RESEARCH INTO THE LONG TERM IMPACT OF DEVELOPMENT INTERVENTIONS IN THE KOSHI HILLS OF NEPAL

DOCUMENTARY REPORT

Commissioned by

Nepal Government's National Planning Commission (NPC) and The UK Government's Department for International Development (DFID)

[Contract Number PO 5504]

August 2013

GRM International Ltd, in association with the Effective Development Group and the Foundation for Development Management

GRM International Ltd
2nd Floor
Turnberry House
100 Bunhill Row
London, EC1Y 8ND
United Kingdom
Tel: +44(0) 20 7250 0556
Fax: +44(0) 20 7336 8742

Effective Development Group
Level 6
444 Queen St
Brisbane
QLD 4000
Australia
Tel: +61 7 3025 8500
Fax: +61 7 3025 8555

Foundation for Development Management
JDA Complex Level II
Bagdarbar, Sundhara
Kathmandu
Nepal
Tel.: +977 1 4263944
Fax.: +977 1 4259104

Acronyms and Abbreviations

ADB	Asian Development Bank	KOSEVEG	Koshi Seed and Vegetable
ADRA	Adventist Development and Relief Agency	LARC	Lumle Agricultural Research Centre
AIDS	Acquired Immune Deficiency Syndrome	LFP	Livelihoods & Forestry Project
APP	Agriculture Perspective Plan	MLD	Ministry of Local Development
BNMT	Britain-Nepal Medical Trust	NDHS	Nepal Demographic and Health Survey
CBS	Central Bureau of Statistics	NGIIP	National Geographic Information Infrastructure Programme
CEDA	Centre for Economic Development and Administration	NGO	Non-Government Organization
CPS	Community Support Program	NLSS	Nepal Living Standard Survey
DANIDA	Danish International Development Agency	NPC	National Planning Commission
DFID	Department for International Development	NSCA	National Sample Census of Agriculture
DHO	District Health Office	NUKCFP	Nepal-UK Community Forestry Project
DHS	Nepal Demographic and Health Survey	PAC	Pakhribas Agriculture Centre
DNPWC	Department of National Park and Wildlife Conservation	PAF	Poverty Alleviation Fund
DoE	Department of Education	PCRW	Production Credit for Rural Women
DoHS	Department of Health Services	PHCC	Primary Health Care Centre
EDG	Effective Development Group	PGRS	Pakhribas Gurkha Reintegration Service
EDR	Eastern Development Region	PM	Progress Meeting
EMIS	Education Management Information System	PRA	Participatory Rural Appraisal
FCHV	Female Community Health Volunteer	PST	Project Steering Committee
FGD	Focus Group Discussions	RAP	Rural Access Programme
FHH	Focal Households	RCA	Reality Check Approach
GIS	Geographic Information Systems	SHP	Sub- Health Post
GIZ	German International Assistance	SMIP	Safe Motherhood Innovative Project
GoN	Government of Nepal	SNV	Netherlands Agency for Development
HHH	Host Households	SSSP	Seed Sector Support Project
HMGN	His Majesty's Government of Nepal	STI	Sexually Transmitted Infection

HIV	Human Immunodeficiency Virus	TBAs	Traditional Birth Attendants
HMIS	Health Management Information System	TMI	The Mountain Institute
HP	Health Post	TOR	Terms of Reference
ICIMOD	International Centre for Integrated Mountain Development	UK	United Kingdom
IT	Information Technology	UNDP	United Nations Development Programme
KHARDEP	Koshi Hills Area Development Project	UNICEF	United Nations International Children's Emergency Fund
KHDP	Koshi Hills Development Programme	UNIFEM	United Nations Development Fund For Women
KHST	Koshi Hills Study Team	US/USA	United States of America
KII	Key Informant Interviews	VDC	Village Development Committee
KIS	KHARDEP Impact Studies	WB	World Bank

Table of Contents

List of Tables

List of Figures

Maps

1 KOSHI HILLS – LONG TERM CHANGE AND DEVELOPMENT IMPACT ANALYSIS

1.1 Introduction to the Report

The Government of Nepal's National Planning Commission (NPC) in association with the UK Government's Department for International Development (DFID) in Nepal has commissioned a study to assess the impact of development interventions in the Koshi Hills area of eastern Nepal over the past 40 years, since 1970. This study will assess the impact of interventions supported by a range of actors, including the Nepal government, donors, non-governmental organizations (NGOs) and the private sector, in addition to the investments by the UK government. In doing so, the study will assess the influence of wider social, political and economic factors to explain the success, or failure, of development interventions. In particular this study has two specific objectives:

(a) To quantify and characterise the economic and social changes in the Koshi Hills over the last 40 years and in doing so, assess the impact and contribution of the different development interventions supported by a range of actors, including government, donors, NGOs and the private sector, to these changes.

(b) To test and assess the validity and rigour of methods that can be applied to retrospective evaluations of long-term aid within wider contexts of development investments to help provide guidance on how to undertake such studies in other countries and sectors.

The Inception Report of the study has been endorsed by DFID and by the Project Steering Committee (PSC). The PSC headed by the Member Secretary of the National Planning Commission (NPC) comprises members such as NPC Joint-Secretary, a representative from each of the government's line ministries including the Ministry of Local Development, the Ministry of Finance, and the Ministry of Forestry and Soil Conservation, a representative each from DFID Nepal and the Study Team, and four individual experts representing university, DDC Association, NGO, and INGO.

1.2 Objective of the Review Report

This documentary review report is one of the outputs of the study. The objective of this report is to review existing documents related to development concepts, research studies, projects and programmes of both government and non-government, as well as quantitative data on different sectors from the past 40 years and to consolidate the findings in order to identify a set of hypotheses related to changes in the social and economic conditions of the communities in the Koshi Hills. Additionally the document report also is to review sample of the projects and to present them as case studies.

1.3 Layout of the Documentary Review Report

This report begins with an overview of global development theories and ideologies that have influenced processes of social and economic changes in Nepal (section 2.2). It is followed by a review development planning in Nepal and a synopsis of the evolution of foreign aid in Nepal that has been provided by various partner agencies to support the development efforts of the country. Section 2.3 focuses on a review of nine different sectors and their various programmes that have been implemented in the Koshi Hills since the past 40 years. Each of these sections reflects the evolution of programmes in the study area and provides a synopsis of impact evaluations of the different programmes being implemented. The Section 2.12 contains three in-depth case studies. Section 3 of this report contains an overview of the national, regional and district level quantitative data based on the set of indicators identified in the Inception Report which is being used to analyse social and economic changes in the Koshi Hills over the past 40 years. Section 4 of this report contains an analysis of gaps in data and information, as well as identifies a set of hypotheses to be tested later in the field in order to assess the most influencing factors that have brought about social and economic changes in the lives of the people across the Koshi Hills. These are based on only those sectors now covered and yet to ascertain for the other remaining sectors. In Section 5, this report contains the draft maps generated by the Geographical Information Systems (GIS) of each of four districts of the Koshi Hills and the Koshi Hills region as a whole.

1.4 Physical Settings of the Koshi Hills

1.4.1 Location

The Koshi Hills region [26°53' to 27°55'N and 88°57' to 89°41'E] comprises four districts, viz Bhojpur, Dhankuta, Sankhuwasabha and Terhathum. Administratively, Sankhuwasabha lies in the 'Mountain District', while the other three districts fall within the 'Hill Districts'.[1] There are two other districts, namely Morang and Sunsari, which lie in the 'Tarai Districts'. All of these six districts are in the Koshi zone of the Eastern Development Region of Nepal (Figure 1).

Figure 1: Location of Koshi Hills and Other Study Districts

The 'Koshi Hills' comprises those four districts as the main study area, whereas those two 'Koshi Tarai' districts are considered here only for understanding the linkages between 'Koshi Hills' and 'Koshi Tarai' in terms of flows of people, goods and services. In addition, two 'neighbouring districts' of the Koshi Hills such as Ilam in the east and Khotang in the west—both lie in the 'Hills'—are also considered as reference to see how the changes have occurred in those two hill districts.

Of the Koshi Hills' four districts, Sankhuwasabha with 3,480km^2 is the largest, whereas Terhathum with 679km^2 is the smallest. Bhojpur and Dhankuta cover areas of 1,507km^2 and 891km^2 respectively; combining all these four, the Koshi Hills region covers 6,557km^2, making up of 4.4 percent of the country's total land area (147,181km^2).

The Koshi Hills is bordered by the districts of Taplejung and Panchthar in the east and Solukhumbu and Khotang in the west. In the north, it borders with Tibet (China) and in the south with Morang and Sunsari districts.

[1] The designation of country's all 75 districts as *Mountain districts, Hill districts,* and *Tarai districts* is primarily for administrative purpose, considering arbitrarily the homogeneity of geographic feature such as terrain or topography in most cases. Despite this however in few cases, some of the mountain districts like Dolakha, Sankhuwasabha, etc have their large portions contained hill features and likewise the hill districts like Gorkha have its large part covered by Himalaya. Of the total, 16 districts are defined as the *Mountain districts*, 39 as the *Hill districts* and the rest 20 as the *Tarai districts*.

1.4.2 Topography

The Koshi Hills has a rugged topography that presents a maze of spurs and valleys but some order can be discerned. Two parallel ranges of varying height and extent traverse the region east to west, unlike four parallel ranges that are found throughout the western part of the Koshi Basin (Burathoky 1968).[2] The Mahabharat Lekh also known as the Lesser Himalayas with an average 2,100m in height and 16km in width is the first elevated terrain in the south of the Koshi Hills region. The structure is synclinal and the topography is steep and jagged. The range is mainly composed of shale, sandstone, limestone, marble, slate and a variety of other metamorphic rocks. Associated feature with the Mahabharat Lekh is the broad hill complex of 'Pahar' landscape which though much dissected has a subdued topography (Gurung 1968). This part consists of the elevations ranging from 300m - 3,000m and a number of narrow longitudinal river valleys such as the Arun and the Tamur and the Tars like Tumling tar (320 m), Saptingtar, Lahanitar, Beltar, etc.[3] This belt is extensively cultivated and has been the traditional zone of the indigenous Nepalese settlements. The lower and gentler slopes have been cleared for terrace cultivation and forests are found only on the higher elevations. By shape and extent, the southern part of Sankhuwasabha district and all three hill districts fall within this topographic zone.

Next parallel range in the north of the Mahabharat Lekh is the main mountain belt with elevations over 3,000m and confined only to the northern part of Sankhuwasabha district. It extends up to the Tibetan border, where lies the ultimate crest-line of the main mountains, also known as Greater Himalayas, which rise as high as to over 8,400m above sea level. This is the realm of snow-peaks including some of the highest in the world such as Mt. Makalu (8,470 m) at the north-western corner. Kumbhakarna and Umbhek Himals run west-east, while the Lumbasumba and Jaljale mountains run along the north-eastern border. To the east are the peaks of Janak, Lasar, and Jongsong Himals. The landscape is wild and forbidding without human habitation for kilometres. Over this part, population is sparsely distributed. This belt consists of historically important trading routes leading to Tibet through the passes of Bhopti (3,754 m), Rakha (4,884 m), and Poptila (5,850 m). This belt also consists of Lekali region with elevation of above 2,700m to 5,000m that has rolling pasture land or known as Kharka where sheep and yaks graze.

1.4.3 Drainage

The Koshi region is drained by the Koshi River, the biggest river of Nepal. It is composed of three main affluents, viz the Arun, the Sunkoshi, and the Tamor. Of these, the Arun is the main river and has largest catchment or basin area of 36,533km^2, whereas the Sunkoshi and the Tamor have 19,230km^2 and 5,900km^2 catchment area respectively (Sharma 1977). The Arun, with its 24 tributaries, flows as the principal river from north to south through the middle of the Koshi Hills. The Arun river system has markedly influenced the physiography of the Koshi Hills, almost eliminating the original quaternary basin deposits particularly in low areas (KES 1986). Two distinct soil types appear in the Arun basin. The parent material in the depositional basins or low terrace is recent alluvium with a mixture of fine sand, clay, loam and silt. The fans or ancient higher terraces called *Tar* are composed of alluvium of

[2] The Nepal Himalayas are divided into four ranges from south to north (Burathoky 1968): (i) Outer Himalayas or *Churia range,* (ii) Lesser Himalaya or *Mahabharat Lekh,* (iii) Greater Himalayas or Main Mountain, and (iv) Trans-Himalayas or *Border range*. The Churia ranges form continuous chain from the Mahakali in the west up to the Koshi River in the east. To the east of the Koshi River, they do appear but not as a range rather as isolated hillocks like the Bhatti Chure, the Chula Chuli and the Maina Chuli in the north of Morang and Jhapa districts. It seems that much of this system in this part has been washed out because of high rainfall and long continued process of erosion. Similarly, there is also absence of the Trans-Himalayas in the eastern part of the Koshi River. This range ends up in the north of the Trishuli River watershed of central region. Thus the eastern part beyond the Koshi River does not possess two important physiographic features such as the Churia range and its associated feature such as the Inner Tarai Valleys or *Bhitri Madhes* (lying between the Chure Hills and Mahabharat Lekh), and the Trans-Himalayas range and its associated Bhot Valleys (lying between the Great Himalayas and the Trans-Himalayas).

[3] The *Tars* exist as high table lands either projecting like peninsulas at the confluence point between the two rivers or as high terraces on either bank of big rivers. The tar in other words means a land which is irrigable only by natural rainfall during the monsoon.

coarse loamy texture. The river valleys are wide, but the river flood plains and terraces for cultivation are few. However, the old terraces as well as flood plain terraces are an asset for the people to grow rice and other cereals. Other resources as boons of economic and social importance derived from the Arun are drinking water, carved landscapes, fishes, boulder and sand deposits, mines, irrigation, power generation, and flora. On the other hand, the Arun is also the main agent of erosion, slides, undercutting and shifting of courses. Of the two other tributaries, the Sunkoshi is flowing from north-west to east and acts as boundary between Bhojpur and Udayapur districts, whereas the Tamor is flowing from north-east to west all the way through the eastern border of Terhathum and the southern part of Dhankuta district. The east-west oriented Tamor valley is of important one for agricultural purpose. Both these tributaries meet with the Arun at the confluence point, popularly known as 'Tribenighat' and then the river is called 'Saptakoshi', which comes out of the Churia hill at Chatra and flows down to the south to meet the Ganges in India.

Within the Koshi Hills region, rain and snow are the main sources of drainage. Rainfall primarily occurs during the monsoon season (June to September), with 80 percent of the annual precipitation (monthly means of 150 – 300 mm) falling during this period (CEDA 1972). However, as this part lies at the beginning of en route of the monsoon air mass, it receives first and huge amount of precipitation. As these large rivers are snow-fed, together with the most of the tributaries are the perennial where water in the river remains throughout the year.

1.4.4 Climate

Over the Koshi Hills region, intricate variations occur within the broad vertical climatic zones including moist sub-tropical climate (300m - 3,000 m) in the southern half to temperate climate (3,000 – 4,000 m) and tundra type of climate (above 4,000 m) in the northern part. Broadly speaking, the mean temperature increases from north to south (32^0C) and the average rainfall 1,500 mm[4] decreases from east to west. There is a recognisable seasonal pattern that regulates the rhythm of human activity (Gurung 1968). The two warm periods (February-March and September-October) are brief transitory phases between the hot summer (April-August) and the cold winter (November-January) seasons. The seasonal variation becomes less apparent with increasing altitude and in the northern mountainous region the winter season is lengthened considerably and summers are brief. The hot summer season under the influence of the south-east summer monsoon (June to September) gets about 80 percent of the annual rain and this is the period of intensive agricultural activity particularly in the lower altitudes, while cold temperatures and long winters put a limit to agricultural activity in the high mountains. During the winter season, westerly cyclones cause snowfall on the higher elevations but for the people this is the season for trade and travel. Further, owing to intricate variation in topography, the Koshi Hills region has a multiplicity of microclimates. However, a great deal of fluctuation occurs in the water level of rivers that relates to the rainfall patterns. There is constant hazard of river being rerouted through existing meanders during short rainy season. Erosion of river banks results in yearly losses in some areas. The torrential rainfall also causes erosion and landslides on the hill slopes. During dry season, the water level in most rivers is very low and some streams even dry up.

1.4.5 Natural Vegetation

Similar to the climatic contrasts, vegetation types in the Koshi Hills region range from sub-tropical wet hill forest in the south to the nival zone in the north. In the sub-tropical wet hill forest, hill-type Sal (Shorea robusta) continues to the lower levels but the dominant trees are the broad leaf Schimal wallichii (Chilaune) and Castonopsis indica (Katus). Other common species are Dendorocalamus (Bans) of numerous species, Alnus nepalensis (Utis), Rhododendron arboretum (Gurans), and Allo. On higher altitudes beyond the Mahabharat Lekh are found common plants such as evergreen conifer oaks, rhododendron, Juglans regia (Okhar), Michelia excels (Champ), Fraxinus floribunda (Langri), and Arundinaria (Nigalo) in wetter slopes. Other species are Pinus excels (Sallo) and cedar (Deodar). Higher up grow Abies spectalis (Fir), Picea morinda (spruce), Betula utilis (Bhoj), dwarf varieties of rhododendron, juniper, birch, and cypress. Tree trunks and branches are festooned with parasitic orchids and filigree of moss and lichen. Most of the exposed ridges are however covered with Anaphalis numbegena (buke) grass studded with occasional Caragana bushes and other alpine plants

[4] As this part lies en route of the monsoon air mass that first enters through eastern Nepal, particularly the area around the Hile-Pakhribas receives largest rainfall in the eastern region.

such as Stellera chamaejasme, violets and primulas. These vegetations provide products such as timber, fuel wood, fodder and others. In addition, varieties of herbs such as chiraito, kutki, padmachal, tejpat, rudrachhe, etc are being valuables for medicinal use. Since the last few years Allo plant has been used to make clothes for selling.

1.5 Land Use

Two important land use categories of the Koshi Hills are forest and agriculture. In 2000, 40 percent of the Koshi Hills was under forest coverage, which was nearly 49 percent in 1986. Second to this is the agricultural land, showing an increase from 31 percent in 1986 to 33 percent in 2000 (Table 1). The pattern of change in forest coverage among the Koshi Hills districts between two years 1986 and 2000 remains to be the same, i.e., declined in all four districts.[5] Unlike forest coverage, the pattern of change in agriculture coverage differs among the Koshi Hills districts between those two years, i.e. its proportion increased in Sankhuwasabha and Dhankuta and declined in Bhojpur and Terhathum. The proportion of shrub coverage increased considerably in all four districts of the Koshi Hills during 1986-2000.

Table 1 depicts that the forest land in the Koshi Tarai accounted for 17 percent on average in 1986, while by the same year the cultivated land claimed nearly 74 percent. By 2000, both land use categories increased slightly in the Koshi Tarai districts.

Table 1: Change in Distribution of Land Use Categories (%), Koshi Region (1986-2000) (LRMP 1986; and JAFTA 2001).

District	Forest		Shrub		Cultivated		Others	
	1986	2000	1986	2000	1986	2000	1986	2000
Bhojpur	51.6	35.8	4.0	12.9	43.5	38.8	0.9	12.4
Dhankuta	40.4	29.3	4.5	16.3	52.0	52.7	3.1	1.7
Sankhuwasabha	52.2	46.3	11.4	14.0	14.3	20.7	22.1	19.0
Terhathum	36.8	29.4	6.1	18.3	55.4	51.3	1.7	0.9
Koshi Hills	48.9	39.7	8.2	14.5	30.5	32.6	12.5	13.2
Morang	21.5	29.6	3.3	1.3	71.7	65.3	3.5	3.7
Sunsari	12.6	18.3	1.2	3.9	75.9	64.5	10.3	13.4
Koshi Tarai	17.1	23.9	2.2	2.6	73.8	64.9	6.9	8.6
Ilam	42.1	55.9	18.4	2.0	37.7	39.3	1.8	2.8
Khotang	37.9	49.5	14.0	4.6	46.2	44.3	1.8	1.6

Note: Others include water bodies, bare land, snow land, etc.

The present land use is the outcome of development interventions and process of migration of population that have undertaken since the 1960s. Prior to this, migration of people from the hills to the Tarai was virtually absent because the latter was a negative area for human settlement due to prevalence of malaria. A dramatic change took place after the launching of the malaria eradication programme in the eastern Tarai in 1962 (Gurung, 1989).[6] This region then became an attractive place for its fertile soil, cheap land and comfortable life for the hill people. A stream of the hill migrants began to pour into the adjacent Tarai by clearing the forest, known as 'Charkoshe Jhadi' for agricultural

[5] Contrary to this, a study by Virgo and Subba (1994), based on sample areas, shows an increase of forest area from 36.5% in 1978 to 38.8% in 1990, or by 34%, indicating a significant improvement in on-farm fodder, fuelwood, and fruit tree resources. It also indicates that landslide areas increased from 1.0% of the total sample in 1978 to 1.9% in 1990.

[6] It was initiated in Chitwan for the first time in 1956 and then followed in other parts of Tarai.

settlement (Kansakar 1983). Consequently, the eastern Tarai thus became an area like other parts of Tarai, which suffered heavy forest depletion over the past three decades.[7]

1.6 Demographic Settings

According to the recent census of 2011, the total population of the four hill districts is 609,407 (Table 2), which accounts for 2.3% of the total population of the country.

Table 2: Population Change in the Koshi Region, 1971-2011 (CBS Censuses: 1971, 1981, 1991, 2001, 2011)

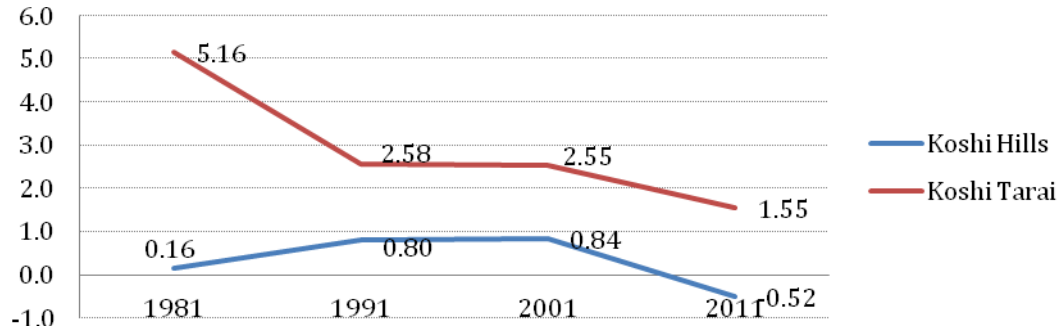
Districts	Population by census year				
	1971	1981	1991	2001	2011
Nepal	11,555,983	15,022,839	18,491,097	23,151,423	26,620,809
Koshi Hills	535,775	544,338	589,943	641,811	609,407
Koshi Hills (%)	4.6%	3.6%	3.2%	2.8%	2.3%
- Bhojpur	194,506	192,689	198,784	203,018	183,916
- Dhankuta	107,649	129,781	146,386	166,479	164,133
Sankhuwasabha	114,313	129,414	141,903	159,203	159,649
- Terhathum	119,307	92,454	102,870	113,111	101,709
Koshi Tarai	524,991	879,286	1,138,304	1,468,853	1,715,834
Koshi Tarai (%)	4.5%	5.9%	6.2%	6.3%	6.4%
- Morang	301,557	534,692	674,823	843,220	964,709
- Sunsari	223,434	344,594	463,481	625,633	751,125

Overall there is a negative growth rate of -0.52% (compared to the national 1.4%)[8]. This is seen primarily in three districts, Bhojpur, Dhankuta and Terhathum. While the neighbouring district of Ilam has shown a steady rise in the population at a growth rate of 0.45% per annum. The gender distribution of population in the Koshi Hills and the Koshi Tarai shows that the females constitute more than 50%.

[7] During 1961-81, there was large volume of out migrants from the eastern region. For instance, Gurung (1989:41-48) mentions that the volume of out-migrants from the eastern mountain and hill was 41.9% in 1961, while in the same census year the eastern Tarai claimed 40.4% of the total in-migrants. Likewise the volumes of out-migrants from the eastern mountain and hill were respectively 7.5% and 36.9% (the highest) in 1971 and 22.7% and 25.5% (both highest) in 1981. The eastern Tarai claimed 36.7% and 29.0% of the total in-migrants in 1971 and 1981 respectively. The depletion of forest area was associated with expansion of cultivated land. The proportion of cropland increased in the eastern Tarai from 51% in 1963-64 to 64% in 1978-79 while the forest land depleted from 654,298 ha to 404,883 ha, or by 12.4% between the same durations of the years.

[8] This represents the lowest growth rate over the past 40 years.

Figure 2: Trend in Population Growth in Koshi Hills and Koshi Tarai (CBS 1981, 1991, 2001, 2011)



The 2011 census records annual growth rate at 0.03% for Sankhuwasabha the only positive growth though very negligible while annual growth rates for other three districts of the Koshi Hills are negative. Two Koshi Tarai districts have shown higher annual growth rates and Sunsari with 1.83% higher than the national average of 1.40%, Ilam has positive growth at a very low rate, and Khotang has also negative growth rate. Of all, Terhathum has shown highest negative average annual growth rate of population of -1.06% during the last census (2001-2011).

Historically, the census data show that there has been a heavy flow of people from the hills to the Tarai. For example, the 1981 census recorded a net loss of about 0.68 million population in Hill and mountain, while the Tarai gained 0.69 million population. As such in 1981, 67% of in-migrants in the eastern Tarai were born in the eastern Hill (CBS, 1987).[9]

Further in the Koshi Hills, the number of people migrating out (absent population) has jumped drastically from 3.1% in 1991 to 8.4% in 2001.[10] The highest number was recorded for Terhathum (9.5%), while the lowest for Sankhuwasabha (7.6%).[11] Similar increases were also recorded for the neighbouring districts of Khotang (8.7%) and Ilam (7.4%). During 1991–2001, the trends in the destinations for out-migration were also found to be changed. India remained the main destination and but recently the Gulf States have emerged as the destination for a growing number of emigrants. In 1991, 5.6% were travelling to the Gulf, whereas by 2001 the number was more than doubled to 12.9%.[12] Interestingly, the majority going to the Gulf States, which is considered to be a more lucrative destination place,[13] were from Dhankuta (56%) and Terhathum (48%).

During 1991–2001, the trends in the destinations for out-migration were also found to have changed. India remained the main destination and but recently the Gulf States, which are considered to be a more lucrative destination[14], have emerged as another important destination for a growing number of emigrants. In 1991, 5.6% were travelling to the Gulf, [15] whereas by 2001 the number had more than doubled to 12.9%; with the majority of those migrating from Dhankuta (56%) and Terhathum (48%). All most all (93%) of those out-migrating have been men.

[9] Central Bureau of Statistics: *Population Monograph of Nepal*, 1987.

[10] In the Tarai absent population increased from 2.3 percent in 1991 to 6.9 percent in 2001.

[11] The rates for Dhankuta and Bhojpur were 8.8% and 8.2% respectively.

[12] Approximately half (US$1.2b or 48.9%) of all remittances (US$2.5b) entering into the country was from the Gulf countries (World Bank: *Nepal Migration Survey 2009*).

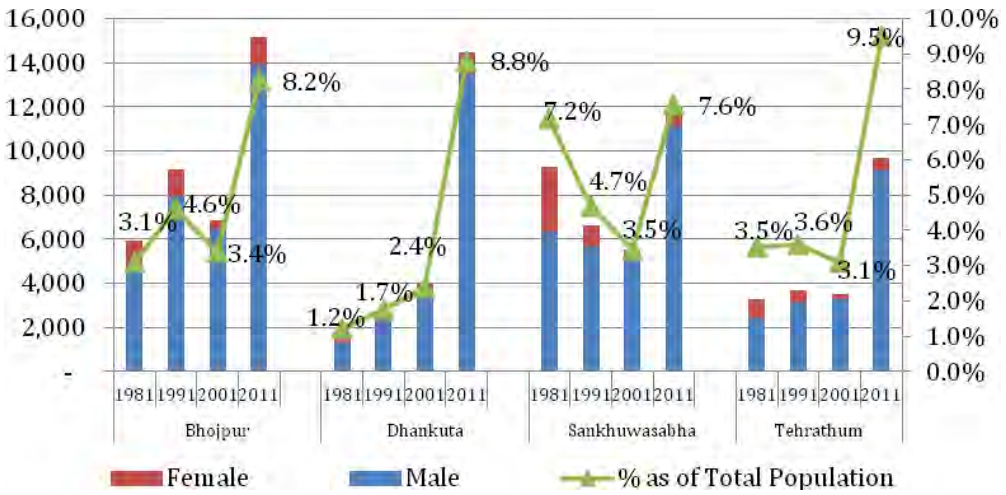
[13] According to the World Bank: *Nepal Migration Report 2009*, households with a migrant in the Gulf countries received US$2,120 on average compared to US$800 of those with members in India.

[14] According to the National Migration Report 2009, on average, households with a migrant in the Gulf countries receive US$2,120 compared to US$800 for those with members in India.

[15] Nationally, approximately half (48.9%) of all remittances (US$1.2b) entering into the country (total US$2.5b) were from Gulf countries (Nepal Migration Survey, 2009).

One reason for this is that out flow of people from the Hills to the Terai has historically been encouraged by the state and traced back to various policies[16] and programmes[17] on land and labour (Olyphant, 1852; Regmi, 1971; Ojha, 1983). More recently, scholars point out that population pressures in the hills, worsening ecological resources and greater opportunities in the Terai have continued the phenomenon (Dixit et al, 2009; Macfarlane, 2001; Bohle and Adhikari, 1998). For example, census figures for 1981 showed that the hills recorded a net loss of 0.68m population, while the Terai gained 0.69m; with 67% of in-migrants in the eastern Terai being born in the eastern Hill (CBS, 1987).[18]

Figure 3: Trend Migration in the Koshi Hills Districts (CBS 1981, 1991, 2001, 2011)



According to the 2001 census, Rais constituted the largest ethnic group (22.3%), followed by Chhetri (19.9%), Bahun (8.5%), Tamang (6.0%), and Limbu (3.5%).[19] Table 3 provides the relative sharing of the main ethnic groups/castes within the Koshi Hills region.

Table 3: Predominant Caste/Ethnic Groups in the Koshi Hills, 2001 (District Profiles, 2006)

SN	Bhojpur	%	Dhankuta	%	Terhathum	%	S_sabha	%	Ilam	%	Khotang	%
1	Rai	34	Rai	23	Limbu	35	Rai	22	Rai	24	Rai	39
2	Chhetri	20	Chhetri	20	Chhetri	19	Chhetri	19	Brahmin	15	Chhetri	22
3	Tamang	8	Limbu	14	Brahmin	15	Tamang	9	Limbu	14	Brahmin	8
4	Newar	8	Magar	10	Tamang	5	Brahmin	6	Chhetri	13	Newar	5
5	Brahmin	8	Brahmin	6	Dalit	4	Sherpa	5	Tamang	7	Dalit	4

[16] According to Olyphant (1852), the development of the Terai region was stressed in the 18th century for state expansion. Primarily, to acquire land revenues, royalty on timber exports as the Hills were already extensively cultivated and offered less possibilities for increasing revenue (Stiller, 1976). Ojha (1983) also points out various land reforms.

[17] Some significant programmes include the Malaria Eradication Programme (initiated in 1958), The Rapti Valley Development Project (in 1955) and the Resettlement Programme initiated in 1962 (Ojha, 1983).

[18] Population Monograph of Nepal, 1987, Central Bureau of Statistics.

[19] Historically, it has been noted that the ethnic communities (Rais, Limbus, Magars and Tamangs) were the original settlers in the Koshi Hills and were mainly herders, who only later turned towards agriculture by planting maize and potatoes to overcome population pressures (MacFarlane 1976). Later, rice was introduced into the area, with the arrival of the high castes (Brahmins and Chhetris) and the occupation castes such as Sarki, Damai, Kami (Regmi 1978).

The gender distribution in 2011 showed that females constituted 53% of the population in the Koshi Hills. One reason for this recent trend can be attributed towards the growing number of male migrants from the regions, which in 2011 rose to 47,590 from 18,690 in 2001. Age wise distribution of the population shows that since 1971 the trend has remained consistent in the Koshi Hills and Tarai, with over half of the population belonging to the 15-59 years of age group.[20]

In 1971, agriculture was the predominant activity with 98% of the population engaged, but since then other activities, such as technical, services and sales, were also recorded. The most drastic change was seen within the Tarai districts, where the population engaged in agriculture decreased from 84% in 1971 to 43% in 2001. Among the districts of the Koshi Hills, Dhankuta has shown a significant change in the occupational pattern, with declining from 97% in 1971 to 66% in 2001.

The 2011 census shows an average density of population for the Koshi Hills at 93 persons per square kilometre. Topographic control has caused extremely uneven distribution of the population. Sankhuwasabha, whose most of the land lies in the higher mountainous zone, has density of population at only 46 persons per square kilometre far less than that of Bhojpur, Dhankuta and Terhathum of the Koshi Hill, whose land mostly fall within the Mahabharat Lekh zone. The density of the latter three districts is far higher than the average density of the Koshi Hills. The density of the Koshi Tarai districts is exceptionally very high, showing over 500 persons per square kilometre, while that of the two neighbouring hill districts: Ilam and Khotang is quite comparable with that of three districts except Sankhuwasabha of the Koshi Hill.

The basis of population concentration is being the traditional homeland and land habitable for human settlement and agricultural activity that has higher density. Therefore the three hill districts lying in the southern part of the Koshi region supports three-quarters of the population. According to the 2001 census the urban density of Dhankuta and Khandbari municipalities had 429 and 239 persons per square kilometre respectively. Three recently inducted municipalities are Myaglung (Terhathum headquarters), Chainpur (Sankhuwasabha) and Bhojpur (Bhojpur headquarters), the population and the area of which are not yet enumerated and demarcated.

Historically, the Rais and the Limbus were the indigenous inhabitants of the Koshi Hills and were collectively termed as “Kirat” (Caplan 1970). At present, the Rai settlements are mostly concentrated along the Arun River, which is termed as “Middle Kirat”. The Athpahariya of Dhankuta is associated with the Rais. The Limbus are found in the east of the Arun primarily in Terhathum and in the south-east part of Dhankuta; the area commonly is known as “Far Kirat” (Caplan 1970; CEDA 1972). Other castes such as Bahun/Chhetri, Dalits, etc, are found to be scattered throughout the Koshi Hills, while the ethnic Newars are mostly concentrated in the towns.

The settlement pattern and house-types show local differences determined by local relief and materials. In the lower hills the basic pattern is one of dispersed hamlets with houses of stone walls and thatch roof. In the mountainous area the houses are solidly-built with stone wall and sopping slate roofs and they are closely packed into nucleated village. In the Himalayas, the villages are compact but the houses have flat roofs.

1.7 Cultural Process

As in other hills and mountains, the inhabitants of the Koshi Hills are mixed in origin such as the Mongoloid groups from the north-east and the Caucasoid from the south-west. In general, the mongoloid tribes of northern part follow Tibetan cultural traditions in language, religion, and economy and speak Tibeto-Burman dialects.[21] In the south are the tribal culture area and the Pahari culture areas arranged in successive ecological zones. While the indigenous groups living generally along the

[20] In 1971, 52% belonged to 15-59 years of age group as compared to 51% and 54% of the same age group in 1981 and 2001 respectively (CBS: *Population Censuses* 1971, 1981, 1991).

[21] The medieval history of the Himalayan region is wrought with the fluctuations of Mongoloid and Khasa dominance. The most notable phases being the seventh century ‘golden age’ of Tibet when Sron-btsan-sgampo extended his empire to the Himalayan foothills, the 12th century occupation of Western Tibet by Khasa rulers of Jumla, and the 18th century expansion of the Gorkhas from Kangra to Sikkim. The impact of the Hindu rulers over the last few centuries has been progressive ‘sanskritization’ and the establishment of Indo-Aryan language Nepali as the *lingua franca* of Nepal.

middle and higher slopes speak their own languages, the caste-stratified Caucasoid Paharis occupying lower slopes speak Nepali.

1.8 Economic Profile

Agriculture has remained the predominant activity within the Koshi Hills, but in recent years the population engaged in the sector has decreased from 98% (1971) to 76% in 2001 (Figure 4); which reflects national trends[22]. Whereby, non-farm (services, clerical jobs and sales) and off-farm earnings have grown in importance. Overall national figures for 2006 show that, for rural areas, the main sources of income include farm activities (38%), remittances (15.4%), non-agricultural wages (15.3%), non-agricultural enterprises (15.3%) and agricultural wages (7.3%) (NLSS II, 2003/04). Not surprisingly, with the rise in out-migration of the population, the proportion of households receiving remittances have also increased. Within the EDR, it rose from 14% (in 1995/96) to 26% (2003/04) (ibid).

Figure 4: Economically Active Population by Major Occupations in Koshi Hills (CBS 1971, 1981, 1991, 2001)

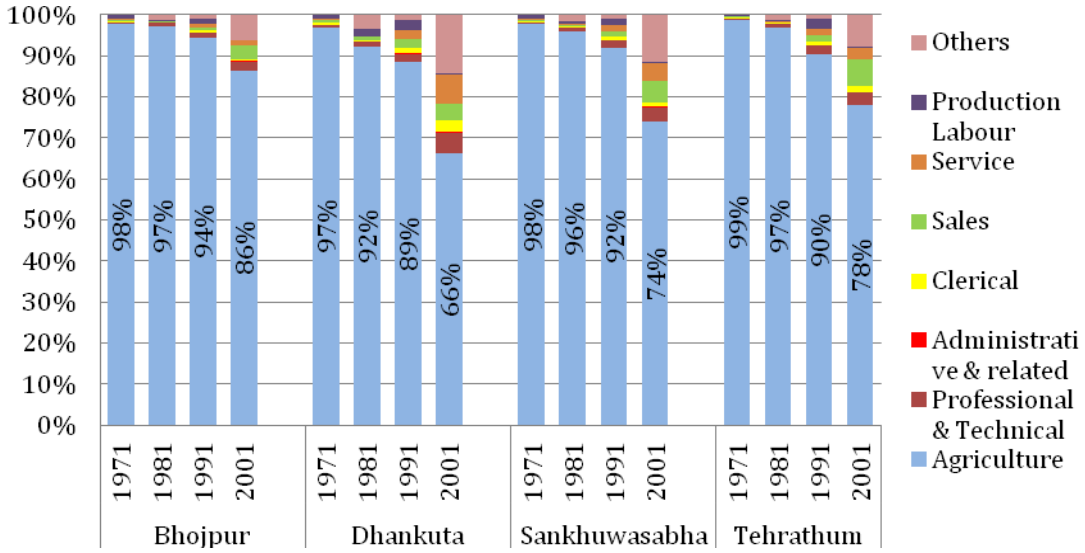


Table 4: Area Under Cultivation (1981- 2008) (MOA, 2005; CBS, 2009)

Area under cultivation	Year	Dhankuta	Terhathum	Bhojpur	Sankhuwasabha	Total
Cereal crops	1981	30,760	13,790	20,260	18,910	83,720
	1991	38,130	25,040	30,290	36,040	129,500
	2001	41,129	28,965	34,113	46,967	151,174
	2008	39,554	27,438	42,111	43,358	154,469
Cash crops	1981	1,590	1,910	1,790	2,120	7,410
	1991	1,790	2,060	2,820	2,580	9,250
	2001	2,769	2,002	2,770	2,591	10,132
	2008	3,098	2,955	3,815	3,126	15,002

[22] People engaged in agriculture has decreased from 98% in 1971 to 66% in 2001.

Within the agricultural sector, subsistence farming has continued to dominate, over commercial production. Figures show that the area cultivated for both cereal[23] and cash crops have however increased over the past 30 years. For cereal crops, the sharpest increase (55%) was recorded between 1980/81 and 1990/91, which saw a doubling of the cultivation of staple crops such maize, paddy and wheat (MOAC 2005). In recent years (after 1990), there has also been an increase in the production of high value crops such as off-season vegetables, cardamom, fruits and tea. For example, vegetable production grew from 32,000 mt (in 1993/94) to 69,400 mt (in 2003/04) (MOAC, 2005).

The Pahar zone grows paddy, maize, millet, and barley at a subsistence level. The mountainous zone with the short growing seasons grows barley, buckwheat, and potato, and is a food-deficit area.

The hāts play a significant role in economic and social interactions in the Koshi Hills. They are held on different days of a week across the region such as on 'Saturday' in Khandbari (1,067m), on Friday in Chainpur (1,330m) and Myaglung (1,636m), on Thursday in Dhankuta bazaar (1,524m) and Hile (2,133m) to mention a few.

The manufacturing sector, meanwhile, is small, with only 22 manufacturing establishments within the four study districts (CBS, 2006/07). These are primarily concentrated in Dhankuta (9) and Terhathum (8) and are predominantly focused on textiles, paper and food/beverages, altogether, employing 520 employees in 2005 (ibid). As such, the whole hills area has historically been reliant on trade flows from the Tarai for manufactured goods (Conlin & Falk, 1979); which are either produced in the commercial hub of Biratnagar or imported from the border from India.

1.9 Human Development

Human development indices show that the Koshi Hills have a slowly on the rise. Life expectancy figures for the Koshi hill districts are consistently higher than the national average (Table 5). Among the four districts, Terhathum has the highest HDI with rank 10th (amongst the 75 districts) while Bhojpur has the lowest with 32nd (UNDP 1998, 2004).

Table 5: Selected Human Development Indices (1998 and 2004) (UNDP 1998 and 2004)

Indicators	Year	Nepal	Bhojpur	Dhankuta	Sankhuwasabha	Terhathum
Life expectancy at birth	1998	55.0	64.3	64.3	61.7	61.3
	2004	60.98	64.6	64.9	63.7	67.7
Adult literacy	1998	36.72	37.09	44.41	41.32	52.57
	2004	48.6	46.8	58.6	47.5	54
Per capita income (PPP)	1998	1,186	707	1,275	1,058	1,056
	2004	1,310	1,002	1,102	1,257	1,246
HDI	1998	0.325	0.351	0.401	0.365	0.393
	2004	0.471	0.472	0.507	0.481	0.523

[23] Cereal crops include: Paddy, Maize, Millet and Barley and cash crops include: Oil seeds, Sugarcane, Potato and Tobacco (MOAC 2005).

Figure 5: Relief Features, Koshi Hills

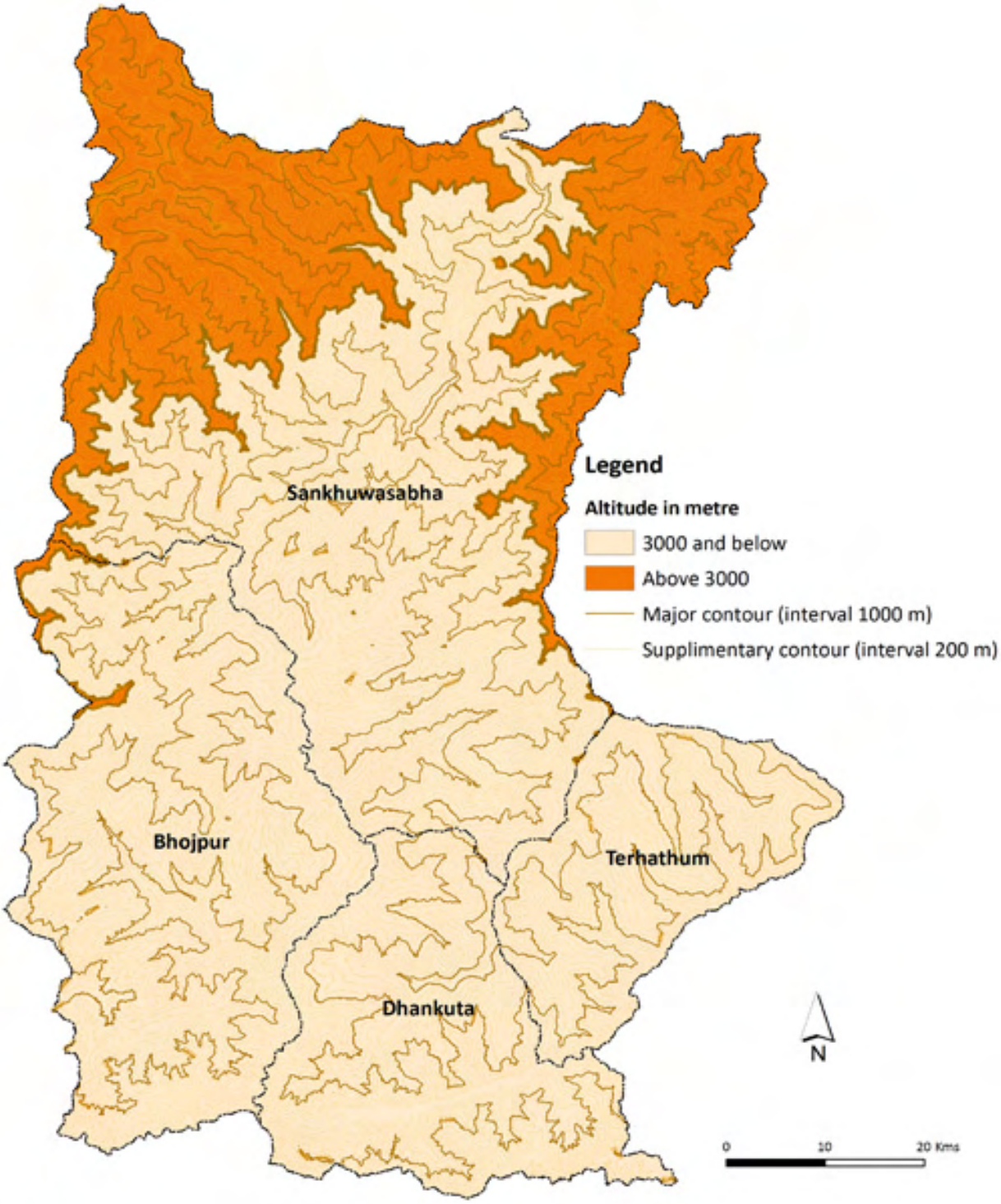
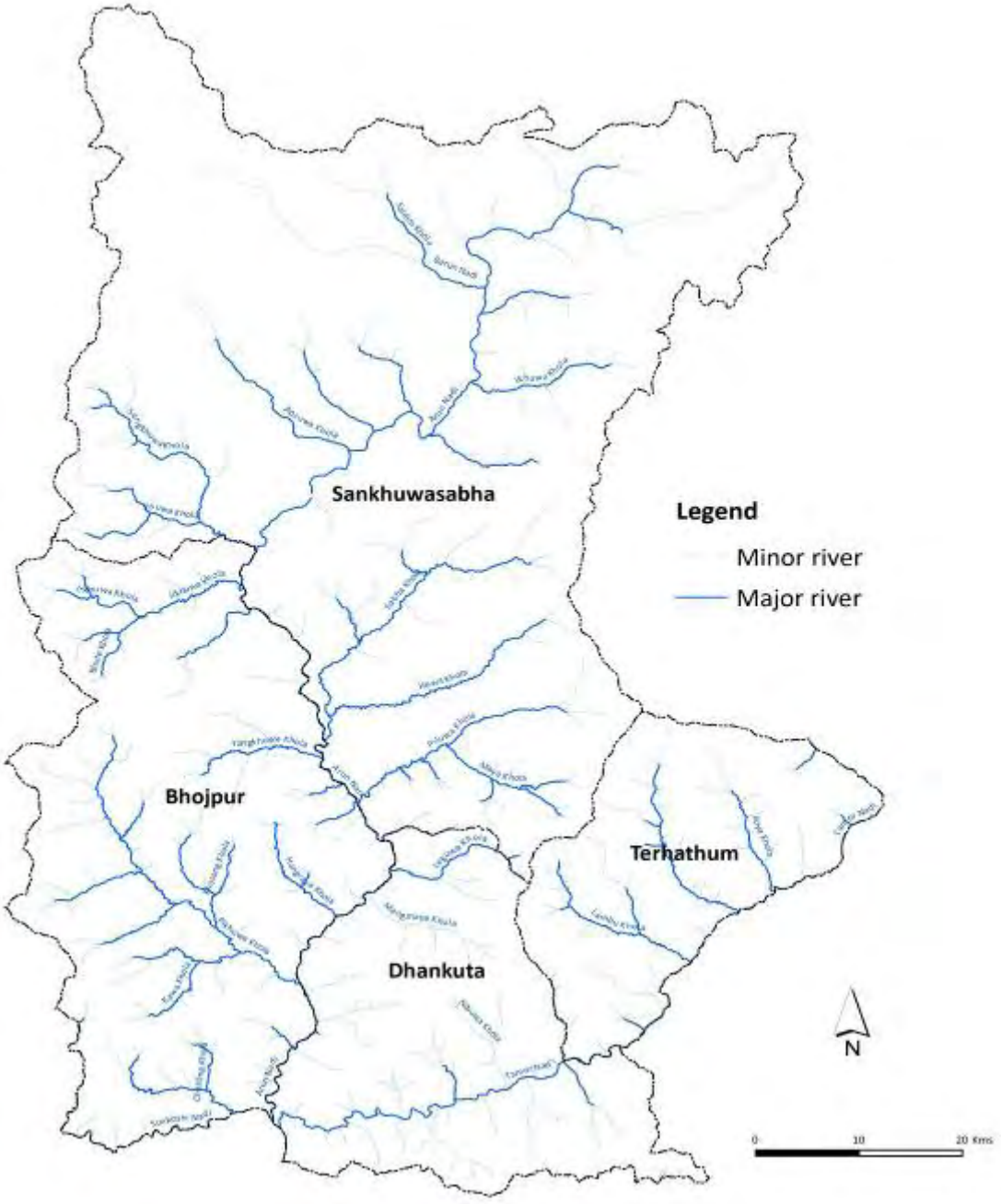


Figure 6: Major Rivers of Koshi Hills



2 REVIEW OF EVIDENCE OF CHANGE, DEVELOPMENT AND IMPACT OF DEVELOPMENT INTERVENTIONS

2.1 Global: Development Theories

This chapter attempts to highlight the dominant development discourses that have emerged over the past half-century; so as to develop a general understanding of how ideas and theories regarding 'development' have evolved and changed. The aim is to not merely trace the emergence of new ideas or the turnings point between them, but more importantly, to lay the setting in order to understand how Nepal's own development path has been influenced (section 2.2). As these ideas have inevitably filtered back into the country and have been translated into various policies and programmes.

Being mindful of the complexities and the risks of oversimplifying the evolution of development ideas along convenient timelines; this chapter nevertheless seeks to identify and briefly discuss the dominant themes.

2.1.1 Post World War II (1950s and 60s)

During the post war decades of 1950s and 1960s, the development discourse was dominated by 'modernization theories' that emphasised a series of successive stages of growth that each nation should pass. These approaches stressed the need for "less developed" countries with "traditional" economies, characterised by small-scale subsistence agriculture, petty trade and a high degree of labour intensity but low capital accumulation, to adopt "modern measures". These were to consist of a mixture of technological know-how, savings, investment and foreign-aid to enable them "takeoff" to increase productivity and achieve rapid economic growth (Rostow, 1960). The goal was to emulate the modern industrialized countries, which themselves were once understood to have underdeveloped agrarian societies.

The injection of massive amounts of capital and technical aid, which had been successful in the reconstruction efforts of war torn Europe through the Marshall Plan, were also taken as lessons learnt that could be applicable to the newly emerging nations. These efforts had been assisted through the "Bretton Woods" International Financial Institutions (IFIS) – the World Bank and the International Monetary Fund (IMF) – that were established to assist with lending for reconstruction and provide immediate relief for balance-of-payments problems; with both institutions in subsequent years going on to shape the economic and social policies of many governments in the developing world.

Based on these two strands – the historical pattern of growth and the injection of capital, Western powers led by USA, paved the way for "modernization" through the use of aid and technical assistance. In addition, there was also the simultaneous promotion of western liberal democratic views, to consolidate the emerging balance of power in the "post-war period" which had pitted the western "capitalistic model" against the "socialistic model" lead by Soviet Union, with both sets of powers providing aid to counterbalance each other's influence.

Planning was also influenced by the "dual-economy" theory of development (Lewis, 1954; Fei & Ranis, 1964) that gained prominence in the 1960s. According to this model, the agriculture sector possessing only negligible potential for rising productivity and growth, but a "surplus of labour" was to play a secondary role, in supplying the raw materials and labour to the modern "industrial" sector which would be the driving force of change (Lewis, 1954).

The spark for the new industries were to be provided by large scale external financial investments or the "big push" (Roden-Rosenstein, 1943); either in complementary investments in sectors which had a high degree of linkages so that a "balanced growth" could be achieved (Nursk, 1963) or deliberately contrived "unbalance growth" (Hirschman, 1958), with investments concentrated on sectors and projects which would cause additional investments due to their forward and backward linkages. Economies of scale and externalities gained through industrialization underpinned both these models.

Hence during this period, development -as economic growth - was to be achieved through government led "modernization" plans, focused on industrialization with the support of foreign investment "aid" and technical assistance. The primary concern was on efficient production. But, the distribution of benefits were little or rarely discussed as they were thought to automatically "trickle-down" and spread.

The focus of industrialization also differed according to two contrasting approaches- Import Substitution (IS) and Export-Oriented (EO) growth. The followers of the former strategy, which was

popular in the 1950s and 1960s, advocated the protection of developing countries' nascent industries (from the already highly productive industries of developed countries) through a variety of instruments such as tariffs and quotas of imported goods. Later, this was also supplemented with controls on foreign exchange. The aim was to put into place new activities that would produce an array of manufactured goods, which would bring about changes within the structure of the economy, generate new opportunities and would at a future date make it possible to engage in foreign trade (Burton, 1998).

At the other end of the spectrum, the proponents of outward focused Export-Oriented strategies concentrated on foreign trade and the deliberate production of goods for exports. This included dismantling controls, establishing a single exchange rate and the encouraging the setting up of export led industries through a variety of measures.

By the 1970s, this approach, on the evidence of dramatic successes seen in GDP growth in Taiwan and Korea along with the failure of IS strategies to bring about sustained growth and learning, was on the rise and became the new mantra for development.

2.1.2 Critique of Mainstream Development Theory

By the end of 1960s, the growing disenchantment with the conventional wisdom of "modernization" was also emerging amongst policy makers and practitioners. Critics, mostly from the far left in Latin America, but also in Africa and other parts of the world, began in light of stagnant growth, worsening poverty and developing-world historical relationships to question the assumptions and validity of models of modernization and industrialization. Instead, they viewed developing countries, which they termed as the "periphery", to be caught up in highly unequal and exploitative capitalistic relationships with the "centre" i.e. the richer industrial countries (Prebish, 1959; dos Santos, 1970; Frank, 1967). According to the proponents of the "dependency theories", rather than development, there was a growing perpetuation of "underdevelopment". This was due to the international division of labour and the lack of technological dynamism within the "peripheries", as a consequence of the historical conditioning and trade policies of industrial countries (dos Santos, 1970; Frank, 1967). Furthermore, they concluded that certain groups (ruling elites) within the developing countries, either knowingly or not, end up supporting the system due to the financial, social and political power rewards that they receive from international special-interest power groups such as the World Bank, IMF and multinational companies (Sunkel, 1972).

The solution advocated was therefore to break the cycle of dependency and pursue policies of self-reliance. For neo-marxist dependency theorists, this entailed a political revolution (Frank, 1967). For others it comprised of economic, political and institutional reforms, internally as well as internationally.

From the far right, there was also growing criticism of the broadly neo-Keynesian approach that stressed the role of the state in the management of the economy. It was argued that the state, composed of elites and ruling groups, propagated "bad policies" in resource allocation and incorrect pricing policies and was beset with "rent-seeking" behaviour (Krueger, 1974; Bates, 1981). As such, a greater reliance on the market rather than on the state's direction and regulation was advocated in order to improve the general economic welfare of the people.

The call for a "minimal state" was also gaining voice against the background of recession and inflation in the industrialized world since the early 1970s. Government spending, which previously had been responsible for fuelling post-war growth, was now being seen to contribute towards inflation, hurt investment and savings, and eventually contribute towards worsening unemployment (UNRISD, 1994). The oil crises in 1973 and 1976 also affected the economies of both the industrial and developing countries; with the latter borrowing on a massive scale to finance its development programmes.

In the midst of these contrasting ideological debates, the mid 1970s also saw the emergence of the "Basic Needs" strategy, which grew to become the new conventional wisdom and influence the development priorities in the developing world. The strategy itself had its origins during the International Labour Organization's (ILO) World Employment Conference in 1976; during which the need for development planning to prioritise the fulfilment of minimum human needs was stressed (Long, 1978). Rather than merely focus on economics (growth, industrialization) the policy recommendations were more geared towards wider issues of social welfare and the quality of life. It focused on the minimum requirements for private consumption – adequate food, clothing, and shelter; essential community services such as drinking water, health, education; and the participation of citizens in the decision-making roles (Long, 1978).

The demand for social justice and social equity for women also emerged during this period with the Women in Development (WID) movement that gained recognition with the 1975 World Conference of International Women's Year in Mexico City and the United Nations decade for Women (1976-1985). Over the past decades, there had been an increasing recognition that the processes of development had differential impacts on men and women. With the expected "trickle-down" of benefits not always evident and in some cases the processes of "modernization" actively contributing towards the deterioration of women's position in their homes and public spheres (Boserup, 1970), WID advocates rejected the narrow interpretation of women's roles (as care-givers) that underlined much of the development policies concerning women and instead argued that women were "productive" members who could be the "missing link" in development (Tinker, 1990). The impact of this movement was seen in the push towards greater integration of women into development programmes. But, the WID approach continued to be grounded on the modernization approach and tended to accept the existing social and power structures that valued men's activities above women's. It also overlooked the impact and influence of caste, race and culture (Mbilinyi, 1984).

2.1.3 Emergence of Neo-liberalism

The 1980s saw the political ascendancy of conservative governments in the United States and Britain, which led to significant shifts towards the right and the dominance of neoliberalism, as an economic theory and also a policy stance (Kotz, 2000). Neoliberalism as a theory claimed that a "free market" (unregulated economy) embodied the ideal of free individual choice and could also achieve optimum economic performance with respect to growth and efficiency. The state in the mean while was thought to best allocate to the limited role of protecting property rights, enforcing contracts and regulating money supply (Kotz, 2000).

The policy prescriptions in developing countries therefore, entailed the dismantling of statist planning and government regulations on economic activities for freer markets. The central argument of the neo-liberals was that underdevelopment was a consequence not of predatory activities of the industrial countries, but rather due to much government interference in markets through "incorrect pricing policies" and the corruption and inefficiency of a bloated government system (Krueger, 1974; Bauer, 1972; Lal, 1983). This view of development was given credence by influential studies such as the World Bank's "Berg Report" and Robert Bate's " Markets and States in Tropical Africa" (Arrighi, 2002), which studied underdevelopment and argued for state powers to be minimised, so that people could take advantage of market opportunities.

The remarkable economic growth of the New Industrial Countries (NICs) such as Taiwan, Korea, Singapore and Hong Kong which followed Export-Oriented (EO) economies, were also taken as proofs of legitimacy of the neo-liberal approaches; especially, in light of the failures of the interventionist and ISI economies in Latin America (Krueger, 1983). The call was therefore, for all developing countries to drop their protectionist policies, in favour of "lassez-fair" policies, which included the elimination of exchange-rate controls and restrictions on trade, privatization of public enterprises, deregulation of the financial sector and specialization of the productive sector according to the "comparative advantage" (i.e. primary products)(Krueger, 1986; Lal , 1983; Balassa,1981).

The "debt crisis" in 1982 further effected highly indebted countries, mostly in Latin America and Africa that were most integrated into the world economy. As a consequence, Structural Adjustment Programmes (SAPs) were forced upon them to pay back the interest and principle on their loans (Arrighi, 2002). These SAPs were associated with intense pressure for the countries to enter into free-market economics. This included the reduction of trade barriers, elimination of subsidies and price controls, privatization of public enterprises and the "rolling back of the state" (Toye, 1994). Later to be famously labelled as the "Washington Consensus" (Fine, 2001).

But governments of the developing countries were not always willing to eliminate protectionist measures that had been built up over the past decades and open up their economies to the forces of free-markets. Many were concerned with the effects on the reduction of public expenditure on welfare and ultimately the economic and political repercussion of the austerity measures. There was also growing criticism, highlighted in the famous 'Brandt Report' in 1980, which criticised the growing inequality amongst developed and developing countries and recommended for greater transfer of resources between the two.

The incorporation of "sustainability" into the development discourse was also a turning point in the 1980s. While the notion that economic progress needs to be balanced with the protection of the environment could be traced back to the UN conference on Human Environment in 1972, it was only

later in in 1987 with the “Brundtland Report” that the ideas gained weight and became a part of the political, economic and ecological domain.

The Brundtland Report stated that global environmental problems were a consequence of both non-sustainable patterns of consumption and production in industrialized countries and poverty in developing counties. It therefore called for a strategy that addressed both economic growth and environmental concerns together, whereby “the needs of the present generation could be met, without compromising the ability of future generations to meet their own needs”. This report was a major step forward in the development discourse and laid the groundwork for later international agreements (in climate change) and conferences (Earth Summit in Rio in 1992, Kyoto in 1997). Most importantly, it underlined the need that economic growth and the environment could no longer be addressed separately.

The view that poor-quality of “institutions” were to be blamed for economic problems in the developing countries gained widespread momentum in the 1990s (Roderik, 2006). Lead by the World Bank, and influenced by the New Institutional Economics, the focus shifted from the initial concerns and prescriptions about the role and size of the state apparatus to that of institutions as an explanation of international differences in economic development (Roderick, 2006; Chang, 2010). As such, rather than substituting the state by the market, the policy recommendations were for the state to create “enabling environment” for the markets (Stiglitz, 2001). According to Chang (2010) while there were no agreed definitions of what “better institutions” were, there was an underlining understanding that it represents those found in Anglo-American countries, which seek to maximize market freedom and protect private property rights. In accordance, the World Bank and IMF started to impose many governance related “conditionalities”, which required borrowing countries to improve their “governance” (Kapur & Webber, 2000). These include, amongst others, the need to improve efficiency, accountability and transparency in government; to restructure and upgrade public bureaucracies; and to strengthen local level institutions through decentralization and promotion of citizen organizations. The pressure for improving the institutions was also stressed by donors and the various regional, multilateral trade agreements, such as the adoption of Intellectual Property Rights (IPRs) by the World Trade Organization (WTO).

Within aid-dependent countries, the greater use of “targeting”, as opposed to universal programmes, were also stressed by the World Bank and IMF (Mkandawire, 2005). The proponents argued that this would allow for greater cost-effectiveness, especially in times of fiscal constraints (due to the adjustments), and that the "pro-poor" measures (of targeting) would transfer resources to those who are the most "deserving poor" (World Bank, 1990). Targeting was also used by the governments of developing countries to mitigate the “social consequences of adjustment policies” and for the donors, in the context of “aid-fatigue”, it demonstrated that aid would directly reach the poor, or if not, it would lead to greater growth and as a consequence affect them nevertheless (Makandawire, 2005).

Within this context, women figured prominently in the new pro-poor strategies and constituted an important “target group”. Female education and employment were stressed along with support for income-generating activities (Razavi & Miller, 1995). These strategies were, however, attacked from feminists within the Gender and Development (GAD) perspectives, for seeking to maintain existing social and international structural inequalities (Goetz, 1994). The homogenization of women as a single category, without considering issues of caste, class, race and culture; the preoccupation with the productive sector, while ignoring the reproductive side of women’s work and lives; and the “adding women in” into existing development programmes without reshaping them according to the interests and needs of women were some of the criticisms directed at the predominant WID approaches (Young, 1993; Goetz, 1994; Razavi & Miller, 1995). Instead, the need to mainstream gender strategies, as emphasized during the Beijing Platform for Action in 1995, to provide equitable distribution of benefits and opportunities to both men and women to reduce disparities were stressed.

2.1.4 Poverty Focus

Already a matter of concern back in the 1970s, the World Bank’s ‘World Development Report’ for 1990 had focused on ‘poverty’. But, it was the publication of the first UNDP ‘Human Development Report’ which had far-reaching success in broadening the meaning of ‘development’ from being a purely an economic aim to one which encompasses various other measures of ‘human development’ by proposing a composite index of life expectancy, adult literacy, real GDP per capita.

Since 1999, Poverty Reduction Strategy Papers (PRSPs), which set out national policies and programmes detailing macro-economic policies, government spending and social programmes, have also come to dominate the development landscape. Primarily as a consequence of the plans replacing

the Structural Adjustment Plans (SAPs) of the previous decade, they became the new pre-requisite to the eligibility of loans from the World Bank and the IMF (Fraser, 2005). Under this new framework, it is argued, countries will build "ownership" of the plans and policies and rather than the IFIs imposing the policies, it is the countries themselves who will be responsible for the plan's preparation (Fraser, 2005).

In theory the plans are expected to reflect a consensus of the views on national priorities, as they are prepared with the "participation" of various stakeholders (such as NGOs, private sector, unions). But, critics argue that since the plans are guided by the IFIs, it is little more than a public relations exercise (Bendaña, 2001). Others however point out that the plans and the process of participation hold the potential to transform relations between donors and recipients (Maxwell, 2005).

The Millennium Declaration by the UN in 2000, and the subsequent presentation of the Millennium Development Goals (MDGs) in 2001 have also become a critical element within the development discourse. The MDGs set out a series of targets for improved wellbeing by 2015 (by taking 2000 as the base year); and have become the touchstone of not only governments, but also donors and civil societies. Proponents argue that through their firm targets and deadlines a focused urgency has been established. Others however point out that many of the targets are immeasurable or that the measurements are inadequate (Attaran, 2005).

According to Easterly (2006) the MDGs also heralded the return towards the "big push" approaches towards development policy-making; whereby "aid" would provide the necessary investment for bringing economies out of the "poverty trap" (Sachs, 2005). Aid would "…provide governments with a resource for making the multiple investments in health, education and economic infrastructure needed to break the cycles of deprivation (UN, 2005:7) and "…without a sustained increase in aid, the MDGs will not be achieved" (ibid:76).

2.2 Development Theory and Practice in Nepal

This chapter provides an overview of the development planning in Nepal since the mid 1950s after the reinstatement of the monarchy in the country and the subsequent opening up of the country to the international community. It provides a snap shot of the key areas of focus in each plan period which in turn was what guided programmes to be implemented in the Koshi Hills area.

2.2.1 The Beginning of the Formal Planning Process

Prior to the decade of the 1950s there were very limited attempts for initiating any systematic economic growth strategies or policies in Nepal. Metz (1995) characterises the 100 year period of the Rana oligarchy in Nepal where the Rana rulers, "a narrowly based feudal aristocracy, kept in place by British colonialism, bled the country white and blocked the introduction of any modern physical or social infrastructure". Attempts by the Ranas at constituting a 'Development Board' (*Udyog Parishad*) to initiate agricultural, industrial and commercial activities in the country did not contribute to any perceptible economic changes in lives of the people. The Ranas did not invest in industrial development themselves. On the contrary they granted free entry to British manufactured goods in 1923 and these factory-produced goods played a major role in destroying Nepal's previously robust hand manufacturing industries (Khadka 1992:25; Shrestha 1990:79-80 cited in Metz, 1995). A short-lived 'National Planning Committee' set up in 1949 to formulate a 15-Year Plan was totally ineffective as it became redundant with the dissolution of the Committee itself (NPC 2004).

The change in the regime in 1951 with the end of the Rana rule coincided with the dawn of the 'age of development' globally and foreign aid became a major means to supporting the 'development' of poor countries (Sachs, 1992:1). But planning for economic growth was not able to take off due to continuing political instability in Nepal. In 1952 the government's focus on rural economic growth was initiated by the multi-sectoral 'Village Development Programme' (VDP) with support from the USA and India as a first step to improve life conditions of 95% of population that were living in rural areas at that time[24]. A more planned approach to economic growth began only in the mid 1950s, as the government adopted the five year plan when a periodic plan approach that was pioneered by the Soviet Union and followed

[24] Known as 'Tribhuvan Village Development Model', it was derived from the American experience of community development based on the concept of technological diffusion, through assistance from above directed towards the achievement of material gains (Adhikari, 2000:69-70).

by other South Asian countries (Sill and Kirby, 1991). The process of initiating planning for the development in the country was fraught with difficulties due to the limitation of skilled and technical human resources and the lack of any data on the state of the economy at that time. This planning process has endured to date despite significant changes in the political systems, regimes and governments in the country.

2.2.2 Initiation of Foreign Aid

"In the Nepalese context, foreign aid is development and development is to a large extent foreign aid" (Pradhan and Shrestha, 1983:99)

The mid 1950s opening up of Nepal to the international community heralded the 'aid scramble' (Mihaly, 2002: ix) within the country. In fact, a month before the 104 year old Rana regime was brought to an end; the USA signed a technical cooperation agreement with Nepal with "foreign aid making a debut before there was any serious thinking on economic development as a goal within the country's administration" (Panday, 1983:270). The country attracted considerable attention due to the geo-political concerns, the global political ideological hostilities, as well as romantic notion of supporting a relatively untouched 'Shangri-La'. Since then the flow of foreign aid has continued to date despite serious recurring questions regarding its effectiveness across different sectors and over the years.

The Swiss government was the first country to extend funding for a geological survey in 1951. Soon after the United States began to provide aid in 1952, India in 1954, China in 1956, the USSR in 1958, the United Nations agencies and the Ford Foundation also initiated economic and technical support in the mid 1950s (Metz, 1995:179; GON, 1962). During the next decades a score of nations, new UN agencies, the World Bank, the Asian Development Bank, the International Monetary Fund, and numerous non governmental organizations became contributors. Mihaly (2002) characterised the growing amount of foreign aid in 1964 as 'a stream turning into a torrent' and Sharma (2003) aptly contends that the cumulative aid received by the country can be described as 'a torrent turning into a deluge'. All of the national plans of the government focus on the role of the state and the contribution of foreign aid.

Nickson (1992) critically lays out his argument that British aid in Nepal was based on foreign policy objectives rather than development objectives in all sectors. This also determined the geographical distribution of the aid within the country.

The poor developmental record of British aid to Nepal during the 1980s ... can only be understood in the context of the overriding political objective of the British government in Nepal during the period. This was to maintain excellent relations with the Nepalese monarchy, thereby ensuring continued access to Gurkha recruits for the British army. The purpose of foreign aid was primarily to contribute to the attainment of this political objective.[25] *When viewed from the standpoint of this latter objective, the aid programme was largely successful. This does not negate the fact that when viewed in terms of the developmental objectives of the executing agency, the ODA, the aid programme was largely unsuccessful (Nickson, 1992).*

2.2.3 Nepal's Political Trajectory in Brief (1951-2012)

Following the overthrow of the oligarchic Rana regime in 1951, a democratic multi-party regime was established. In 1961, this regime was brought to an abrupt halt by the intervention of King Mahendra and an alternative regime, the Panchayat Raj, considered by the King to be more 'appropriate' to Nepal's situation and needs, was instituted. In this new system, which remained in place for nearly three decades until 1990, elections were held to local and national assemblies, but political parties as such were banned. The government, under the direction of the monarch, was considered by its advocates to enable a unified approach to 'development from above' to be adopted in place of the

[25] Senior officers in the British Regiment of Gurkhas described this function of the aid programme to the author in the following terms: "as being seen to be doing something in the areas of Gurkha recruitment", and the relationship between British aid and the political factors as follows: "The Gurkha connexion brings a lot of money to Nepal - remittances, pensions and fare earnings of Royal Nepal Airlines as carrier. There is also the bilateral aid from the ODA. If it was not for the Gurkha connexion, this aid would not be forthcoming."

'struggle between parties' for political supremacy and the promotion of divisions within the nation and the state.

The economy of Nepal in 1951 was predominantly agricultural, with the bulk of production directed towards subsistence but with a surplus of rice being exported from the southern plains (the Tarai). There, the settlement and re-settlement policies of the Ranas had proved effective in increasing the area of land under cultivation and the number of people in a position to pay taxes to the central government. Handicrafts and small scale manufacturing, which had flourished for centuries, particularly in the urban centres, was increasingly under threat from India – itself newly independent in 1947. The capacity of the government and bureaucracy to promote economic and social development was limited and the interests of the ruling elite lay not with the development of the Nepali economy and society but with the raising of taxes and deployment of revenues to maintain and enhance their life-style.[26]

2.2.3.1 Jana Andolan I

After 30 years of the Panchayat System, a popular movement (*Jana Andolan I*) began in early 1990 which spread and grew. Virtually every section of civil society joined in, giving rise to mass demonstrations across the country in most of the major towns, demanding a "restoration" of a democratic system. The incumbent King Birendra made a last effort to contain the protest, promising constitutional reforms and a commission to investigate incidents where state forces had acted violently. However, eventually the king was forced to open a dialogue with the political leadership and agreed to an interim government and re-writing of the constitution with a view to creating the basis for a multi-party system with a constitutional monarch. The years following the *Jana Andolan I* marked a period of general government instability and inefficacy.

2.2.3.2 The Maoist Insurgency

In 1996, the Communist Party of Nepal (CPN-Maoist) launched a 'People's War', claiming that multi-party politics had failed and that successive governments had not delivered on their claims and promises. The aim was to unseat the current constitutional monarchy and install a democratic republic. Though the earlier stages of the insurrection were contained primarily in several mid-western districts, from mid-2000, however, the Maoists progressively expanded their campaign nationwide, spreading across rural areas of most of the country. In 2001, a succession of extraordinary events, including the massacre of the king and his family (in June) and the ascent to the throne of the former king's older brother, Gyanendra, the September 2001 (9/11) attacks in the US, a hardening of the position of the new government under King Gyanendra (with support from the USA and the UK) towards the rebels (now identified as 'terrorists'), all contributed towards an escalation of the conflict. After 2001, the country experienced increased violence, destruction of lives and property, impediments to basic service delivery, communications and an overall negative impact on development efforts throughout the country, including the Koshi Hills area.

In October 2002, the King sacked his prime minister and dissolved parliament; the term of office of local governments at DDC and VDC level expired and no new elections were envisaged, given the situation. From that time to the present there has been no elected government at either national or local level. This has meant that local government development planning and practice has been undertaken by state officials (bureaucrats and technicians) of the various Ministries, without the oversight, let alone the control of locally elected DDCs or VDCs.

The year 2006 saw the second movement for democracy (also known as Jana Andolan II) where an alliance of seven major political parties, including the CPN (Maoists) jointly led the nation on the path to national unity and prosperity, while ensuring permanent peace and safeguarding multiparty democracy. Finally on November 21, 2006 the government and the Maoists signed a comprehensive peace agreement declaring an end to the conflict. A 601 member strong Constituent Assembly was elected in April 2008 with the aim of forming a new constitution; the first President and Vice President of the new republic of Nepal were also elected in 2008.

[26] The common tendency was at the time and has been ever since to belittle the progress achieved under the century long Rana regime, and to underestimate the links between Nepal and the outside world, at the time of their downfall. Nevertheless, certain developments of some significance had been initiated, including the establishment of Trichandra College, the first college in the country.

2.2.4 National Development Plans

The development efforts in Nepal have been initiated through adopting periodic plans. The one currently running is the twelfth national plan (2010-2013). Table 6 utlines the different period plans and their major aims. The budget allocation to key sectors by different national plans is depicted in Table 7. Keeping in line with this study, the description of the national periodic plans is divided into two sections: before 1970 and after 1970. However, the plans do not provide programmes and funds breakdown by ecological regions such as mountain, hill and Tarai, nor by development regions.

Table 6: Nepal's Periodic Development Plans and Their Major Aims (Adapted from Poudyal (1983) and NPC 1992, 1997, 2002, 2007 and 2010)

National periodic plans	Periods	Major aims
First Five Year Plan	1956 – 1961	Raise production and employment, and improve the standard of living
No Plan Year	1961 - 1962	-
Second Three Year Plan	1962 – 1965	Increase production, create jobs, create just social order, and reduce inequalities
Third Five Year Plan	1965 - 1970	4.7% annual growth in GDP, increase welfare
Fourth Five Year Plan	1970 – 1975	4% annual growth in GDP, increase production, improve labour efficiency, increase international trade and regional development
Fifth Five Year Plan	1975 – 1980	5% growth in GDP, labour efficiency, regional development, production oriented to people's needs, and population control
Sixth Five Year Plan	1980 – 1985	5% growth in GDP, creates jobs, increase production, satisfy basic needs
Seventh Five Year Plan	1985 – 1990	4.5% annual growth in GDP, increase production, create jobs, satisfy basic needs
Plan Holiday	1990 - 1991	-
Eighth Five Year Plan	1992 – 1997	5.1% growth, sustainable economic growth, poverty alleviation and reduction of regional imbalances
Ninth Five Year Plan	1997 – 2002	6% growth, poverty alleviation, employment generation, higher production and productivity, food security, rural public works, electrification, people's empowerment & decentralization
Tenth Five Year Plan	2002 – 2007	4.3-6.2% growth, reduce poverty to 30%, broad based high and sustainable growth, human development, targeted programmes emphasising social inclusion & improved governance
Three Year Interim Plan	2007 – 2010	5.5% growth rate, reduce poverty from 31 to 24%, improve living standards, achieve MDGs by 2015
Three Year Plan	2010 - 2013	5.5% growth, reduce poverty to 21%, achieve MDGs by 2015

2.2.5 Development Plans Before 1970

2.2.5.1 First Five Year Plan (1956 – 1961)

The first economic plan for the country was initiated at the end of 1955 and gave birth to the First Five Year Plan, mainly as a response to the requirement of the Colombo Plan Consultative Group Meeting

(Panday, 1983:270).[27] The key objective stated in the plan was "to raise production, employment, standards of living and general well being throughout the country" (GON, 1956). The primary emphasis was on establishing infrastructure particularly in roads and transportation and communication. The country was divided into 150 development blocks, averaging around 200 villages each and three levels of interventions were planned in these blocks based on differing levels of activities and resource allocation. The first phase focused on subsidising roads, construction of wells, school buildings, village halls etc. High priority was accorded to the continuation of the Village Development Programme that received the third highest allocation of resources (Pradhan, 1985:2). As early as this period, villages were expected to "contribute at least half the cost and all the unskilled labour required" (NPC, 2004).

A total of NRs 330 million ($4 million)[28] was planned for investment during this plan and breakdown of the percentage allocated to selected sectors in presented in Table 7. It has been noted that the most significant result of the First Plan was "the recognition of the conditions required for successful planning and project implementation" (HMGN, 1965). A review of this plan made in the Second Plan noted that some progress was made in the establishment of schools, colleges and health facilities, a rope way to facilitate transfer of good to Kathmandu, and cottage industry development centres (GON, 1961).[29] The review also stated that the 6,800 villages and 22.5% of the population benefitted from the VDP. But the targets set in the various sectors were not met apart from the production of milk and cheese which was supported by the Swiss (Wildavsky, 1972). In the transportation sector, for example, out of 1,450 kilometres of highways planned only about 565km was built during this period. Thus only 67% of the total outlay planned was spent over this period.

2.2.5.2 Second Three Year Plan (1962 – 1965)

The coup d'état by King Mahendra and the institution of a system of 'Panchayat Democracy' in 1961 created a one year vacuum in the planning process. The political change gave rise to new political institutions at all levels of governance and the Village Development Programme gave way to the Panchayat Development Programme (PDP) which was spread across the country in the Second Plan period. The major goals of the PDP were institutional development, social mobilisation and attitude change (Adhikari, 2000:72).

The second plan continued to give top priority to transportation and communication followed by industry, tourism, and agriculture and social services (Table 7). The total outlay for the plan was twice that of the first plan at NRs 600 million (US$8m). The targets were not met during this period, though there were improvements in the industrial production, road construction, telephone installations, irrigation, and education. However, during the plan period population census, sample agricultural survey, and national income estimate were conducted that provided greater knowledge about the national economy. Development expenditures had been rising rapidly during this period. In 1962-63, NRs. 70 million (US$0.89m) was spent out of the development budget and by 1964-65, it rose to NRs. 235 million (close to US$3m). Thus the development expenditure had been close to 99% of the outlay by the end of the second plan period.

The problems with the first two plans were related to the lack of knowledge of the economic conditions in the country, lack of database on which to base targets, and inadequate administrative machinery with which to execute these plans. Almost 80% of the development budget was derived from substantial foreign aid supported by the countries and agencies such as USA, India, Soviet Union, China, UK, etc and UNDP.

---

[27] The Colombo Plan for Cooperative Economic and Social Development in Asia and the Pacific was conceived at the Commonwealth Conference on Foreign Affairs held in Colombo, Ceylon in January 1950, focusing on cooperation for the economic and social advancement of peoples of South and Southeast Asia primarily for human resources development. (http://www.colombo-plan.org/history.php).

[28] For all conversions the current exchange rate of US$1=NRs. 78.75 has been used.

[29] There were 13 colleges, 85 high schools, 300 secondary and 1,200 primary schools at the beginning of the First Plan. During the First Plan, the number of primary schools rose to over 4,000 and enrolment increased to nearly 200,000. The number of secondary schools rose to 500. Thirty-one colleges and the only university were established in Nepal. Teacher training and adult education programmes were started.

Pradhan (1985) draws attention to the conceptual and operational appropriateness of the phased approach of the VDP and cites the evaluation of the programme (carried out by the Himalayan Studies Centre in 1981) that noted the popularity and success of the programme in bringing about improvements "in different areas of rural health, hygiene, public works, adult literacy, rural education, youth welfare and cooperation". But the Second Plan declared that the VDP model was ineffective due to political changes (i.e. transition to the partyless Panchayat System) towards the end of the plan, limited coverage, lack of participation of the people, and dichotomy between the US and Indian aid funded programmes (Pradhan, 1985: 2-3).

2.2.5.3 Third Five Year Plan (1965 – 1970)

The primary objective of this plan continued to be centred on economic growth with highest priority to the agriculture sector. The Panchayat system of governance continued to be strengthened and the plan laid focus on three sectors: (i) Panchayat programme of local development (small scale public works); (ii) public sector (i.e. the central government); and (iii) private sector. A policy of decentralization at three levels, viz zone, district and village Panchayats was also mobilised during this period. In a bid to support local development in the hills a pilot hill area development project – the Jiri Multipurpose Development Project (JMDP) – was initiated during this plan period with support of the Swiss government. The total outlay for this period was NRs. 2,500 ($32 m) of which almost 79% was allocated to the public sector.

Since the initiation of the national plans, the highest priority was given to the economic development that intended to modernise the feudal economy as quickly as possible. Thus the predominant strategy was to increase gross domestic products, to create the infrastructure necessary for development, and to achieve political stability. Considerable emphasis was placed on improvements to transport and communications systems and much of this emphasis was in order to secure political control over the country as well (Blaikie et al., 1980). Such improvements were the classical prerequisites of local, regional and external trade based on the development concepts of the times (Jha, 1987). But at the end of the planned period only 85% of the planned public sector expenditure was spent.

2.2.6 Development plans after 1970

2.2.6.1 Fourth Five Year Plan (1970 – 1975)

This plan continued to give top priority to the development of transportation and communication networks in terms of investment allocation, followed by agriculture and industrial sectors. While recognising the desirability to expand social services (primarily education and health), this plan too focused on the improvement of existing facilities, rather than on their expansion by increasing expenditures in this sector (see Table 7). Though the promotion of 'local development programmes' in this period claimed to be a priority the investment allocated to it was only 0.8% of the total public sector outlay (Pradhan, 1985). Even when allocations for the JMDP and the Remote Area Development Projects were included, the total allocation for local development was not even two% of the total outlay of NRs. 3,540 (US$45m) (*ibid*).

During this plan period, a regional development strategy was adopted through identifying four development regions across the country which envisaged a series of North-South growth axes or development corridors linking diverse natural regions.[30] This strategy offered the greatest prospect for integration and coordination of development efforts as they represented both the east-west and north-south territorial dimensions of the country (Gurung, 2005). The main reasoning behind the development of growth axes was to tie-in the economy of the Tarai plains with those of the hills in a bid to adopt a long-term policy for the development of the hill regions (NPC, 1970). An approach of "growth centres" as polyfunctional settlements in each of the development regions was also adopted with the objective of catering to the diverse needs of the hinterlands so development activities were clustered in these centres with the expectation that the effects would trickle down over the surrounding

[30] A fifth development region, the Mid-Far West, was carved out from the Far Western Development region in 1981 to provide more equitable attention and resources to the large area in the western part of the country, is the region that was (and is still) the most geographically and economically marginalised area of the entire country.

areas.[31] In most cases, such effects did not take place due to the lack of integration of such centres with the well dispersed small market centres in the hinterland region. Moreover, the strategy never attained the status of a national commitment (Sharma 1989).

The Koshi Sector was designated as one of four regions for comprehensive development. Four growth centres were identified in the Koshi axes: Hedangna in the mountains, Dhankuta in the hills, Dharan in the foothills and Biratnagar in the Tarai. Field surveys were undertaken by the NPC in 1969, leading to regional development plans based on north-south growth axes (Okada, 1970).

Decentralization of district administration was initiated during this period through the initiation of the District Administration Plans (DAP), the key focus of which was the preparation and integrated development plans for each district. Yet the new institutional arrangements focusing on decentralization were not able to take off due to the reluctance on the part of the ministries to devolve their authority and functions (Pradhan, 1985).

A review of the performance of the Fourth Plan acknowledges that most planned targets were not met (by wide margins) which in turn affected the target for the GDP which failed to exceed 2.65% as against the anticipated rate of 4% in the plan. 'Natural reasons' for the setback in the planned period were that 'the four years period was marked by excessive rains and partial drought'. The delay in trade and transit treaty between Nepal and India and the subsequent events in the Indian sub-continent also contributed to the inability to complete many projects. The review also acknowledges that internal weaknesses and shortcomings in the form of administrative indecisions or lack of such decision in time affected the timely implementation and completion of projects aimed at social and economic development.

2.2.6.2 Fifth Five Year Plan (1975 – 1980)

Pradhan (1985) states that the Fifth Five Year Plan period was a turning point in the development process of the country. In a distinct change from the previous plans, this Plan accorded the highest priority to the agricultural sector to secure increased production, followed by the social sector, within a policy of integrating the development process with the Panchayat system. Until 1975 about 60% of all investments went to roads, communication, and power generation but in this plan period, physical infrastructure received relatively less emphasis compared to the earlier years (Khadka, 1991; refer to Table 7). This Plan had also made provisions of maximum and minimum levels of financial resources and physical targets, in order to maintain flexibility for better achievements of targets and thus allocated a total outlay ranging from NRs. 9,197 to NRs. 11,404 million (US$116.8-144.8m). The percentage of budget allocation across different sectors is presented in Table 7.

This plan came up with regional planning objectives to increase productivity, making maximum use of labour power and ensuring regional balance and integration. It was also the first periodic plan to estimate resource allocation by the five development regions. The Plan further proposed a low share for the Eastern Region due to the "already existing road, irrigation and education facilities in Eastern Tarai (having about 50% of the region's population) as well as the greater private sector participation in industry and trade" (NPC, 1975).[32]

The regional approach to planning provided some territorial framework for rural development but failed to generate interregional exchange of various economic functions and merely served as an administrative centre. District level plans were taken as a general framework for formulation and implementation of district level projects and programmes. Attempts at institutionalising decentralization efforts continued with the DAP being replaced by the Integrated Panchayat Development Design to make the Village and District Panchayats responsible for rural development and was supported by nine service centres in each district to help with planning, implementation and training (NPC, 2004).

[31] The 'growth centres' were expected to be become marketing and service centres, centres of agricultural transformation, where decentralisation of development activities would occur, along with the transmission and implementation of national programmes, and would also become locations for eventual industrial development wherever feasible.

[32] The Central Region had the largest share of allocation due to the predominance of large capital city of Kathmandu in the Region, in the economic and political sphere of the nation (ibid).

The fifth plan also began focusing on an integrated approach for rural development. The Small Area Development Programme (SADP) was proposed as a rural development adjunct to the overall design of growth axes – the government's first effort in integrated planning and programme implementation. The Intensive Development Areas selected under this programme in the Eastern Region was Sankhuwasabha, Taplejung, Khotang and Dhankuta districts. Yet the elevation of the concept of integrated development (which concentrated on smaller pockets), to a major component of the regional strategy led to a diversion in focus from 'regional' to 'rural' development (Gurung, 2005). The 1979 World Bank assessment of development performance recommended that the organizational basis for hill development seemed to be hinged on Integrated Rural Development Programmes (IRDP). Thus the SADP eventually became the precursor to the IRDP.

Following the lead taken by the WB, bilateral and multilateral assistance concentrated on supporting rural development taking the IRDP approach. Several IRDPs were initiated between mid 1970s and the early 1980s, including the initiation of the Koshi Hills Area Rural Development Project (KHARDEP) with support from the UK government. Almost all the IRDPs had objectives of enhancing rural farming production, generating rural employment opportunities, strengthening local institutions, and improving environmental conditions. The projects were designed to coordinate and support the development of the sectoral plans outlined in the national plans, and they involved agriculture, irrigation, roads, forests, soil and water conservation, health, drinking water, and cottage industries. This was one of the first attempts to target the poor and disadvantaged at the household levels (Sill and Kirby, 1991). Pradhan (1985) and Amatya (1989) provide succinct overviews of the approaches of IRDPs in Nepal, and the problems confronted by their implementation.

During the Fifth Plan period, the GDP registered an increase of only 2.2% compared to the target of 4 5% per annum.[33] Combined with population growth of 2.3%, this result actually reduced the per capita income to some extent from NRs 1,302 to NRs 1,298 during the plan periods. Sectoral targets were exceeded in the education sector but were much lower than planned in most other sectors including agriculture, irrigation and forestry. Despite the development policy of regional balance and integration, ongoing large-scale capital projects in the Central Development Region took up a high proportion of the development expenditure, hampering efforts of step up investment in the Western and Far-Western Development Religions (NPC, 1980).

2.2.6.3 Sixth Five Year Plan (1980 – 1985)

Poverty reduction was explicitly stated as an objective for the first time in the sixth national plan. The emphasis on rural development continued and 'people's participation' was adopted as a policy. This plan in fact initiated the process of bottom-up planning approach through the local Panchayats. The Sixth plan incorporated the objective of fulfilling minimum 'basic needs' as well as placing emphasis on raising production through a higher growth rate and by increasing productive employment.

By the early 1970s, globally there was a growing conviction that an increase in income or creation of employment alone was not going to be successful in decreasing the levels of the worst forms of poverty in many countries around the world. This called for a direct public policy and programme action. Hence in 1976 the ILO proposed the 'Basic Needs' approach which outlined "... the minimum standards of living which a society should set for the poorest groups of its people" (ILO, 1976).[34]

Following to this evolution in the thinking of donors and reviewed it by NPC in 1978, the 'basic needs' approach in Nepal was enshrined in the Sixth Five Year Plan. The Plan identified (i) rapid growth in production, (ii) the creation of opportunities for productive employment and (iii) the fulfilment of the

[33] One of the salient features of the Fifth Five Year Plan was the provision of maximum and minimum level of financial resources and physical targets, in order to maintain flexibility in view of better achievements of targets.

[34] Furthermore, the ILO document clarified that "the satisfaction of basic needs means meeting the minimum requirements of a family for personal consumption: food, shelter, clothing; it implies access to essential services, such as safe drinking water, sanitation, transport, health and education; it implies that each person available for and willing to work should have an adequately remunerative job. It should further imply the satisfaction of needs of a more qualitative nature: a healthy, humane and satisfying environment and popular participation in the making of decisions that affect the lives and livelihoods of people and individuals freedoms" (ibid).

basic needs of the people as its three basic objectives. The Plan also called for increased production and better distribution of food grains, planned development of forest resources to meet increasing domestic energy needs, increased provision of drinking water, the extension of basic education, and the provision of minimum physical infrastructure. These elements of "basic needs" were incorporated as part of sectoral programmes, but where these programmes were implemented - the spatial thrust of the programmes – were determined by the areas where donor-assisted integrated rural development programmes were proposed (Sharma, 1980).[35] Apart from the explicit policy of regional development and that of integrated rural development, the Sixth Plan also instituted policies related to mass participation in development, and women's participation in development works.

During the sixth plan period, with the "Decentralization Act 1982", Nepal saw the revitalisation of the decentralization approach which was first initiated in the country in 1963.[36] Accordingly, the district plan was taken as a general framework for formulation and implementation of district level projects and programmes in all 75 districts of the country.

A total of NRs. 21,760 million (UD$276 m) was allocated in the development budget for this plan period. An overall review of the Sixth Plan showed GDP at 4.4% over the five year period, which exceeded the planned target. The growth rate of the agricultural sector was estimated at 4.70% (compared to the target of 3.2) and that for non-agricultural sector at 4.00% (lower than the target of 5.6). Thus it was assumed that the contribution of the agriculture sector accounted for the increase in GDP and in per capita income (an increase of 1.7%) during this plan period despite unfavourable weather conditions (NPC, 1985).

In his synopsis of the first six national plans Khadka (1988) succinctly notes that:

"One of the remarkable achievements is the tremendous increase in the level of planned investment from NRs 330 million in the First Plan to NRs 21,750 million in the Sixth Plan. Some progress has been made in the area of socioeconomic overheads, but the most frustrating result of these planning experiments is their failure to meet the minimum needs of the majority of the population. The country is still caught in the staggering poverty trap, and there is wide-spread inequality between the power-sharing elites and the rural masses. Even if success is measured in terms of the objective of maximising growth, the results are disappointing. In real terms, GDP growth has been very slow and the growth rate of per capita income has not kept up with the rate of increase in the population. According to government statistics, the rate of agricultural output (in real terms) rose by only 1.5% from 1974-75 to 1984-85, which converted the country from a food exporter to a net food importer. There has been continuous depletion of agricultural resources as a result of deforestation, soil erosion, and exhaustion of fertile land. The economy could not move onto a self-reliant basis because the ratio of domestic savings to investment is very low. The gross investment/GDP ratio increased 14.5% in 1974-75 to 19% 1984-85, but the gross savings/GDP ratio only increased 10% to 10.6% during the same period" (Khadka, 1988:557).

2.2.6.4 Seventh Five Year Plan (1985 – 1990)

The Seventh Plan had the same objectives as of the sixth plan and also identified seven basic needs for Nepal – food, clothing, wood fuel, drinking water, basic health services and sanitation, primary and skill-oriented education, and minimum rural transport facility. Yet the Plan did not address the question of the mechanisms through which these basic needs would be met and sustained over time, and also did not specify per capita targets either (Sharma, 2006:9). On the fulfilment of 'basic needs', this plan signified the first attempt to formulate a separate plan with a long term poverty alleviation perspective. The conception of the 'poverty line' in Nepal was also presented to the National Development Council for the first time during the formulation of this plan.

[35] Sill and Kirby (1991) postulate that the 'basic needs' approach "may be interpreted as a form of paternalism, providing for people rather than allowing people to provide for themselves".

[36] Agrawal and colleagues (1998) record how Nepal had a history of decentralised action long before it became an important phrase in relation to development. They document the efforts of local people in the management of irrigation systems and natural resources such as forests and pasturelands that "…involved the exercise of authority locally, often without an explicit central state-led initiative" (p 43).

During the Seventh Plan, the service centre strategy was adopted as a policy measure for rural regional development planning, aimed at integrating urban centres and rural hinterlands, building the capacity of small urban centres to stimulate rural economies and to provide increased access for rural population to market-based service and facilities (NPC, 1985). This spatial strategy was an attempt to induce growth from below. According to this policy, preparation was made in order to select suitable sites for establishing nine service centres in each of seventy-five districts as the spatial framework for the execution of development programme. But this policy ignored the assessment of the magnitude and potential of existing market centres as service centres in terms of linkage system and functional hierarchy for rural development (Shrestha, 1982).

During this plan period based on the Decentralization Act, planning and implementation of district level projects continued to be devolved to the district. However, this was not compatible with the concept of the single area development programme (i.e. IRDPs) and coupled with the unfavourable evaluations of the IRDPs, the focus turned away from multi-sectoral programmes.

A total of over NRs. 103,000m had been allocated across all sectors for this Plan period. The contribution of foreign assistance to the total development expenditure increased to 61.1% in 1989/90 from 37.4% in 1972/72. Additionally the foreign assistance received by the country recorded a progressive decline in grant assistance and a commensurate increase in loans. Yet as with the previous plan, this plan continued to record a low annual growth rate in GDP (at an average of 3.4% annually) and a high growth rate in population. Due to these conditions the per capita income was impacted through a marginal increase of only 0.8% during the period 1964/65 to 1989/90 during this plan period. Most sectoral targets were underachieved during this period as well.

2.2.6.5 Eighth Five Year Plan (1992 – 1997)

The major objectives of the eighth five-year plan were sustainable economic growth, poverty alleviation and reduction of regional imbalance. Sharma (2006:9) pointed out that with the waning of donor interest, the 'basic needs' objective was replaced by 'reduction of poverty' in the eighth plan. The plan set a target of providing job opportunities to 1.4 million people, thereby reducing absolute poverty from 49 to 42% of the total population. 56.5% of the development budget allocated was borne through foreign assistance (see Table 7).

The plan further envisaged the implementation of various target group-oriented sectoral and specific programmes such as production and employment generating activities, development of physical infrastructure, resettlements of the poor, and the provision of health services, education opportunities and safe drinking water facilities. Other activities included a small farmer development programme, production credit for rural women, leased forestry, labour-intensive public construction works and irrigation programmes.

With the restoration of democracy in the country and an opening up of the non-governmental sector, there was emphasis on mobilising the private sector as well as non-governmental organizations (NGOs) in implementing poverty alleviation programmes during this period.

A key element of this planning period was the initiation of the liberalisation of economic policies led by the Structural Adjustment Plan (SAP) of the World Bank. Economic reforms were introduced to liberalise trade, investment and foreign exchange regimes; to unify the exchange rate, rationalise the tariff structure and the tax system; to promote exports, strengthen financial and capital markets, foster private sector development; and to strengthen public expenditure management.

The Agricultural Perspective Plan (APP) formulated in 1995 with a long-term vision and has been a milestone policy document for agriculture led growth strategy for poverty reduction and overall economic development in Nepal for a twenty year period (1997-2017). The APP has been based on three agro-ecological zones − Mountain, Hill and Tarai giving priority to their respective agricultural production potential (APROSC/JMA, 1995). While the mountain zone is particularly suitable for livestock production (yak, sheep, goat), apples, vegetables, and potato seeds, the hill supports dairy livestock, citrus fruits, off-season vegetables, vegetable seeds, apiculture and sericulture, and the Tarai is a prime zone for commercial farming of grains (rice, wheat, and corn), vegetables, fruits, and livestock. The APP was built around four pillars of agricultural development, namely, fertilizers, irrigation, rural infrastructure (roads and electrification), and technology generation and dissemination. This major policy document was based on the argument that agriculture would provide the basis for economic development. However, various analysts (Seddon et al., 1998; Cameron, 1998), Pradhan (1985) and ADB (2004) have argued that not only were there issue regarding the overall approach of the Plan but that the interventions in the agricultural infrastructure including irrigation, roads, farm inputs, markets, improved technology, etc. have hitherto shown varying levels of impact.

Based on the SAP, the Eighth Plan attempted to encourage private sector participation and investment and to confine the role of the government more on developing socio-economic infrastructure. The government planned for a total outlay of NRs. 170,332 (US$2,163 m) over the five year period of this plan. The progress made in the agriculture, irrigation and forest; industry, geology and mines; power, public works, trade, hotel and restaurants sectors fell below the set growth target. However, the progress in transport and communication, finance and real estate and social services exceeded growth targets (NPC, 1997).

2.2.6.6 Ninth Five Year Plan (1997 – 2002)

For the first time in Nepal, this plan included a long-term (twenty year) perspective and established long-term targets and development indicators for all sectors based on their potential for alleviating poverty. It thus defined poverty reduction as its main objective. The long term plan aimed at reducing poverty from 42% of the population in 1995 to 10% by the year 2016-17. This was to be achieved by broad-based economic growth and reduced population increase. The key priority areas identified were: employment generation, higher production and productivity, food security, agricultural development, rural public works, electrification, human resource development, people's empowerment, and decentralization. It proposed that the growth rate of 6% in the Ninth Plan be eventually raised to 8.3% in the Twelfth Plan – taking the 20 year rate of growth to 7.2% – an ambitious target. Growth was to be achieved through liberal and market-oriented policies and practices.

Short and long term targets and indicators were developed for each sector based on its potential contribution to poverty reduction. Total estimated capital investment was NRs. 372,311 million (33.6% from the government and 66.4% from the private sector). Total planned outlay was NRs. 3,727,11 million (US$4,733m at current exchange rates). During the Ninth Plan period it was hoped to reduce poverty from 42% of the population to 32%. It also sought to bring down unemployment to 4% and underemployment to 35% by the end of the Plan period. The annual target for agriculture was 4% growth, with the APP providing the central strategy for growth and development. There was virtually no reference to foreign labour migration and the role of remittances in Nepal's future economic growth.

On assessing the Ninth Plan, Mahat (2005:159) indicated that the macro-economic performance of the Ninth Plan (1997-2002) was 'less than satisfactory'. Overall GDP growth was 3.6% much lower than the target of 6%. Population continued to grow at an estimated 2.25% per year, meaning that the annual growth in annual per capita income was officially only at 1.3%. The agricultural sector grew at 3.3%, as compared with 3% per year of the Eighth Plan period, indicating that this sector was anything but 'stagnant' and for many observers, justification the centrality of agriculture in the '20 Year Perspective Plan'. The non-agricultural sectors grew at an average of only 3.9%, far short of the admittedly ambitious target of 7.3%. The industrial sector grew at an average of 2% as against the target of 9.1%.

But over a longer period – that of the decade as a whole – the economic and particularly the social welfare situation had improved significantly. Electricity generation increased from 232 MW in 1990 to 550 MW in 2002 and the proportion of the population served by electricity increased from 9% to 40%; road network increased from just over 7,000kms. to over 16,000kms.; population with access to improved drinking water increased from 46% to 80%; number of health service units went up from just under 1100 to 4,400; life expectancy increased from 53 years to 59 years; and literacy rates improved from 40% of the population to 54%. Finally, increasing migration of Nepalese workers abroad at least became visible and even official figures (which severely underestimate the actual remittance flows into the country) showed a significant contribution to GNP from remittances sent back to Nepal from overseas and India. Total gross foreign exchange holdings rose from $850 million in 1996-97 to $1.7 billion by the end of the Plan period in 2002 largely as a result of remittances.

The average figures for the ninth five year plan also obscure the fact that the economy performed reasonably well up to the fourth year of the Plan, and then a combination of factors, including arguably the weather, the deteriorating law and order situation and the associated disruption in the supply of key inputs, had a negative impact. The Maoist insurgency undoubtedly had its impact, but it is not at all clear how significant this was in the overall performance of the economy and progress towards welfare targets. In analysing the national plan concerned, the Tenth Plan document blames lack of investment both private and public in agriculture and poor implementation of the APP, loss of agricultural production during the first and last year of the Plan 'due to adverse monsoon', low level of investment and production in the non-agricultural sectors 'caused by the worsening law and order situation', considerable damage inflicted upon development infrastructure. It also refers to an unhelpful external situation, which adversely affected exports and tourism (particularly after '9/11').

2.2.6.7 Tenth Five Year Plan (2002 – 2007)

The Tenth Plan focused exclusively on bringing about "a remarkable and sustainable reduction in the poverty level in Nepal" and "to bring the marginalised sections of the population and backward regions into the mainstream of development, and to make visible progress in reducing existing inequalities" (NPC 2002). A Poverty Reduction Strategic Plan (PRSP) was formulated based on four overarching approaches: (i) achieving sustained high and broad-based economic growth, focussing particularly on the rural economy; (ii) accelerating human development through a renewed emphasis on effective delivery of basic social services and economic infrastructure; (iii) ensuring social and economic inclusion of the poor, marginalised groups and backward regions in the development process; and (iv) vigorously pursuing good governance both as a means of delivering better development results and ensuring social and economic justice. The Tenth Plan had divided poverty into mainly three categories – income poverty, human poverty and social exclusion. Thus for the first time in the planning history of the country, the focus was on categorically improving the lives of the poor, mainstreaming the very poor deprived groups, and promoting inclusive development.

The plan aimed to reduce the overall poverty ratio from 38% to 30% over its plan period through the creation of income and employment generating activities in the key sectors. It envisaged an overall GDP growth rate of 6.2% per annum and a substantial improvement in agricultural growth to around 4.1% per annum. Additional indicative targets for key human development variables included raising literacy to 63%, reducing the infant mortality rate to 45 thousand births, raising life expectancy to 65 years, increasing access to drinking water for 85% of the population, electricity to 55%, and telephone facilities to almost all village development committee. It was envisaged that the achievement of these social and infrastructure goals would contribute to a 10% improvement in the human development indicators (see Table 7). A total of NRs. 609,823 million (US$7,744 m) was planned for across all sectors for this plan period a percentage breakdown of which is presented in Table 7.

As with the past national plans, during the tenth five year plan too, agricultural production continued to be highly influenced by unfavourable weather conditions and the non-agriculture sectors were also negatively impacted by the conflict within the country as well as the unfavourable international situation and hence resulted in reduced production growth. The average economic growth was 3.4%, a 0.9% point less than the alternate scenario expected. On the other hand, the population growth rate continued to be high at 2.25%. Both agriculture and non-agriculture growth rates were less than targeted though the community and social services, the finance and the real estate sub-sectors recorded high rates during this plan period.

The shift from subsistence to commercial agriculture continued during this plan period with increases in the production and consumption of cash crops. Also 25% of the forested land (1.24 million ha) was being managed by over 14,500 user groups leading to improvements in the quality and the protection of the forests. Despite heavy investments in road construction for many years, only 64 out of the 75 district headquarters could be linked by roads during this plan period.

In the social sector, institutional mechanisms for the protection, promotion and monitoring of human rights were established during this plan period. Similarly increase in and improvements in statistical data from 1990s onwards made it possible for gender, caste and ethnicity disaggregated analysis to a greater extent leading to better targeting.

The decade long internal conflict led to the loss of human (around 11,300 lives lost) and physical infrastructure (estimated at NRs. 5 billion), much of which were government and public services structures. A Peace and Reconstruction Ministry was established for the overall management of the human caring and rehabilitation of the conflict affected areas.

Yet a longer term look at changes in the social and economic conditions of households across the country showed more encouraging picture as briefly discussed below.

Analysis of NLSS-I (1995-96) and NLSS II (2003-04): CBS (2006) provides an extensive assessment of poverty in Nepal during the periods of the Eighth, the Ninth and the Tenth Plan. This timeframe also covered the major duration of the period of conflict in the country. The results overall showed resilience and improvements in life conditions despite the situation of political conflict that severely affected public service delivery and private sector production. Poverty during this plan period showed a decline from 42 to 31% – a 26% change in all three measures (headcount, poverty gap and squared poverty gap), with improvements in both rural and urban areas (though more in the latter). The decline in poverty was attributed to growth in per capita consumption expenditure that was driven by increase in remittances which had reached 12% of Nepal's GDP. Additionally increase in agricultural and skilled wages, 6.7% increase in connectivity through pro poor expansion of roads and increased urbanisation

that moved workers from low-productivity to higher one also contributed towards decreasing levels of poverty. Also important for changing social relations were the decreasing discrimination in urban areas and a decline in dependency ratio during this period.

The higher growth rates lead to increased inequality though as shown by the increase in the Gini-coefficient from 0.34 to 0.41 indicated a further widening in the gap between the rich and the poor. Similarly, despite an increase in the human development index of Nepal from 0.513 in the earlier year to 0.527, the country was placed at the 138th position globally and had the least HDI in South Asia (HDR, 2006). Disparities were worse in terms of geography where rural areas and remote areas were particularly hard hit. Additionally households headed by agricultural wage labourers remain the poorest though their share of the population dropped (from 12 to 6% during 1995-04). Level of education, family size and ownership of little land were also related to poverty and the rates were highest among the Hill and Tarai Dalits (46%) and the Hill Janajatis (44%).

There were significant gains in education and health during the plan periods[37] as well due to increased public expenditures in these sectors, increased demand from households measured by increased spending on private primary and secondary education, higher household incomes and due to success of focused programmes such as vaccinations.

An overall increase in migration played an important role in the improvements in economic conditions. Migration of the adult male population rose from 16 to 25%, and for women from less than 2% to more than 2%. This dramatic increase was due to the opening up of newer labour markets and decentralization of reforms related to issuance of travel documents in 2000-2001; 18% of all Nepali migrants were in the Middle East. 10.6% migration from Rural Eastern Hills (lowest compared to other regions e.g. 19% from Rural Western Hills). Increase in share of HH receiving remittances from 23 to 32%. The rural Eastern Region (the poorest in Nepal) registered a fourfold increase in the number of households receiving remittances from abroad. The Central and Eastern Regions also receive the largest amount of remittances from within Nepal. The NLSS I and II panel data suggest that poverty would have declined by 4.8% points instead of the observed 11% points if the amount of remittance had remained unchanged (CBS, 2006).

2.2.6.8 Three Year Interim Plan (2007 – 2010)

This was the first plan after the signing of a comprehensive peace agreement between the government and the CPN (Maoists) in 2006 at the end of the decade long People's Movement in the country. Elections for a Constituent Assembly were held in April 2008. Due to the provisional nature of the government a three year interim plan was prepared for this period that continued much of the poverty alleviation and social inclusion objectives and strategies of the previous plan, within the changed political context of the country. Thus the main goal of this Interim Plan was "to lay a foundation for economic and social transformation to build a Prosperous, Modern and Just Nepal". The main objective was "to generate an experience of a direct feeling of change in the lives of the general public by supporting in the establishment of peace and reducing the existing unemployment, poverty and inequality in the country" (GON/NPC, 2007).

The interim plan accorded priority to the reconstruction, rehabilitation and reintegration of physical, economic and social infrastructures damaged due to conflict. Additionally strategies adopted by the plan were related to: employment-oriented, pro-poor and broad-based economic growth with priority given to projects providing more employment to women, Dalits, Adibasi Janajatis, youths and the Madhesi communities; the promotion of good-governance and effective service delivery; increased investment in physical infrastructures; emphasis on social development with additional investments made on education, health, drinking water and sanitation and other social development activities, and to gradually devolve the responsibility of managing these services to the local bodies. In a departure from the previous plans, this interim plan also set a target of at least 33% of women's representative in

[37] School participation increased 22 percent with 6-15 year olds in school rising from 63 to 77 percent. 6-10 year old girls in school rose from 50 to 73 percent, and 11-15 year old girls in school rose from 53 to 68 percent. The improvement in school participation was related to income: among the richest quintile school participation was universal but from the bottom quintile half of 6-10 year old girls we not in school. Similarly child mortality rate fell from 40 to 29 deaths per 1,000 live births, under 5 mortality decreased from 118 to 91 (per 1,000 live births), and infant mortality decreased from 79 to 64.

the state's mechanism. Thus while focusing on giving continuity to previous achievements, this plan aimed at addressing issues specific to the transitional period in a post-conflict situation, and make special efforts in ending all forms of discriminations and in promoting multiculturalism and peace.

The planned total expenditure for this period was NRs. 587,676 million (US$7,463 million at 2012 rates). The progress of the interim Plan has been mixed due to the political instability and lack of infrastructure development. The annual average economic growth rate was estimated to be only 4.4% as against the target of 5.5%, though there was a high progress of 5.8% as a result of the positive economic atmosphere created due to political stability and cordiality soon after the peace accord in 2006. The targets in the agriculture sector (3.3%) and non-agriculture sector (5.1%) were also not met. The mid-term review states that the target of economic growth rate could not be achieved due to the decrease in the growth rate in the agriculture sector and low growth in financial intermediates, industry and mines, electricity, gas and water of the non-agriculture sector (NPC, 2010).

The target of reducing the population below the poverty line was also not met; during this plan period it was reduced to only 25.4% compared to the target of 24%. The review by NPC (2010) also notes that there was good progress in poverty alleviation, revenue collection, rural electrification, road construction, school-enrolment rate, and financial and cooperative sectors, but the progress could not be achieved in agriculture, trade and industry sectors, the backbone of the economy. The irrigation, energy, and infrastructure sectors, related to rural road network of the remote areas, also did not perform as planned. Thus the review notes that “despite the few positive achievements, the structural reform and development efforts have not been rural income-oriented, poverty has still been pervasive, employment and income generating programmes have not been effective in the rural areas, infrastructure development has not been spatial and regional-based, economic growth has not been balanced in all the regions, and economic distribution has not been equitable” (NPC, 2010: 4).

2.2.6.9 Three Year Plan (2010 – 2013)

With the process of the preparation of a new draft constitution being prolonged and subsequent elections for a stable government being delayed, the formulation of a new full term plan was also delayed. Therefore the running ‘Three Year Plan’ has been prepared, also based on the same long-term vision of the previous plan of creating a prosperous, peaceful and just Nepal through transforming Nepal from a least developed country (LDC) into a developing nation within a two-decade period. The goal of this Plan is “to improve the living standards of all Nepalese people, reduce poverty to 21%, and achieve MDGs by 2015 through sustainable economic growth, generating dignified and gainful employment opportunities, reducing economic inequalities, achieving regional balances, and eliminating social exclusions” (NPC, 2010: 24). The main objective is “to enable people to feel change in their livelihood and quality of life by supporting poverty alleviation and establishment of sustainable peace through employment centric, inclusive and equitable economic growth”.

Attaining employment centric, broad-based economic growth, creating development infrastructures considering the future federal states including regional balance, inclusive and equitable development, support the process of socioeconomic transformation of the nation, making governance and service delivery effective and mainstreaming trade in development are the macro strategies of the Plan.

The Plan aims to reduce the population living in poverty from 24.5% to 21% through a target of 5.5% economic growth rate. It envisages that this growth will be possible with 3.9% contribution from the agriculture sector and 6.9% from the non-agriculture sector. A total outlay of NRs. 1,023,705 million (US $12,999m at 2012 rates) has been planned for this interim period and the sectoral percentage allocation is presented in Table 7.

2.2.7 Summary

The total outlay for the national development plans have increased tremendously from 1956 to 2010 as shown in Figure 7. The Plans allocate budget to broad sectors such as social services (education, health and others), agriculture, irrigation, land reform and forestry, transport and communication and industry, commerce and power. All these sectors do affect on the change in the social and economic conditions across different parts and people of the country, directly and indirectly.

Figure 7: Trends in Total Outlay in National Plans, 1956-2010, Nepal

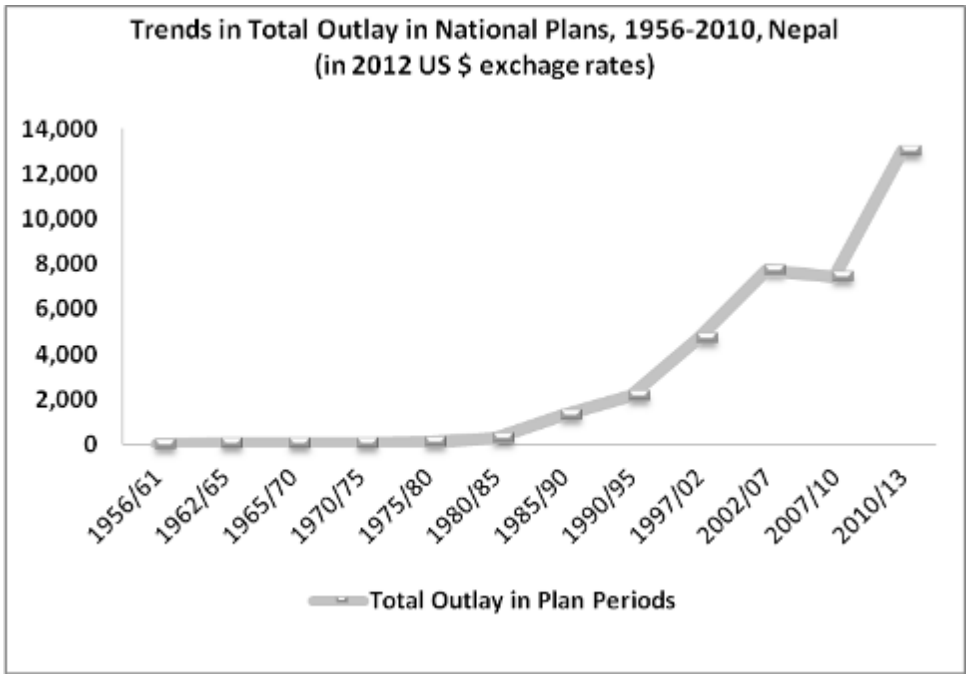


Table 7: Expenditure Allocation (as Percentage of Total) to Key Sectors in the National Plans (1956-2010), Nepal (National Planning Commission, Government of Nepal, Periodic Plans 1956-2010)

National periodic plans		Social services[38]			Agriculture, irrigation, land reform, forestry	Transport and communication	Industry, commerce and power	Others
		Education	Health	Total				
I	1956–196	5.8	7.6	25.9	18.5	33.8	16.7	4.8
II	1962–1965	6.7	6.2	17.1	16.2	32.2	23.9	10.6
III	1965–1970	7.7	6.4	18.5	20.0	35.4	22.1	4
IV	1970–1975	4.7	5.9	14.5	25.8	40.9	18.3	0.6
V	1975–1980	8.9-10.5	6.0-6.9	24.6-23.4	29.8–30.2	23.2–26.4	22.4-20	0
VI	1980–1985	4.9	4.6	24.4	30.4	19.4	25.8	0
VII	1985–1990	10	4.6	29.8	34.3	14.4	21.5	0
VIII	1990–1995	15.2	4.5	31.5	25.7	17.7	24.2	0.9

[38] Social Services also cover drinking water, sports, village development, etc. in addition to education and health; "others" covers statistics, training, general administration and defence, etc. The Fifth Five Year Plan made provisions of maximum and minimum levels of resources and physical targets.

National periodic plans		Social services[38]			Agriculture, irrigation, land reform, forestry	Transport and communication	Industry, commerce and power	Others
		Education	Health	Total				
IX	1997–2002	7.6	7.3	33.3	27.0	17.6	21.8	0.2
X	2002–2007	8	6	38.6	24.0	15.6	19.0	2.8
XI	2007–2010	12.6	10.8	41.5	12.9	17.9	21.9	5.8
XII	2010–2013	8.3	7.7	32.2	13.6	25.5	24.9	3.8

Table 7 exhibits that none of these sectors have received top priority from the first plan to the twelfth plan. While 'Transport and Communication' sector has received highest share of the national total plan budget from the First to the Fourth Plan, 'Agriculture, Irrigation, Land Reform and Forestry' sector has received the top priority from the Fifth to the Seventh plans. Since the Eighth Plan the 'Social Services' sector has been receiving largest share of the total plan budget. Though all these broad sectors are equally important for development, the transport and communication sector appears to be the most crucial in the mountainous country Nepal to facilitate the role of integration and ease provision of other development services at places, which however has been receiving less priority since the Sixth nation plans.

Figure 8: Allocation of Budget to Social Services – Total, Education and Health

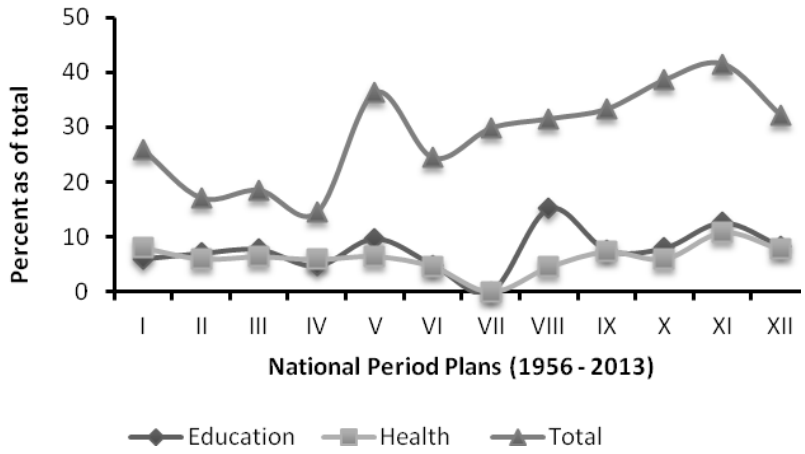


Figure 8 indicates that the education has always received greater priority over the health in the social services sector in all national plans, except in the First Plan. However, in terms of percentage share, both – education and health – have always received less than 10% of the total plan budget in all but the Eighth Plan in which education shared slightly over 15%.

2.3 Review of Development Interventions in the Koshi Hills

2.3.1 Development Interventions

Since 1970s, approximately GBP 239 million has been invested in the Koshi Hills by various donor agencies; with the largest share of the total investments (70%) borne by DFID (EDG/GRM, 2011). Others include the Asian Development Bank (ADB), United Nations Development Programme (UNDP) and Netherlands Agency for Development (SNV). Approximately 42% (GBP 102 million) of this amount has been utilized for the construction and maintenance of roads.

The earliest donor supported development intervention can be traced back to the United Kingdom (UK), which set up the Gurkha Reintegration Service (GRS) in 1968. This demonstration-farm training centre was established to provide training to returning ex-Gurkha[39] soldiers, who originated from the area. Since, then various other programmes/projects in various sectors such as agriculture, transportation, health and natural resource management have been implemented, largely in partnerships with government line agencies but also through local NGOs. Altogether, 31 donor supported projects (Table 8) have been implemented in the Koshi Hills area (Coffey, 2010).

Table 8: Donor Supported Development Interventions (Coffey, 2010)

SN	Sector	Funding agency	Implementation
Agriculture, Forestry and Rural Development			
1	Gurkha Reintegration Centre	UK Military	1968-1972
2	Pakhribas Agriculture Centre	DFID	1972-ongoing
3	Pakhribas Agriculture Research Centre (Under HARP)	DFID	1997-2001
4	Koshi Hills Area Development Programme-K1	DFID	1976-1979
5	Koshi Hills Area Development Programme-K2	DFID	1979-1980
6	Koshi Hills Development Area-K3	DFID	1987-1992
7	Vegetable Marketing Project	DANIDA	1990-1994
8	Koseveg Project	DFID	1994-1997
9	Seed Sector Support Project	DFID	1997-2004
10	High Value Crops	SNV	2008-2013
11	Commercial Agriculture Development Programme	ADB	2007-2012
12	Nepal-UK Community Forestry Project	DFID	1994-2000
13	Livelihoods and Forestry Programme	DFID	2001-2009
Roads			
14	Dharan-Dhankuta Road	DFID	1972-1977
15	Dharan-Dhankuta Maintenance	DFID	1979-1989
16	Eastern Region Road Maintenance	DFID	1990-2002
17	Rural Access Project (RAP 1)	DFID	2004-2008
18	Rural Access Project (RAP 2)	DFID	2009-2012
19	Rural Infrastructure Project	WB	1998-2003
20	Basantapur-Khandabari Feeder Road	ADB	2003-2006
21	Basantaput –Terhathum-Athrai Feeder Road	ADB	2003-2006
22	Hile-Basant-Khad Feeder Road Upgrade	DFID	2007-2009

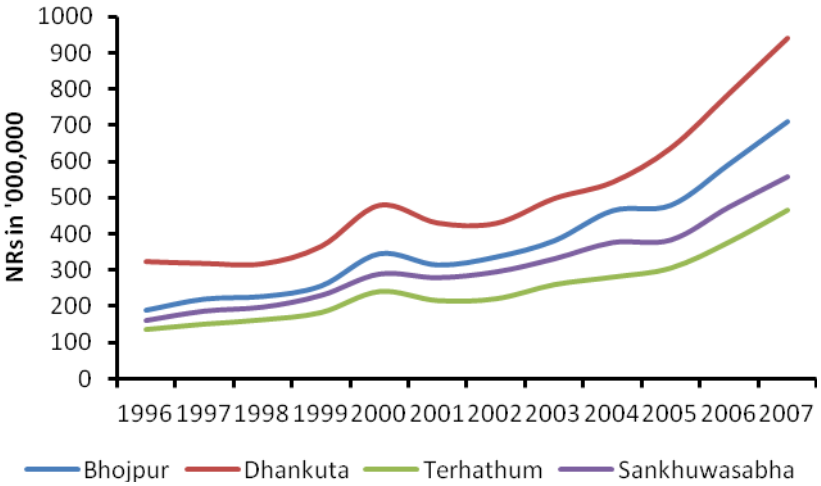
[39] The term “Gurkha” is collectively used to denote soldiers who are recruited into the British and India forces. Historically, they have been mainly drawn from Magar, Gurung, Rai and Limbu ethnic groups.

SN	Sector	Funding agency	Implementation
Health			
23	Terhathum hospital	NL Gov	1983-1984
24	British Nepal Medical Trust: TB, Leprosy, Community Health and Safe Motherhood	DFID	1968-2010
25	British Nepal Medical Trust: TB, HIV and Malaria Programme	DFID	2004-2010
26	Child and Maternal Health	SCF	1980-1988
27	Drinking Water Supply Project	UNICEF	1972-1979
28	Community Aid	GWS	1969-2010
29	Rural Water Supplies Projects I, II and III	GWS	1989-2012
30	British Nepal Medical Trust: National TB Programme	DFID	2003-2006
National Parks			
31	Makalu-Barun National Park	GEF	1986-1990

Note: Asian Development Bank (ADB), Department for International Development (DFID), Danish International Development Agency (DANIDA), GEF (Global Environment Fund), SCF (Save the Children Fund), Netherlands Agency for Development (SNV)

Concurrently, the Government of Nepal has also continued to implement development programmes in multiple sectors and sub-sectors as part of its regular development activities. Figure 9 presents the trend in government expenditure (development and administrative) within the Koshi Hills. Whereby, it is clearly seen that Dhankuta district, which has historically been regarded as the economic and administrative hub of the region, has the highest expenditure compared to the other three districts. Interestingly, the proportion of expenditure within the Koshi Hills has decreased from 1.59% (in 1996) to 0.58% (in 2007).

Figure 9: Government of Nepal Expenditure in the Koshi Hills (Financial Comptroller General's Office, Kathmandu. Nepal)



2.3.2 Poverty

According to the Nepal Living Standard Surveys I and II, though the poverty head count has declined nationally from 41.8 (in 1995/96) to 30.8 (in 2003/04); and from 38.9 to 29.3 in the EDR within the same time period; there has in fact been an increase in poverty in the Rural Eastern Hills[40] from 36.1 in 1995/96 to 42.9 in 2003/04 (CBS, 2005). This reflected a change in the trends, whereby till 1995/96 the rural areas in the West had had the largest share of poor people. According to the CBS report, this was phenomenon was largely due to both the rapid reduction in poverty within the west as well a reduction in the proportion of the population residing in the areas.

Table 9: Poverty Measurements in 1995/96 and 2003/04 (NLSS I and II)

	Poverty Headcount Rate			Distribution of the Poor		
	1995/96	2003/04	Change in %	1995/96	2003/04	Change in %
NLSS Regions						
Kathmandu	4.3	3.3	-23	0.3	0.6	118
Other Urban	31.6	13.0	-59	3.3	4.1	23
Rural Western Hills	55.0	37.4	-32	32.7	23.6	-28
Rural Eastern Hills	36.1	42.9	19	19.4	29.4	51
Rural Western Tarai	46.1	38.1	-17	18.4	18.9	3
Rural Eastern Tarai	37.2	24.9	-33	25.9	23.5	-9
Development Regions						
Eastern	38.9	29.3	-25	21.0	23.4	12
Central	32.5	27.1	-17	26.9	32.2	20
Western	38.6	27.1	-30	18.7	16.7	-11
Mid-Western	59.9	44.8	-25	18.5	17.7	-4
Far Western	63.9	41.0	-36	14.8	9.9	-33

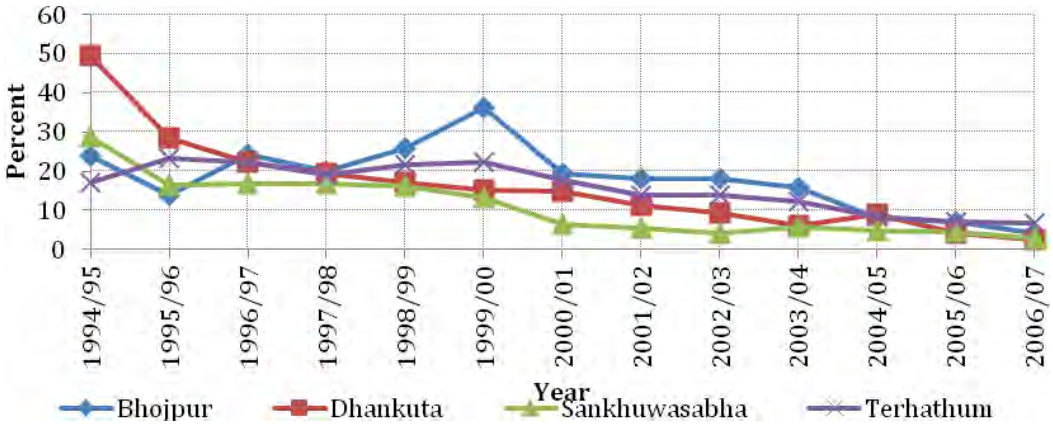
2.3.3 Social Indicators

Within the Koshi Hills, basic primary health services are provided by four district hospitals, located in each district; nine primary health care centres (PHCCs); 41 health posts (HPs) and 119 sub-health posts (SHP) (DOH & WHO, 2010). According to the DoH and WHO study in 2010, despite vacant posts and occasional absences of staff, for the most part the health posts/sub-health posts are functioning at the VDC level. Although, similar to other parts in the country, it notes that there is often a lack of medicine and that the service delivery is low, particularly in rural areas.

Overall, life expectancy figures for the Koshi Hills districts show that they are consistently higher than the national average (Table 10) and that other indices, such as the reduction in the proportion of malnourished children (<3 years), are also improving (Figure 10).

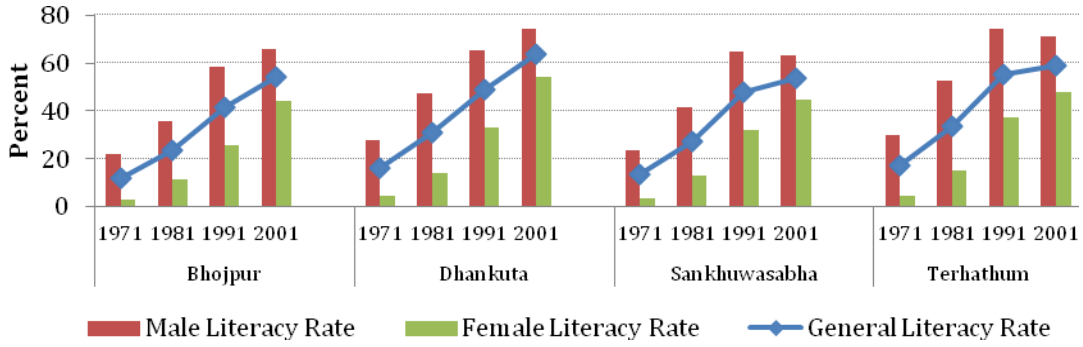
[40] District aggregated figures are not available as the NLSSs have combined large areas.

Figure 10: Proportion of Malnourished Children < 3 years (Weight/Age) (DOH/HMIS 1995-2007)



Adult literacy is also on the rise in all four of study districts (Figure 11), with Dhankuta and Terhathum having higher rates than the national average (Table 10). The gender gaps amongst the men and the women have, however, persisted, although there has been a slight improvement since 1971.

Figure 11: Literacy Rates (Education Flash Reports 1971- 2001)



Among the four districts, Terhathum has the highest HDI, with a rank 10th (of the 75 districts), while Bhojpur has the lowest, with 32nd (UNDP 1998, 2004).

Table 10: Selected Human Development Indices (1998 and 2004) (UNDP 1998 and 2004)

Indicators	Year	Nepal	Bhojpur	Dhankuta	Sankhuwasabha	Terhathum
Life expectancy at birth	1998	55.0	64.3	64.3	61.7	61.3
	2004	60.9	64.6	64.9	63.7	67.7
Adult literacy	1998	36.7	37.0	44.4	41.3	52.5
	2004	48.6	46.8	58.6	47.5	54.0
Per capita income (PPP)	1998	1,186	707	1,275	1,058	1,056
	2004	1,310	1,002	1,102	1,257	1,246
HDI	1998	0.325	0.351	0.401	0.365	0.393
	2004	0.471	0.472	0.507	0.481	0.523

2.4 Environment, Natural Resources and Conservation

This section deals with the general issue of environmental change and impacts of global climate change, as well as of development interventions on environmental resources such as forest, water, and energy and lives and livelihoods in the Koshi Hills.

2.4.1 Context: Landscape Integrity Development in Nepal

As Nepal is a party of the Millennium Development Goals Programme, it has to fulfil its Goal 7: '*Ensure Environmental Sustainability*' by 2015. One of the three global goals and targets under this is to integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources. This includes five indicators, such as forest area, protected area system, energy use, CFC (chlorofluorocarbons) and CO_2 emissions. It is useful to distinguish between (i) environmental protection, conservation and enhancement, (ii) sustainable energy development, and (iii) mitigation/protection and adaptation in the face of climate change.

In regard to all three of these, landscape planning has emerged over the last few decades as an important and useful tool for local and regional development in the mountainous countries like Nepal. Landscape is a mosaic of elements arranged spatially and the mosaic is composed of a pattern of patches (micro spatial ecological units) and corridors (facilitate interaction between patches). Landscape planning examines the various ways the humans structure their land use changes. Since landscape concerns with the study of the effects of spatial pattern on ecological process, all ecological systems possess spatial complexity at some scale, and thus landscape ecology is applicable to all areas of ecology encompassing a wide range of scales (small to broad regional) and systems (terrestrial and aquatic).

Barrow (1991) defines 'landscape integrity' as a stable overall physical condition of the land (bedrock, landform, soil, drainage, etc.) within which transfers of energy, matter and water occur. It is required for the maintenance of terrestrial and aquatic ecosystems. For instance, a watershed landscape with high integrity is in good hydrological condition and is essentially in proper functioning condition. The streams and rivers within a watershed with high integrity are in dynamic equilibrium with the land that drains into them. The watersheds with high integrity fully support their integral biological system.

Nepal consists of four longitudinal river basins from east to west, separated by three large principal rivers, the Koshi, Gandaki and Karnali basins.[41] The Koshi, lying in the east, is the largest and is described below in separate section.

In Nepal, landscape integrity is fundamental not only for maintaining the conservation of major ecologies and environmental resources, but also for supporting livelihood systems of majority of the people. The country has already recognised the need for landscape-based planning and management. The area development is reflected in terms of river basin approach (development region).

Since 1957, the Government of Nepal has undertaken efforts for planning and conservation of environmental resources and biological diversity for the benefit of the people in accordance with the principles of the Convention on Biological Diversity. Those efforts however have been differed markedly and shifted to adopt different strategies and focuses during different decades, for instance, the 'Environment Protection' of the 1970s, the 'Integrated Development' of the 1980s, the 'Sustainable Development' of the 1990s, and the 'Climate Change' since the 2000s. Accordingly, they focused on different ecosystems such as the 'Species Conservation' in the 1970s, the 'Ecosystem Conservation' during the 1980s and the 1990s, and lastly the 'Landscape Conservation' in the 2000s. The approaches undertaken by them have also been shifted such as from the 'Protection Approach' to 'Participatory Approach' (multi-stakeholder approach) to 'Buffer Zone Concept', to 'Wildlife Farming' and currently to 'Ecotourism' (Dhakal 2001). The government's related sectoral departments (or stakeholders) to the landscape development planning and strategies in line with the existing national plans and policies include forestry, watershed, landscape, agriculture, and local bodies and their related projects and programmes (CBS 2004).

The efforts undertaken by the government related directly and indirectly to the landscape based ecological conservation and protected areas can be divided into three types, such as (i) policies and strategies, (ii) acts, and (iii) regulations and guidelines. National Conservation Strategy 1988, Nepal Biodiversity Strategy 2002, National Parks and Wildlife Conservation Act 1973 and Amendment 1993;

[41] Each of the river basins contains three ecological regions such as mountain, hill and plain. The eco-regions are unique and their diversity is essentially three-dimensional: (i) latitudinal – variable climate between south and north, (ii) longitudinal – moisture variability; decreasing east-west, and (iii) altitudinal – increase in ruggedness along with altitude. These natural eco-regions have distinctive environment, resource endowments, socioeconomic values, and development potentials, which provide a sound basis for local development.

Environmental Protection Act 1996, Buffer Zone Regulation 1996, Sustainable Community Development Programme and Ramsar sites are mentioned a few, as the most related ones. In recognition of the magnitude of biodiversity, 32 protected areas consisting of different types such as national parks, wildlife reserves, conservation areas, hunting reserve and buffer zones have been established by the government (Annex 2 for details). In addition, forest is a finite natural resource in Nepal to contribute to economic development by providing forest products such as firewood, fodder, timber and herbs for use by rural communities and for sale more widely and by regulating hydrological and atmospheric conditions. Due to subsistence economy, the agricultural based rural households rely on multiple income sources and adopt a wide range of livelihood strategies for food security and forest resource is a source of livelihood means of the rural communities. It is also an important part of the local, regional and national cultural heritage and a valuable asset for the tourist industry, and so on.

After implementation of the national forest conservation policies through programmes such as community forestry, leasehold forest, buffer zone, etc the forest coverage has increased from 29% in 1980s to about 38% in the 2000s in the country. JFTA (2001) has shown that the forest area has increased by 8.4% while the shrub area has declined by 1.9% since 1994. This apparent increase over the past years was believed due to expansion of the community forest and private forest areas, growing of shrubs to trees, etc, but many agencies including forestry were not ready to admit it. Local communities may have their own ideas as to how the forest has evolved and the reasons for it. Mathema and others (1998 cited in Pradhan & Pradhan 2006) found that the communities managed forests have led to increase in productivity and biomass because of strict protection from fires, free grazing, and uncontrolled cutting. These protection activities have encouraged natural regeneration of forest cover and helped stabilise hill slopes. Because of the increased forest coverage, the water regime (both yield and quality) has improved at micro-watershed level.

The buffer zone concept implemented in the Chitwan National Park has resolved the park and people conflicts and reduced the killing of wild lives of the park to a large extent vis-à-vis protection of standing crops from destruction by the park animals (Pradhan and Pradhan 2006). Conflicts were used to occur among the herders over grazing issue in the *Patan* (high mountain pastureland) before the creation of Khaptad National Park (KNP). After its creation, such conflicts have been minimised by the KNP, which has given an equal access to all herders, based on price charge per animal head (NNDC 2006).

On the other hand, elsewhere in several parts of the country, forest conservation policies have constrained economic activities, social interactions and development opportunities. One of the side effects is decreasing farming incomes of most of the small landholders with decreasing forest resource supplies. For instance the farming land abandonment has increased in the western hills in accordance with decreases in manure supplies from livestock, reduction of farm size and increased wildlife (Khanal & Watanabe 2006). The negative effects of poorly conceived policies are greater in high hill areas and remote communities and indigenous people whose livelihoods were traditionally dependent on community-based resources. Providing income and employment for affected families from wildlife-based tourism has limited scope in mountains where households are scattered. Flash incentives provided from the conservation support programmes do not compensate for direct and indirect economic losses (Dhakal & Neupane 2008).

Further, natural resource policies have hindered social transformation and created long lasting humanitarian problems. The destruction of livestock farming, the engine and inspiration of mountain economy and increasing food deficit in agriculturally based communities are strong indicators of increased vulnerabilities. Forest areas have been used by the farmers as grazing land for livestock. Owing to limited pasturelands, farmers used to take their livestock (cows, buffaloes, goats, sheep and horses) to nearby forests for grazing. Transhumance, which has been existed in the mountains for centuries, often used to take place in the forest areas and was a means of livelihood of the mountain herders. This system now is no more existed due to restriction of free grazing of their herds in the community forest areas (Pradhan & Pradhan 2008). In some cases, community forestry has been responsible for forest depletion. For instance, the density of forests managed by the forestry users group in some parts of the eastern Tarai is dwindled due to mis-management of the forestry communities. A study in the eastern Tarai district has indicated that the forest user group has been responsible for diminishing valuable tree species such as *Sal* in the community managed forest area (Pradhan & Pradhan *op.cit*). The study indicates that community forestry leader and the District Forest Officer have jointly made cutting *Sal* trees beyond the rules and regulation for earning cash income.

The Forest Act (1993) and Forest Rules and Regulations (1995) have provided guidelines to encourage the community based management of forest resources, which need yet to be tuned for the promotion of NTFPs (Edwards 1996; Banskota & Pradhan 2007).

2.4.2 Landscape Integrity Development in the Koshi Basin

The Koshi basin is the largest, covering 10 sub-basins and nearly 30,000km^2 of land in Nepal from the Himalaya to the lowland of the Tarai (WECS 1999). It is an ecologically and topographically diverse basin, with significant biodiversity, a Ramsar site (Koshi Tappu), three national parks (Langtang, Sagarmatha and Makalu-Barun), and the home to Mount Everest. All these together contribute in providing tourism jobs in particular and income to the region. The Koshi is one of the three largest rivers flowing from the Nepalese Himalayas into the Ganges, contributing the majority of its flow during the dry season and almost half during the summer monsoon. There is massive potential for water resources in the basin that remain largely untapped. For instance, the government estimates that only 14% of the total available 4.8 billion cubic metre of water is being utilised with a potential capacity to generate almost 30,000 megawatt of hydropower and to irrigate nearly 500,000 ha of land (WECS 1999). Such potential is not lost on the national government, which has been attempting to build a high dam on the Koshi River for decades, but not yet being in place due to diplomatic difficulties with its Indian neighbour.[42] The Koshi is thus a significant river basin for a wide variety of reasons, viz environment, economic and politic, as well as for maintaining foreign relations with many different agencies including donor and international non-governmental organizations, development banks and government ministries focusing on the basin. Below is a brief introduction of Makalu Barun National Park, followed by its impacts in the Koshi Hills.

2.4.3 Makalu Barun National Park (MBNP)

Set up in the northern part of Koshi Hills in 1992, MBNP covers an area of 2,330km^2 (1,500km^2 park area 830km^2 buffer zone), stretching from the Nepal-China border in the north to about 44km south and 66km east-west. The park encompasses seven VDCs, viz Kimathanka, Hatiya Pathivara, Makalu Yaphu, Mangtewa, Tamku, Bala and Sisuwakhola of Sankhuwasabha district and two VDCs of Solukhumbu district (Figure 12). It is the world's the first protected land in the world's highest altitude of above 8000m and second national park and sixth buffer zone managed by IUCN. There are 88 forest user groups and 12 communities with 6,000 households getting benefits from the buffer zone.

[42] India has a very direct interest in the Koshi for its potential hydropower generation and irrigation supply for Indian use, but it is also relevant for the annual flooding in the Indian State of Bihar, where the Koshi is known as the "Sorrow of Bihar" for the impacts of floods on local populations (NCVST 2009). On August 18, 2008, the Koshi River picked up an old channel it had abandoned over 100 years ago near the border with Nepal and India. Approximately 2.7 million people were reported as being affected as the river broke its embankment, thus submerging several districts of Nepal and India. Ninety-five percent of the total flow of the Koshi was reported as flowing through the new course. At present, the only large infrastructure project is the Koshi barrage or Bhimnagar barrage near the Indo-Nepal border, which was built in the years 1959-1963. It is an irrigation, flood control and hydropower generation project built under a bilateral agreement between Nepal and India. The entire cost of the project was borne by India (*ibid*).

Figure 12: Makalu Barun National Park and its Buffer Zone

The park holds Mt. Makalu (8,463 m), the fifth highest mountain of the world, Chamalang (7,319m), Baruntse (7,129m) and Mear (6,654m) and down to the Arun River valley at about 300masl (metres above sea level). Spanning over these extreme altitudinal variation, MBNP exhibits a high diversity of eastern Himalayan forest ecosystems such as: (i) tropical (<1,000m): *Sal* species; (ii) subtropical (1,000-2,000m): broadleaf forest with stands of *Schima* and *Castanopsis*; (iii) temperate forests (2,000-3,000m): predominantly broadleaf evergreen species of oak and laurel families and broadleaf deciduous stands of mapple and mangnolia; (iv) subalpine (3,000-4,000m): conifer forests with stands of Himalayan birch and fir, as well as stands dominated by juniper and fir; and (v) alpine pastures (>4,000m): shrub and meadows, dwarf rhododendron, juniper, aromatic herbs, delicate flowers, etc.

MBNP is rich for its wide variety of ecological biodiversity. The study by Shrestha et al. (1990) has prepared a list of types of plants and animals in the park area.[43] About 35,000 people dominated by

[43] The study by Shrestha et al. (1990) has gathered a list of diversity of plant species including a total of 3,128 species of flowering plants with 25 varieties of rhododendron, 48 primroses, 47 orchids, 19 bamboos, 15 oaks, 86 fodder trees and 67 economically valuable aromatic and medicinal plants. Likewise, there are 315 species of

indigenous groups such as Sherpa, Rai, Gurung, Tamang, Magar, Newar, as well as Bahun and Chhreti castes, who are primarily subsistence farmers, reside in 12 Village Development Committees of its buffer zone and their livelihoods depend heavily upon forest resources for animal fodder, fuel, food, medicine, and others (Jha 2003).

By virtue of these features, the park has a huge potential for tourism (detailed description given below) and significance of conservation of these "treasures" as national and local heritage. Despite these, however the MBNP is facing manifold challenges. There are struggles over different land uses (because people use to settle near the park) and between livelihoods support and environmental protection. Since the last few decades, there has been continuous struggle of reconciling and saving threatened species and managing their habitats as still the people depend heavily on the products of the natural resources for grazing and animal fodder collection, fuel wood, timber collection, and the collection of medicinal and other economically valuable plants. Further, the critical conservation issue in the park is the slash and burn farming practice or '*Khorea*' by the indigenous tribal groups of Kulung Rais, particularly over the upper slopes of the Arun Valley (*ibid*). Large cattle population and overgrazing, high dependency on natural resources (firewood), park and people conflicts (damaging crops by wild animals – deer, wild boar), and hunting and poaching are often threatening to the conservation of the park's resources. In response to the threats to biodiversity conservation, people participation, community development activities (infrastructure development – water supply, trails and bridges, schools and non-formal literacy programmes), eco-tourism development, income generation programmes, local culture conservation, natural resource management and grazing area management have been adopted. However the impact of these activities in regard to the park's resource conservation is yet to ascertain.

Further, a huge problem of the area is the construction of the largest hydroelectric project "Arun III" on the boundary of the park and an access road to the dam site. The project was designed, developed and funded by the World Bank and other donors in 1994 and was supposed to generate 201MW of electricity for Nepal at the cost of US$1.1 billion. For the construction and operation of the project an access road of length 122km was to be built first.[44] The Arun III was also the first hydropower project with an Environmental Impact Assessment (EIA) as well as some mitigation plans. Besides meeting the domestic power needs, the project was expected to open the possibility of exporting electricity and thus provide a new dimension in the economic development of Nepal. In August 1995 the World Bank decided not to fund the project.

As a result, despite all the planning and design exercises, the future of Arun III is uncertain. An important issue concerned the ensuring of equitable sharing of the benefits, by the local people in the Arun Valley, along with considering the macro-economic risk for the country as a whole. The project received a significant amount of attention from the media and the general public, especially with regard to its economic viability and environmental sustainability. The project, however, came under criticism by local, and some western, NGOs and individuals as being risky, costly and liable to bring about severe environmental and social impacts. Consequently the project was dropped on institutional, national, economic and financial grounds (www.wafed-nepal.org).

It took until 2008 for the government of Nepal to restart the project and float a tender for a Build-Own-Operate-Transfer licence. A memorandum of understanding was signed with Satluj Jal Vidyut Nigam (SJVN), an Indian public sector company, granting the company 79.1% of the generated electricity for a period of 30 years before the structure would be handed over to the government of Nepal.[45] The

---

butterflies, 43 species of reptile and 16 species of amphibians; altogether 78 species of fish inhabit ponds, lakes and rivers; and ornithologists have recorded 440 bird species, ranging from eagles and other raptors to white-necked storks and brilliantly colored sunbirds and 88 species of mammals.

[44] A small artificial lake of 50 hectares was to be created by building a 155m long and 68m high dam in the river. Water from the reservoir was to be conveyed by two 11.5km long tunnels to an underground power house for generation of electricity. The flow coming out of the power house was then to be returned to the parent river. A 450 km long, 220 kilovolt transmission line was to be constructed to transmit the power up to Kathmandu.

[45] A Memorandum of Understanding between the Ministry of Water Resources/Government of Nepal and Satluj Jal Vidyut Nigam Limited was signed in 2008 concerning the execution of Arun III hydropower project in Nepal. (http://www.moen.gov.np).

company is a joint venture of the governments of India and Himachal Pradesh. SJVN is currently re-surveying the Arun III site, but still waiting for a Detailed Project Agreement.

2.4.4 Tourism Impacts

Makalu-Barun National Park and Conservation Area (MBNPCA) that lies in the Koshi basin has unique physical, cultural, and spiritual attributes. The study by Byers (1996) based on 1991 field investigation of the nature and extent of historical and contemporary human disturbance in the upper Barun valley describes that the area may have been visited by pilgrims since the 14th century. Based on genealogical records, according to Byers, regular seasonal grazing may have commenced in the 17th century with the easterly migration of the Sherpa people from the Solukhumbu region and that historical anthropogenic disturbances in a dynamic environment, including the possibility of regular burning in a presumed attempt to increase pasture area, could have played significant roles in modifying the upper Barun valley landscapes.

Since the recent past, tourism has been a major source of income, providing direct employment in the form of guides and porters in trekking, mountaineering, and other adventures in MBNP. According to the Nepal Tourism Board (NTB) records, tourist arrivals in 2000 were 376,503 against 421,000 in 1999. A total of 1,000-1,500 visitors to Makalu-Barun National Park and Buffer Zone generated an estimated Rs. 12.5 million (US$275,000) annually for the rural economy (Sherpa, 2002).

While tourism has greatly helped the local economy by improving living standards with better health care, education, and building structure in this region, the increased number of visitors over the decades has also resulted in increased environmental degradation of the fragile mountain area. For instance, a corridor of disturbance related to contemporary indigenous and tourist use (tree harvesting, burning, grazing) was observed along the main valley trail and impacts appeared to be growing in frequency and magnitude (Byers, 1996).

Despite the tourism impacts on environment in the region, there is very little reinvestment of the economic benefits of tourism in natural resources management and community development. The benefits from tourism are not well distributed. Sherpa (*op.cit*) argues that those who have been the main beneficiaries are often the traditionally well off local people or investors. If this trend continues, it will pose a threat to sustainable tourism in the region. However, efforts being initiated by The Mountain Institute (TMI) since 1997 include mitigation of the environmental impacts by promoting community-based eco-tourism in the Makalu Barun region and by creating a direct tourism based economic link for conservation. TMI's ecotourism activities focus on four aspects: (i) promote sustainable mountain tourism, (ii) minimise negative environmental impacts, (iii) ensure that local communities receive direct economic benefits from these activities, and (iv) create local capacity for on-going management. Other completed activities related to tourism and nature conservation of the MBNPCA include GIS and satellite based biodiversity database[46], vegetation classification, and the community based tourism development guidelines (*http://www.ain.org.np/partnership_docs/ NGO%20partnerships%20guidelines.pdf*).

TMI has contributed to improve the tourism facilities significantly in MBNP and Buffer Zone and now in the area the lodges are cleaner and pleasant than before, introduced back boilers, solar water heating devices and establishment of kerosene to cut firewood consumption, blanket and stoves for porters, and local residents reap the common benefits (Sherpa *op.cit*). By now, the Porters Association being set up for the first time in the MB has been successful to offer services to the tourists and trekkers, as well as to sustainably run the association itself according to the established operating principles. Based on the successful experience in Makalu, the porters' association is being shared in other national parks such as Langtang National Park, Kanchenjunga Conservation Area, Sagarmatha National Park and Annapurna areas.

2.4.5 Climate Change and Its Impacts in Nepal, Eastern Himalayas

The Himalayan region is one of the most sensitive hotspots to global climate change impacts, many of which are already being experienced. Global average surface temperatures are increasing and snow

[46] Two Ph.D. candidates including one native Sherpa and one American are focusing on GIS applications to park management in the Makalu-Barun, with various levels of support from funds raised by The Mountain Institute.

cover and ice extent are decreasing in the Himalayas (IPCC 2001). While the absolute magnitude of predicted changes is uncertain, there is a high degree of confidence in the direction of changes and in the recognition that climate change effects will persist for many centuries. The average annual mean warming is predicted at around 2–3^{0}C over the Asian land mass and these temperatures will be potentially catastrophic for the Himalayan peoples and ecosystems (Hansen et al. 2008; Solomon et al. 2009). Such impacts however will be highly variable and site specific and complex interactions among the climate change responses.

Though Nepal Himalaya is one of the most vulnerable regions in the world to climate change impacts, there has been little investment in research, or in developing a process for systematic nationwide data collection. There is lack of data on actual measurements of the changes in microclimate in the Himalayas and the limited climate observations are available only of few sites across the country. The predicted changes in climate and their impacts particularly in the Koshi Hills can be described based on runoff and river or glacial responses, water-related hazards, socioeconomic responses, etc.

2.4.6 Temperature and Precipitation

During the last few decades, Nepal Himalayas have experienced increasing and decreasing trends of precipitation (Shrestha et al 2000; Xu et al 2007). Studies on climate trends suggest that from 1960-2003 there have been no increases in annual temperature in Nepal (World Bank 2010), while the studies by Agrawal (2003) indicate an increase in temperature in recent years, with more pronounced warming at higher altitudes (Liu and Chen 2000). Average temperature is predicted to rise significantly by 0.5 to 2.0^{0}C by 2030 (NCVST 2009).

Shrestha et al (2000) reported that there was no distinct long-term trend in the precipitation records in Nepal from 1948 to 1994, though there was significant variation on annual and decadal time scales. However, Sharma et al (2001) found an increasing trend in observed precipitation data based on the Koshi Basin - it was more than 0.3^{0}C per decade at elevations over 4000 m. As Nepal lies in the monsoon climate domain, various studies including those from the Intergovernmental Panel on Climate Change indicate that on a general level the summer monsoon (June-September) will become more 'intense', but also more variable, meaning more frequent heavy rainfall events, even as the number of rainy days decreases (IPCC 2001). Further, the prediction is that the monsoon would most likely be weakened initially, leading to a dryer state in the short term due to the effects of land use changes and greater aerosol production from increasing industrialization in the Indian subcontinent, followed by a more wet monsoon in the long term as the effects of increased CO_2 levels become increasingly significant (*Ibid*).

2.4.7 Runoff and Glaciers

The effects of changes in precipitation and temperature are expected to change the balance between 'green water' and 'blue water'. 'Green' water is the water that is used or lost in catchments before it reaches the rivers, while 'blue' water is the runoff that reaches the rivers. Glacial melting and retreat, rapidly thawing permafrost and continually melting frozen soils in higher elevations is already being observed (Eriksson et al 2009). In the sub-basins dominated by glaciers, this will mean increased downstream flows in the short term, but in the long term, runoff is expected to decrease with the retreating glaciers, causing major reductions in flow and significantly affecting downstream livelihoods and ecosystems (Bates et al. 2008). In the winter months, more precipitation is falling as rain, which also accelerates deglaciation and in turn means a shorter winter and earlier snowmelt, ultimately affecting river basins and agricultural systems dependant on surface water diversions for the summer growing season.

Nepal Himalayas, the principal catchments of all principal rivers of Nepal, including the Koshi River which ultimately flows into the Ganges River of India with supplying about 70% of the dry season flow, will be badly affected by the recession of glaciers (IPCC 1998). According to ICIMOD, the rates of warming in the Nepal Himalayas are significantly higher than the global average. Within the region, the rates in eastern Himalayas and the western Himalayas, as well as in the plains of the Ganges basin over the last 25 years were lower (0.01-0.03°C/year) than those in the central Himalayas (0.04-0.09°C/year). The glacier in the eastern Nepal Himalayas found to be retreated by 160m or shrunk by

26% in 21 years from 0.57km^2 in 1978 to 0.42km^2 in 1999 (Fujuta et al 2001).[47] Over 30 years from 1970 to 2000, the glacier area was lost by 5.9% or 0.2% per year in the upper Tamor River basin of Nepal (Bajracharya et al. 2006).[48] Such widespread glacial retreat in Nepal can have two direct consequences such as changes in the hydrological regime and glacial lake outburst floods (NCVST 2010).

2.4.8 Glacial Lake Outburst Floods (GLOF) Events

A significant threat in Nepal Himalaya and directly correlated to rising temperatures are GLOFs that result from rapidly accumulating water into glacial lakes that then burst, sending flash floods of debris and water from high elevations, wreaking havoc on downstream communities and damaging valuable infrastructure like hydropower dams, irrigation canals, bridges, roads, etc. There are approximately 9,000 such lakes across the Himalayas, of which 200 are said to be in danger of bursting (Bajracharya et al 2007). The scenario of time series satellite images depicts that the glaciers are retreating and consequently the number and size of the glacial lakes are growing to the stage of potential GLOF (Bajracharya et al 2006; Bates et al 2008).[49]

A general baseline study of glaciers and glacial lakes throughout the eastern Himalaya carried out by ICIMOD in 2001 indicates that there are at least 21 recorded GLOF events[50] in the Himalayan region spanning Nepal, China and Bhutan, and 14 of them lie in the Nepal Himalaya (Bajracharya et al 2006). The upper Koshi drainage basin alone, including the rivers of Arun, Tamor, Sunkoshi, Dudhkoshi, and Tamakoshi, has 13 out of 14 GLOFs and the rest one lies in the upper Trisuli River basin of central Himalaya.

Fifteen GLOF events have been documented in Nepal in the past (Ives, 1986; Yamada, 1998). The first GLOF event recorded in the Dudh Koshi in 1977 destroyed bridges for 35km downstream, triggered many debris flows and killed two-three people. Another GLOF event that occurred in the headwaters[51] of the Bhotekoshi and the Sunkoshi Rivers on 11 July 1981 damaged the diversion weir of the Sun Koshi hydropower plant by the debris flow as well as destroyed the Friendship Bridge of the Arniko (Kodari) highway lying at the Nepal-China border, and tore out extensive road sections of the highway in the central Himalaya, amounting to a loss of US $3 million. The most recent and significant GLOF event in terms of recorded damages occurred on 4 August 1985 when Dig Tsho, a lake in the headwaters of the Koshi River breached after an avalanche and slid into the river, overtopping the dam (Ives 1986; Agrawal 2003; NCVST 2009). The event caused a 10 to 15m high surge of water and debris to flood down the Bhote Koshi and the Dudh Koshi Rivers for 90km, destroyed the Namche Small Hydel Project (which was almost completed at the time and cost approximately NPR 45 million), 14 bridges including new suspension bridges and at least 30 houses. The damages by this event gathered by Ives (*op.cit*) included destabilisation of long stretches of the main trail from the airstrip at

[47] Documentation of seven clean type glaciers in the neighbouring sub-basins of the Koshi basin such as Khumbu region from 1970 to 1989 shows that the majority of the glaciers have retreated in the range of 30 to 60 m during the observed period, while a subsequent expedition held in 2004 found that the majority of the glaciers in that region continued to shrink at a rather faster rate, while some smaller glacier began to disappear. Similar trends have been documented in the studies of the Yala glacier of Langtang basin and the Ghunsa basin glacier of the Kanchanjanga area between 1958 and 1992.

[48] Based on the visual analysis of different satellite images from 1962 to 2006, two glacial lakes such as the *Imja Tsho* and Tsho Rolpa are seen expanding by about 41m and 66m per year respectively, signifying retreating of the same glaciers.

[49] Out of 2,323 inventoried lakes, 330 lakes associated with the glaciers have an area larger than 0.02 km². Among them, 65 lakes including 15 new lakes are growing in size due to glacier retreat (Bajracharya et al. 2005). High rates of glacial melt due to increased in temperature are adding to this threat, as the rate of such incidents increased between the 1950s and 1990s from 0.38 to 0.54 events per year. The glacier lake studies in the Himalayan countries, viz Bhutan, China, India, Nepal and Pakistan reveal retreating of glacier by significant size (Karma et al 2003; Ageta et al 2000; Mool et al, 2001, 2004; Vohra, 1981; Matny, 2000).

[50] Of eight out of 21 recorded GLOFs, 7 lie in China and 1 in Bhutan.

[51] It also damaged the highway section in the Zhangzangbo Gully region of China. The Zhangzangbo Cho is the headwater of the Bhote and Sun Koshi Rivers of Nepal and the Poiqu River of China.

Lukla to Mount Everest base camp, increasing prices of staple supplies by an average of 50% when the trail reopened; destroying cultivatable land and forest, four or five deaths, and collapsing road sections.

2.4.9 Climate Change in the Koshi Hills

Climate change in the Koshi Hills is described in terms of trend in precipitation pattern, based on the precipitation data available of the meteorological stations. The data being made available has data on precipitation for Terhathum since 2007 and therefore it is omitted for consideration. Further, the record being made available to us does not have temperature data for the Koshi Hills. Annual precipitation data for every year since 1970[52] has been computed, but the analysis of trend of precipitation is based on every five years interval.

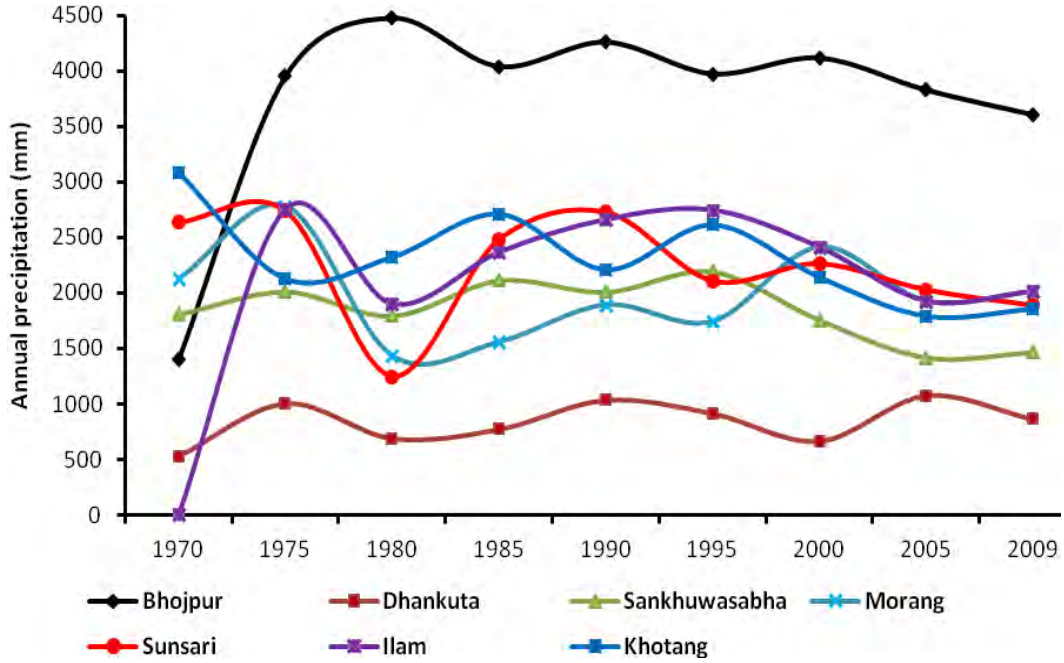
Table 11 and Figure 13 show that there is markedly fluctuated of the trends in annual precipitation for all districts under study and that there is no particular remarkable year to describe the event of change in precipitation. Therefore there is no certain pattern discernable among the districts of the Koshi Hills as well as other districts under consideration.

Table 11: Trend in Annual Precipitation, Koshi Hills (1970-2009) (Department of Meteorology and Hydrology (CD), 2011)

Districts	1970	1975	1980	1985	1990	1995	2000	2005	2009
Bhojpur	1,404	3,952	4,475	4,040	4,259	3,974	4,117	3,828	3,607
Dhankuta	529	1,004	689	772	1,035	915	665	1,076	864
Sankhuwasabha	1,807	2,012	1,794	2,115	2,010	2,194	1,758	1,419	1,465
Morang	2,127	2,781	1,436	1,561	1,894	1,745	2,414	1,928	2,014
Sunsari	2,636	2,737	1,248	2,481	2,727	2,107	2,263	2,027	1,887
Ilam	*	2,754	1,901	2,367	2,663	2,747	2,414	1,928	2,014
Khotang	3,085	2,124	2,321	2,712	2,207	2,613	2,140	1,785	1,851

[52] The annual precipitation data can be used to relate with the annual data of agricultural production.

Figure 13: Trend in Annual Precipitation, Koshi Hills (1970-2009)



The graph lines in Figure 13 show slightly decreasing trend in the annual precipitation for all the districts under study, but the remarkable or critical years from where the precipitation has declined seem to be different for each of the districts. Among the districts, Bhojpur has got highest annual precipitation throughout the observation years, while Dhankuta is at the other end. These trends would be meaningful when they are related to the production trends of different agricultural crops.

2.4.10 Climate Change and Impacts

The ongoing climate change and changes projected to occur are likely to have impacts on different sectors of Nepal, including the Koshi Hills. Impacts on some sectors are likely to be more severe than others. The sensitive sectors as identified by MOENV (2010) are agriculture, forestry, water and energy, health, infrastructure, tourism, industry and overall livelihoods and economy of the people. According to the ranking of all 75 districts of Nepal, being divided into five groups of climate change vulnerability index[53] (climate risk/exposure, sector wise sensitivity and adaptive capacity), Dhankuta and Terhathum fall in low vulnerability group, whereas Bhojpur and Sankhuwasabha lie in moderate vulnerability. Among the other districts under consideration, Ilam and Khotang fall at two extreme levels, with the former in very low vulnerability group and the latter in high vulnerability group. Morang lies in low vulnerability, whereas Sunsari in moderate vulnerability group (*Ibid*).

According to MOENV (2010), vulnerability contexts depend on a number of factors and conditions. Poor people, small holders, landless, women, children and people with disability are most vulnerable to loss of physical capital (damage to shelter and infrastructure), human capital (malnutrition and diseases), social capital (displacement of communities), natural capital (loss of productivity in agriculture, livestock and fisheries), and financial capital (more disaster and less income). Degradation of livelihoods by climate change will thus leave poor people with less of the assets they need to withstand shocks and stresses.

2.4.11 Agricultural Systems Impacts

Bartlett et al (2010) mentions that the impact of climate change (CC) on water resources is likely to affect agricultural systems and food security. This is especially critical in the region such as the Koshi

[53] The vulnerability index classified into five groups, from very low to very high ranges scores from 0 to 1 scale. (www.ngofederation.org: climate change phenomenon in Nepal).

Hills where a high percentage of the population is dependent on agriculture for livelihoods. The climate change impacts on agriculture in the region, as in other parts of Nepal can be divided between systems that are dependent on snow, ice and glacial melt and those that are dependent on the summer monsoon. Agricultural systems dependent on water sourced from snow, ice and glacial melt will see an immediate increase in water supply, but will also be in greater danger of GLOFs that threaten crops, water infrastructure, and mountain livelihoods in general. Whether such an increase will consequently increase productivity in the short term is unknown, as very little exists in terms of water storage in Nepal. In the long term, the effects of reduced water storage and variability of supply from earlier thawing of the snowpack and deglaciation will have significant potential, with glacial melt accounting for 30% of per capita consumption in some lowland regions (Eriksson et al 2009) and increases in temperature causing consequent increases in agricultural water demand (IPCC 2007).

Since only limited land has irrigation facilities, agriculture production is highly dependable on favorable weather conditions, mainly on the monsoon's timing and availability of rain water. A late or erratic monsoon causes losses of crops and resulted into food insecurity, as also being observed across the country. This situation makes the agriculture sector one of the most vulnerable to climate change across Nepal, including the Koshi Hills.

A study on the climate change impacts on agriculture in the Dudhkoshi sub basin lying next to Sankhuwasabha district to the west depicts that, whether the direct result of anthropogenic climate change or a consequence of natural variability, the effects of a much weaker monsoon were evident, particularly in relation to crop production in 2009. As a result of a 30% weaker monsoon, many rice terraces were left unplanted due to a lack of sufficient water, and many rice crops that were planted dried out and left unusable due to the delay in consistent rainfall (GoN 2010). Rice, a water-intensive crop, is the most affected due to the lack of rainfall and irrigation in many hill communities, which ultimately means that it has to be imported during some years, raising its cost beyond what many families can afford and thus creating pervasive problems of food security. Such was the case during the summer and fall of 2009 when paddy and maize harvests were reduced by 11 and 4% respectively due to a much later onset of the summer monsoon (GoN 2010). Further to the west, production of major winter crops such as wheat and barley decreased in 2009 by 14.5 and 17.3% respectively compared to previous years. Crop yields in some districts in mid and far western region, which received less than 50% of average rainfall during the period from November 2008 to February 2009 have dropped by more than half and placed more than two million people at high risk of food insecurity.

2.4.12 Climate Impacts on Livelihood

Climate change is a driving force to stress on mountain ecosystems and livelihoods. There is a clear connection between poverty, food security, and worsening agricultural productivity, which is at least in part a result of climate change. For farmers, changes in water availability and timing are crucial symptom and effect of climate change.

A recent study by ICIMOD (2011) based on case studies of five villages situated at varying altitudes ranging from 700 to 2000m of Terhathum district provides description on local communities' experiences and perception about climate change and its effect on agricultural production system, livelihoods, vulnerability, and coping adaption to change.

Farmers' experience and observation were that monsoon rainfall has begun to show erratic behaviour such as when rains the monsoon rains heavily and uncontrollably and even the earth cannot hold the water, but sometimes it doesn't rain at all. Also observed was that a trend towards delayed onset of the monsoon, noticed over the last 10 years; increasing numbers of dry spells during the monsoon period, lasting up to 15 days and damaging crops. Associated with this was a perception that the dry season was longer and more severe. During the last year's drought, different crops were cultivated in small amounts but the seeds germinated and then dried up. In contrast to 2010, the monsoon rains started early in 2011. The communities' perception was that rainfall patterns become more erratic and that there used to be at least some rainfall in almost 11 months of the year, even if it was only once in a month, with 2 to 5 months of heavier precipitation. This low intensity of rainfall disappeared almost completely, with rain falling only in the monsoon months. Winter precipitation – snowfall at higher altitudes and rain at lower altitudes – was thought to have decreased. The communities claimed that this time snowing was unusually less and snow was lasting for a shorter period. Hailstorms appeared to be less frequent, resulting in less hail damage and noted that the incidence of floods and landslides had decreased with the reduced precipitation. There has been a slight increase in average annual rainfall over the whole period, but a decrease over the last 20 years. Recent years have shown

marked variation with twice as much precipitation in 2005/06 as in 2004/05. Winter rain was highly variable, with almost none falling in the 2 years before the survey.

In Dhankuta, large cardamom is used to cultivate by farmers in the *Kholcha* (shadow and narrow valley). Due to lack of winter rainfall over the last 4 years, the cardamom state got to dry (CBS 2006).

Food security – It is claimed that harvests had decreased drastically due to lack of or untimely rainfall. Some farmers had stopped planting rice and switched to maize, a crop that is less water intensive, or left the land fallow. The World Food Programme (WFP) issued a press release related to this issue in May 2009 claiming that the winter drought of 2008/09 had destroyed crops across Nepal, and wheat and barley production had dropped by 14 and 17% respectively.

Livelihoods - Cash crops such as black cardamom, ginger, and broom grass have proliferated in Terhathum, but the decrease in water availability had reduced harvests and thus income. Livestock and dairy, which provide a crucial supplement to household income, are affected by the reduction in fodder availability and drinking water for animals. Communities close to markets regularly sold milk, but claimed that milk production decreased when livestock could not be fed fresh fodder due to the lack of rain. In Terhathum, it is now possible to grow fruits such as lychee (Litchi chinensis) and mango (*Mangifera indica*) that require warmer temperatures and were previously unsuitable for these altitudes. Farmers in Terhathum have replaced maize with different types of cash crops including ginger, cardamom, and broom grass, which can raise a high income if the weather conditions are appropriate.

2.4.13 Other Social Impacts of Climate Change

Though recent trends of urban bound migration in Nepal are the result of security fears during the insurgency, there is likely to be an increasingly positive correlation between urban migration and the impacts of climate change, with more and more “climate refugees” moving to urban areas. Migration is thus not only an adaptive action for small rural farmers moving to urban areas, but also a constraint to adaptation as exploding urban populations continually struggle to handle such growth. More research needs to be carried out in Nepal, particularly in the most climate impact highland areas to explore the exact causes of migration and to what extent climate change will lead to future increases in urban population growth as farming becomes increasingly risky and untenable due to the effects of climate change.

2.4.14 Climate Change Policy

Nepal submitted its National Adaptation Programme of Action (NAPA) in September 2010 (MoE 2010) and the government approved a national climate change policy in early 2011. Local Adaptation Plans of Action (LAPAs) have been drafted to take into account Nepal’s wide diversity of ecosystems, micro-climates, cultures, and socioeconomic circumstances. The NAPA recognises that water security is a priority and focuses on broad projects that are likely to reduce vulnerability to climate change. If the measures proposed in the NAPA are implemented successfully, they could greatly assist farmers in dealing with some of their concerns across the country including the Koshi Hills.

2.4.15 Land Use change

Major land use categories of the Koshi Hills include arable land, forest, shrub, grassland and others. Arable land refers to the cultivated land both lowland and sloppy terraces. Forest in Nepal refers to all lands having trees with more than 10% crown cover (DFRS 1999). Shrub refers to the degraded forest, where there are no trees standing. “Others” include water bodies, rock, snow and bare land or badland (sand and gravel along the river banks), settlement build-ups, roads, etc.)

Table 12 Change in Land Use Categories, Koshi Hills (1986-2000)

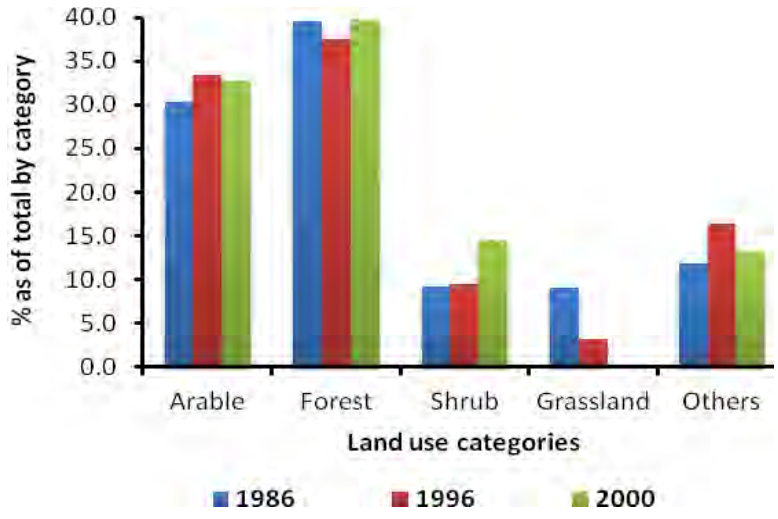
Land use categories	1986		1996		2000		1986-2000	
	Area	%	Area	%	Area	%	Area	%
Arable	199,403	30.4	219,688	33.5	214,126	32.6	14,723	6.9
Forest	259,367	39.5	245,918	37.5	260,311	39.7	944	0.4
Shrub	60,541	9.2	61,946	9.4	95,091	14.5	34,550	36.3

Land use categories	1986		1996		2000		1986-2000	
	Area	%	Area	%	Area	%	Area	%
Grassland	59,254	9.0	20,718	3.2	*	*	*	*
Others	77,550	11.8	107,846	16.4	86,588	13.2	9,037	10.4
Total	656,116	100.0	656,116	100.0	656,116	100.0		

Forest has been and now is a principal natural resource of the Koshi Hills. The land utilisation map of LRMP (Land Resource Mapping Project) based on 1979 aerial photographs, toposheets (1956), and extensive field verification produced in 1986 for general use shows about 40% forest coverage, the largest and also far larger than the national coverage of 29%. By that year Bhojpur had 46% forest coverage, the largest among the Koshi Hills districts (Annex 4). The forest coverage declined slightly in 1996 and again increased in 2000 to about the same level as of 1986 (Figure 14). Sankhuwasabha with over 46% has shown the highest forest coverage, whereas Dhankuta and Terhathum have had the lowest (about 29%) in 2000.

Next important is the arable land in terms of coverage proportion at about one-third of the total land area, which has been maintained throughout all three years: 1986, 1996 and 2000, but the coverage rose in the later years than in 1986 (Figure 14). The proportion of arable land coverage has shown a fluctuated (increased and then decreased) trend for Bhojpur and Dhankuta. While Sankhuwasabha has shown a consistently rising trend of arable coverage proportion, Terhathum on the other has a consistently declining trend (Annex 3).

Figure 14: Change in Land Use Categories, Koshi Hills (1986-2000)



Shrub, a degraded forest is also an important resource. If secondary growth has taken place it then can be a potential forest provided that it is well protected. Its coverage has gradually increased from 1986 to 2000. Figure 14 shows about 15% coverage of shrub in 2000, which is almost twice the national coverage of 8%. By 2000, Terhathum had by far the largest shrub coverage (18.3%), followed by Dhankuta with 16.3% (Annex 4).

Grassland coverage has declined tremendously from over 9% to 3% between 1986 and 1996 and no category of grassland can be obtained in the 2000 classification of land use. It is quite evident from the largest coverage of “Others” category by Sankhuwasabha among the Koshi hill districts that, it has only snow covered mountains, the Himalayas, as well as largest grassland coverage with about 13% in 1986 and declined at 3% in 1996.

An increase in forest coverage between 1996 and 2000 can be attributed to the initiation of forest conservation programmes, such as community forestry and leasehold forestry across the country including the Koshi Hills in the late 1970s and 1980s. While a decrease in the forest coverage

coincided with an increase in arable land, i.e., land being used for cultivation between 1986 and 1996, the latter can also be attributed to the building of Dharan-Dhankuta road in the early 1980s and the introduction of the improved agriculture (off season vegetable farming) system [54] in the area. Importance of the forest coverage in view of nature and biodiversity conservation and economic importance has already been described under Makalu-Barun Conservation Park above. Over the last decade several earth roads have been built penetrating into rural and hilly areas of the Koshi Hills, the impacts of which on agriculture, access to basic services, etc are dealt under the "road and transport sector". Grassland appears to have an immense role to contribute not only to raising livestock, such as sheep and yaks in the high mountains of Sankhuwasabha district (description of livestock under livestock farming section), but also to maintain the watershed. Economic importance of sands and gravels as mined from the river banks of Tamor and other streams seems to have increased, for using them in the construction of buildings, roads, bridges, etc, which seem to have increased; information of the contribution of such mineral resources to revenue generation of the local government organizations such as district, municipality and village development committee is yet to be verified.

2.5 Forestry Sector

This section starts with a brief historical overview of the forestry sector, an important resource for the country. Rural communities have depended heavily on the intersections of forestry, agriculture and livestock in Nepal for their subsistence. In the more recent history the modality of management and conservation of forests patches by rural communities has stood globally as an example of local governance in the utilization and conservation of forests and its resources. The section next goes on to describe the various programmes that have been implemented within the forestry sector and discusses their impact wherever data and documents have been available (Table 13). The UK government has provided technical and financial support to the government of Nepal in the implementation of forestry programmes since the early 1980s.

Table 13: Overview of Donor Assisted Programmes Reviewed

Project/programme	Total investments
The Forest Sector Programme of KHARDEP (K2) (1980-1985)	HMGN: NRs. 350,000 ODA: UK £430,000
Koshi Hills Community Forestry Project of KHDP (K3) (1987-1992)	HMGN NRs. (in lakhs): 178,15 ODA UK £('000): 3,963.95
Nepal-UK Community Forestry Project (NUKCFP) (1993-2001)	UK £6.61 million over five years
Livelihoods and Forestry Programme (LFP) (2001-2011)	£3.82 million (NRs. 489 million) (in seven districts between 2001-2008)

2.5.1 Background

Forests cover approximately 40% of Nepal's area and contribute to about 10% of Nepal's gross domestic product (GDP) (Luintel et al., 2009). This is an extremely important sector in Nepal since over 80% of the population depend on agriculture for their livelihood, which also depend on forest products for fuel wood, fodder and fertilizers, as well as a diverse range of household usages. Additionally, agroforestry and livestock production are closely linked to the availability, management and sustainable use of forests and its products. There is also evidence that poorer rural households depend more on forest products for their livelihoods than others.

Throughout the Nepalese history the state had only two major interests in the forests of the Pahad (the hills): as a land resource that could be converted to agriculture and so brought within the ambit of land taxes, and as a source of fuel for the metallurgical industries obtained by way of labour obligations

[54] The field verification made by the GIS study team in all four districts of Koshi Hills during the months of January-February 2012 found that the commercial vegetable farming has mostly been confined along the sides of motorable roads and that the *Amreso* plant (grass for brooms) and large cardamom found to be cultivated in the shrub lands.

(Mahat et al., 1986:229). The 1829 forest regulations for the Tarai and other similar regulations were all either directly related to military purposes or for revenue collection from timber export and re-settled land (Regmi, 1971 cited in Mahat et al., 1986). Timber was also used by the elites for building palaces and other construction works and the heavy forests provided a source of entertainment for the elite in terms of animal hunting.

The more recent history of forest policies and interventions in Nepal, most often begins from the nationalisation of the forests in 1957 in a bid by the government to control the forests through stringent laws and expansion of the forest bureaucracy. Prior to this the focus of the government was on conversion of forestlands to farmlands, and extraction of timber for export (Gautam et al., 2004; Mahat et al., 1986). A total of 103,968 ha of forest in the Churia range and the Tarai are estimated to have been cleared under settlement programs from the beginning of the 1950s to the mid 1980s (HMGN/ADB/FINIDA, 1988). In was estimated that 40% of the entire Tarai was forested in 1967 (Gaige 1975: 68). Two central Tarai districts, viz Saptari and Siraha had least, with less than 6% of land of forest coverage. Of 9,485 square kilometres of forest land recorded in 1967, 33.5% (3,177km²) lay on the steep, stony and uninhabitable southern slopes of the *Chure*. If the remaining 6,308 were cleared and settled with a density of 194 people per square kilometre (the average density across the whole of the Tarai in 1961), the forest area would provide a habitat for 757,285 people. Gaige (*ibid*) argued that "In the not too distant future, the population density of the terai is likely to reach that of the Indian border districts."

The approach of nationalisation of forests was widely believed to have failed and was cited as one of the principal underlying causes of widespread deforestation and forest degradation across the country during the 1960s through the 1980s (Hobley, 1985; Shrestha, 1996). Gautam et. al (2004) pointed out that the early efforts of the government and donor agencies to rectify the problem through reforestation and afforestation also were largely failed. These experiences led to a growing recognition of the role of local communities in the conservation and management of forests and thus subsequently the initiation of the participatory approaches to forest management became more pertinent in the beginning of the late 1970s.

Prior to the 1980s the Department of Forest (DoF) was principally concerned with the management of the state forests, and also responsible for soil and water conservation. The forestry activities being carried out were largely restricted to policing the state forest to stop further encroachment, control felling and cutting of fodder, and raising revenue from such exploitation (Balbernie et al., 1977, in Dunsmore, 1987).

Subsequent evolutions in forest policies and legislations and support from several bilateral and multilateral donors have helped create a more conducive environment for community-based forest management in Nepal, which met with notable successes particularly in the middle hills of the country (Gautam et al., 2004).[55] The areas of success have been related to reversing the deforestation process, development of local institutions and providing economic benefits to a larger segment of the population (*ibid*).[56] A number of policy documents, acts and regulations in the decades of the 1980s and 1990s helped define the policy and institutional framework in the forestry sector such as the Master Plan for the Forestry Sector Nepal (MPFS), 1988; the Forest Act, 1993; the Forest Regulations, 1995; the Agricultural Perspective Plan (APP), 1995, and many others Annex 5 presents a summarised chronology of key changes in forest policies in Nepal.

[55] Relative to the success of community forestry in the mid hills of Nepal, the approach has had less success in the mountains and the Tarai in terms of both spatial coverage and number of handed over forest areas (JTRCF, 2001). Gautam and colleagues (2004) also point out how policy debates on the suitability of the Tarai forests for community management and sharing of income from forest products, has lead to other management approaches such as collaborative forest management. Refer to Springate-Baginski & Blaikie (2007) for policies and practice issues related to participatory management of forests in the Tarai. Also refer to Baral & Subedi (2000) for problems in community forestry in the Tarai, and HMGN (2000) and Malla (2001) for changes in forest policies in the Tarai.

[56] For articles on evidences of such changes refer to Virgo and Subba 1994; Pardo 1995; Jackson *et al*. 1998; Acharya 2002; Gautam *et al*. 2003.

2.5.2 Current Status of Community Forests in Nepal as at 2011

The 1988 Forestry Master Plan envisioned that control of about 61% of the national forests would be handed over to local communities through the formation of Forest User Groups, and gave the Community and Private Forestry Programme (CPFP) the sectoral highest priority over management of other national forests in the 1990s.[57] As at September 2011, the CFUG database record of the Community Forestry Division (CFD) of the Department of Forest shows that, a total of 17,685 CFUGs have been registered throughout the country and 1,652,654 ha of forest area have been handed over, accounting for over 28% of the country's forested area to 2,177,858 households or over 38% of the total number of households throughout the country (CFD, 2011).[58]

2.5.3 Government of Nepal and Donor Supported Forestry Programmes in Nepal

Since the late 1970s, two main groups of donors have been supporting forestry programmes in the country. Donors like Swiss Development Corporation (SDC), Danish International Development Association (DANIDA), Australian Aid (AusAid), German GTZ and DFID have been supporting community forestry activities whereas others such as UNDP, WWF, IUCN and WB (through the Global Environment Facility) have been supporting it through biodiversity programmes. While some donors chose to focus their efforts on specific target districts, the World Bank and DANIDA supported the DoF in 38 hill districts until 1999 and after which DANIDA took up support in those districts. A list of forestry programmes supported by different donors across the country is presented in Annex 6.

2.5.4 Land and Forest Management in the Koshi Hills before the 1970s

Policies related to the use and management of forests in the eastern hills in Nepal date back to government policies during the period of the unification of the country in late 18th century. A system of the *Kipat* was institutionalized - described as a customary system of communal land tenure - where only the *Kirantis* (people of Rai and Limbu ethnicity) were permitted to own land and these rights were recognized on forest land as well. This arrangement ensured that their rights to their traditional lands were recognized as inalienable. Regmi (1978) points out that, for the Gorkha King Prithvi Narayan Shah, it was "... expedient to recognize the local chiefs and guarantee the security of their traditional rights and privileges", in a region of the country that had not been conquered but was annexed in Nepal by negotiation between the local rulers and the Gorkha king (ibid). The management of non-private forests in the eastern hills as well as settlement of vast tracts of uncultivated lands were controlled by individual *Jimmawals* (revenue collectors).[59]

The Land Re-organization Act of 1962 abolished communal ownership of *Kipat* land which ended up converting ethnic communities into collections of marginal smallholders. The Land Reform Act in 1964 eventually brought the *Kipat* lands under government control.

Labour shortages in the Koshi Hills areas entailed in-migration into the area at the invitation of the ethnic Rai and Limbu and also due to the encouragement of the government in Kathmandu to slowly bring the area under the preview of central authority (Regmi, 1978).[60] The Rai and Limbu population

---

[57] Pokharel and Tumbahamphe report that the CPFP covered nearly half of the forestry sector budget in the late 1990s (1999: 21).

[58] The National Forest Inventory (NFI) carried out in early nineties in Nepal recorded that forest and shrub together cover about 5.83 million ha, which is 39.6% of the total land area of the country (FAO, 2009). The percentage of CFUG coverage as of 2011 is calculated using this figure of total forest and shrub coverage.

[59] In the *Kipat* land tenure system, among the tribal communities in the hills of Nepal, "land was considered to belong not to the state or the king, but the community owned the land and extended to each tenant his right to till the land, but no one had individual title to land" (Mahat et al., 1986). The *Jimmawals* had the authority to arbitrate law and order and also to extract around five days' free labour a year from each household in their *raiti* or area.

[60] Regmi (1979) writes, "In A.D. 1934, Colonel Shiva Pratap Shumshere Thapa, and Bada Hakim, arranged for the allotment of home sites in Dharan. The price of each allotment was one Indian rupee. Gradually, Marwari and other traders from India, as well as Nepalis from Kathmandu Valley, Palpa, Pokhara, and different parts of

gradually handed over their *Kipat* lands to the new settlers at nominal cost and these soon got registered as private land by law at the time of the cadastral surveys in the area in the 1970s. The cadastral surveys also finally severed the system of land ownership by the *Jimmawals* and their tax collection duties.[61]

Thus in the Koshi Hills the local Jimmawals had protected and preserved the forests with a management system that was quite effective, unlike in other parts of the country where indigenous 'user groups' were active. Mahat and colleagues (1986) and Loughhead and colleagues (1994) pointed out that in the Koshi Hills (KH) areas, as in other parts of the country, it was a crisis over property rights prompted by the cadastral surveys in the area, coupled with a lack of effective measures by the Forest Department that contributed to the forest degradation, rather than the absence of an indigenous management system.[62]

A more formal and government controlled system of forest management was initiated with the FAO/IBRD financed forestry project in 26 hill districts in 1979, with the objectives to develop community forestry in the Hills and to establish training facilities in the country to satisfy needs for qualified forestry and soil and water conservation personnel (WB, 1980). The first forest sector programme, supported by the UK government, designed as part of a larger integrated development programme – the Koshi Hills Agriculture and Rural Development Programme (KHARDEP) - was designed along similar lines for the Koshi Hills. The impact of the forestry component of this programme is discussed further later in this section, while the impact in the agriculture sector is discussed elsewhere in this report.

The chapter next focuses on reviewing the various forestry programmes that were implemented in the KHs area that were implemented to arrest the degradation of forests and to institute structures and practices to conserve as well as manage forest areas.

2.5.5 Koshi Hills Area Rural Development Programme (KHARDEP - K2): The Community Forestry Component (1980-1985)

The forestry component of KHARDEP was the first instance of forest conservation programme to be supported by an external aid agency that was implemented in the KHs. KHARDEP was modelled as an Integrated Rural Development Programme (IRDP) focusing on the eastern part of the country following the rural development approach of the 1970s and the 1980s as well as in line with the GoN's strategy for rural development outlined in the Fifth and Sixth national plans.

Given that forest degradation was considered to have been extensive after the nationalisation in 1957, the key objective of the forestry component of KHARDEP was to assist Village Panchayats in taking over government land for forestry, either by planting up waste land, which were then categorised as Panchayat Forests (PF), or by managing existing woodlands, categorised as Panchayat Protected Forests (PPF).

2.5.5.1 Key Interventions, Outputs and Impact of KHARDEP Phase2

A key focus of the project was on afforestation through the establishment of nurseries to support forest plantation work. The KH area had only two nurseries at the start of the programme in 1979. In an overall review of KHARDEP, Dunsmore (1987) reported that though 42 different nurseries were eventually established in the KH area by 1985, the quality of nursery work was variable to the extent that the average production of seedlings suitable for plantation, in 1985, was probably only 50-70% of the total. However Howell's (1984) evaluation of KHARDEP noted that the major problem was "more social than technical". Identification of suitable species of fodder, fuel, and timber were another important output during this phase and these were then distributed to local farmers and planted during

---

the eastern hill region settled in Dharan. The population of Dharan increased considerably as a result of the influx of Nepali returnees from Assam and Burma after the second world war."

[61] In the 1990s, further surveys in the east and in Sankhuwasabha affected common property resources. Refer to Caplan (1970) for land and social change in East Nepal.

[62] Refer to Loughhead and colleagues (1994: 8-10) for a synopsis of the historical context of resource management in the Koshi Hills.

the project period. The free issuance of seedlings to farmers for private plantation and distribution was also linked with the work of the Livestock Department in the KH districts since forests were the key source for fodder.

Over the five year period, a total of approximately 712 ha of plantation and enrichment work were conducted in various types of forests. Of the 572 ha of Panchayat Forests planted, the survival rate was estimated to be around only 50%. While most of the Panchayat Forests in Terhathum required replanting, successful examples in Sankhuwasabha were attributed to "the social cohesion of the communities involved and to the efforts of a Ranger who had previously served with T.B. Mahat, the 'father' of community forestry in Nepal" (Dunsmore, 1987:34).

The KHARDEP community forestry programme was designed as a technical operation. Yet the programme suffered from the lack of support of appropriate levels of trained government staff and delayed inputs of the expatriate forest adviser, as well as problems related to the timely provision of funds. During this phase there was little or no involvement of the local community in the forestry programme which was considered the major reason for the slow progress of the programme. Dunsmore (1987) concluded that an appropriate mix of committed involvement of the communities and people involved, and timely, technical support from appropriately trained staff of the Forest Department would be necessary for a successful community forestry programme. The critical need for the understanding and acceptance of the relevance and effectiveness of the programme by the communities, in terms of benefits to themselves, was also identified as a necessary element for a successful programme in future. This experience and recognition of the need for more community involvement in the conservation and management paved the way for the next phase of UK government support in community forestry in the KHs.

2.5.6 Koshi Hills Community Forestry Project (KHCFP): Forestry Component of K3 (1987-1992)

2.5.6.1 The National Context

The transition from KHARDEP to the Koshi Hills Community Forestry Project (KHCFP) took almost two years due to a prolonged planning phase. The design and implementation of this phase of the forestry programme was influenced by the experiences of the integrated nature of the KHARDEP as well as the evaluations of the limited effectiveness of integrated rural development projects in the hills of Nepal. The next phase of forestry interventions demonstrated the evolving perspective of 'conservation' to 'sustainable management' of forest resources with the involvement of local communities in order to meet their "basic needs", the key agenda of the government of Nepal as laid out in the Seventh Five Year Plan for the period 1985-1990.

2.5.6.2 Project Objectives

The wider project objective was, "*To help the people of the Koshi Hills to meet their basic needs for tree products in a sustainable manner*" (Gayfer, 1994). Though the initial focus of this phase also continued to be on technical support (such as management, training, silviculture and agroforestry), this initial focus changed to a growing attention on *institutional development* of the District Forest Offices (DFO) particularly in relation to the *process of formation of community forestry user groups (CFUGs)*. There was no historical precedent for local group management of forest resources in the KH area as mentioned earlier; the prevalent forms of control had been feudal or private. Thus this phase instigated the process and institution of community management of forests in the Koshi Hills areas.

2.5.6.3 Key Interventions, Outputs and Impact of KHCFP

(a) Strengthening Capacity of the DFO

KHCFP's objectives related to strengthening the capacity of the DFO staff, and establishing effective forest management through community forest user groups (CFUGs), were highly relevant in supporting the change in the role of the DoF from one being directly responsible for forestry development, to one of supporting and facilitating local communities in community forest (CF) management. This change entailed a re-orientation (rather than re-training) of the DFO staff attitudes and developing their social extension skills. Yet the project did not analyse structural features of the capacity and procedures of the DFO (staffing levels, authority for decisions) and also did not conduct any assessments of the capacity of forestry staff to respond to the needs and demands of the community and thus was not able to address key institutional issues (Soussan et al., 1991). Also, constraints within the DFO were not adequately recognised or addressed by the project either. CF

activities were added on to an ongoing portfolio of work at the DFO which had limited numbers of staff. This had repercussions on timely outputs since more time was required for the social extension component of CF; this also led to extension work being concentrated around the district headquarters.

(b) Effective forest management through CFUGs

The final evaluation of KHCFP pointed out that the key success of this phase was the creation of a social context for the empowerment of local people and for "successful and effective community forests in the KH" (Soussan, 1991). The process of CFUG formation varied with differing time invested for extension purposes depending on level of KHCFP staff support to the DFO. Yet field evaluation results found no direct relationship between length/quality of extension to the subsequent quality of the CFUG. However the final evaluation suggested that the field extension work of this phase was the most cost effective component and the outputs provided growing recognition of CFUGs as viable and participatory institutions for forest management. However, the project had not thought through the implications of success particularly in terms of rapid expansion due to successful models, increased technical support required, and post formation support required by the CFUGs (ibid).

The importance of geographic locations for the interventions was reflected in the comparative success of the programme in Dhankuta district vis-à-vis the other three districts. The KHCF Project Office was located next to the DFO in Dhankuta and thereby received more support. Programme intervention locations were prioritised by KHCFP to be near the DFO, and/or the road for accessibility rather than the characteristics of the localities, as well as to focus on demonstration ('model') effects. Thus the final evaluation notes that, "the effectiveness of the user group formation process is consequently extremely patchy through the Koshi Hills" (Soussan, 1991: 55). The project efforts were confined to two out of the four KH districts and success was confined to very small, more accessible areas.

During this period there was also a growing shift from DFO centred seedling production to that being managed by CFUGs. Additional objectives were related to supporting/ encouraging individual private planting, as well as the transfer of seedling production to HMG/N was planned to continue the restoration of degraded forest areas. Finally contribution to the national forestry policy processes was also envisioned. As the final evaluation notes, though the objectives reflected a better balance between institutional and technical support, they were too ambitious and thus a balanced implementation did not occur (Soussan et al., 1991:12).

(c) Evolving Conceptual Understanding

The project experiences also reflected the nascent and evolving nature of the concept and practices of community forestry, overall, in the country. This period reflected a time for experimentation and learning in CF throughout the country. In the KH, the bureaucratization of the "formal institution" (i.e. the user groups) gained precedence due to the limited understanding and adaptation of the regulations of the government legislation. The forest management operation plans were more administrative than management prescriptions, and most management regimes imposed were highly protection oriented regardless of the condition of the forests, reflecting the earlier policies of control over and protection of the forest areas.

Also limited understanding and experiences in the conceptual shifts in the field of community forestry was reflected in a misguided ideology of "local knowledge". The final evaluation pointed out that even when local people raised specific problems and asked for help, KHCFP staff did not extend assistance since the said "they knew the answers themselves" (Soussan et al., 1991). The evaluation team documented their strong disagreement with *"...the assertions repeatedly made by members of the KHCFP team that the content of the plan does not matter as long as people feel that it is 'theirs' ...",* thus *"undermining of the very process it is intended to engender: effective resource management through community participation"* (Soussan, 1991: 48).

(d) Limited Documentation and Learning

Participation in national debate on forest policies and documentation of the programme efforts by the KHCFP were "extremely ineffective". The evaluation team was critical of the lack of documentation and internal learning of the project staff from their own experiences, and pointed out that *"the notion of 'conceptual development' apparently adopted by the project was to proselytise to others rather than learn themselves"* (Soussan, 1991:79). KHCFP staff actively participated in national policy debates through workshops and meetings, but unlike the Nepal-Australia Forestry Project being implemented in two central hill districts (Sindhupalchok and Kabhrepalanchok) around the same period, failed to document their experiences and learning.

(e) Participation of Women and Poor Households

Community forestry at this point in the mid 1980s was not poverty focused but rather there was recognition of different categories of users (rich and poor) having diverse interests in forest management and conservation. Therefore guidelines had been prepared to focus on involving all types of users. Yet user group formation without KHCDP support saw a degradation of the process in the form of rapid and less participatory approaches leading to elite domination within the groups formed, and only partial inclusion of women and minority groups. In the KH the disadvantaged groups of people were the uneducated and poor low caste, Newar, Rai and Tamang, whereas the advantaged groups were the Rai, Limbu and Brahmins (Gayfer, 1994:42). Many studies had shown that the poor were often disadvantaged by CF as an approach due to restricted access to what was once a common resource. Yet one study observed that some poor household members felt pride in being in CFUGs as it accorded them opportunities to membership within the same institution as other more rich households in the community (Loughhead, 1993).

Gayfer (1994) reported that in the KH women's participation in CF reflected their positions in the society – Limbu women participated and spoke more; Brahmin/Chhetri and low caste women rarely attended or spoke out in the meetings. Age hierarchy also influenced women's participation; older women were more likely to speak than younger ones. There was limited clarity or understanding about women's role in CF and also no separate women's programmes had been planned to avoid marginalization of their role (Gayfer, 1994:45). It is only towards the end of the project period in 1992 that gender planning workshops were conducted. High levels of extension support and efforts to engender the active participation of women and disadvantaged were met with some levels of success as seen with the experiences of the Sildunga vs. Mangdum CFUGs both in Dhankuta. Yet prolonged extension processes often resulted in alienation of the very poor and disadvantaged groups of people due to lost opportunity costs in terms of wage labour.

(f) Costs and Benefits to Users

The 1991 final evaluation noted that there was an a priori assumption that CF is a "good thing" which would be nothing but beneficial for the people. Though CF brought real and valued benefits to 'the people', there were also costs involved for 'different members' of the CFUGs as well as non-members (Soussan et al., 1991: 83). The time commitment demanded from users for the formation process and for user group activities was a direct and material cost in an economy where the most important economic asset of many households was their labour. This burden was especially high for groups such as women and the poor; committee members spent time on monthly meetings which were a barrier for women and poor households, and the labour contribution expected (i.e. taking turns in watching the forests) was seriously difficult for single mothers. For the poor households, the various level of charges due to the commodification of forest goods (the need to pay for fodder, firewood), which were earlier free, also became a real economic burden. Poor households which had greater dependence on forest resources suffered the most from reduced access to forest products. This often led to increased pressure on government forests due to the CF being closed off and protected.

The benefits from CFs varied a lot among different households. Based on "snapshots" of forests and inputs of household members, the evaluation team concluded that there was reduced degradation, signs of regeneration, reduction in soil erosion and siltation, and improved water availability, and that there would be improved availability of forest products in the future. Importantly for some of the poor and marginalized groups, there was increased and secure access due to changes in de facto private control of forests by the local elites. Thus there was an increased "sense of ownership" by the community and the potential for improved social cohesion, which was helpful for poor and disadvantaged households to voice their concerns (Soussan et al., 1991).

2.5.7 Nepal-Australia Forestry Project and the Rapti Development Project[63]

Around the same period other agencies were also working in CF in Nepal. The Nepal-Australia Forestry Project (NAFP), being implemented in Sindhupalchowk and Kabhre Palanchowk districts, was "...the most advanced attempt at user group formation in Nepal" (Bartlett and Nurse, 1991). By 1991 the project had formed 70 groups and 100 more were ongoing. The project used an approach

[63] This section is taken from final evaluation of the project conducted by Soussan and colleagues (1991).

that was similar to the KHCFP where the emphasis was on developing the social context, rather than technical prescriptions, for community management. But, as noted by Soussan and colleagues (1991) they had a more flexible approach with more balance between socially-oriented approach and direct assistance to the user groups in the formation of the management regime, as well as more post formation support. Unlike the ODA funded project in the KHs, their approach was quicker, their administrative structure was less rigid, and they took a more interventionist approach, being more responsive to the needs and priorities of the local people. Finally, unlike the KHCFP, the ANFP had invested in good documentation and publications, displaying a conscious process of evolution of the extension approach based on experience gained during the implementation process.

In the western part of the country, USAID was supporting the Rapti Development Project which used a diametrically different approach. Their goal was to maximise the number of forests handed over, e.g. 100 handed over a year with limited pre-formation meetings and rapid informal hand over. Their extension model was one of informally empowering the communities to manage defined forest areas and then provide post formation support for formulating effective management regimes. They sported a highly flexible approach, without any claims to perfect community management, leaving doubts regarding how effectively extension support could be provided to a large number of groups.

Thus the early 1980s was a period in which experimentation on different approaches and extension models in CF was being tested throughout Nepal with varying degrees of success. Processes of institution building were going on within local communities in the form of user groups and within the government bureaucracy (e.g. the DFO). Issues of class, gender, and caste/ethnic equity in participation and benefits sharing had not yet gained primary focus. Yet the political changes after 1990 – with the restoration of democracy in the country – "made people more willing to demand their rights, even in remote communities and amongst traditionally marginal groups" (Soussan, 1991: 52). The combination of the creation of an environment for community based or civil society activities as well as availability of resources generated through forest management initiated the process of diversification of activities by CFUGs and as a vehicle for "piggy back riding" by other agencies for community development activities.

2.5.8 Nepal-UK Community Forestry Programme (NUKCFP) (1993-2001)

2.5.8.1 The National Context

The decade of the 1990s marked major changes in the political processes in the country which had profound repercussions on the design, management and implementation of development projects and programmes. Poverty reduction was highlighted as the main objective in the Eighth Plan (1992-1997) and the World Bank influenced Structural Adjustment Programme Reforms were also introduced. The post 1990 period of the restoration of democracy in the country gave rise to changes in rural development strategies, with a complete reorientation of the basic components of rural development efforts. The Local Governance/Decentralization Bill re-focused attention on decentralization at the village and district levels. The opening up of the non-governmental organizations and civil society organizations lead to strengthening of community-led development approaches where emphasis was on strengthening local institutions (such as user groups, NGOs, private enterprises), local capital formation and self-reliance, environment management, improvement in rural infrastructure and enhancement of the role of women.

Around the early 1990s, the overall British Government support to Nepal was also refined in order to (i) assist in poverty alleviation by support for economic growth and by activities that contribute directly to poverty reduction and address the particular problems of women; (ii) support strengthening Nepal's new democratic system and promoting public sector efficiency; and (iii) sustainable development of Nepal natural resources (KHDP, 1992:4). This indicated continuing support for the forestry sector in Nepal[64].Thus the next phase of British support to the forestry sector in the Koshi Hills began in 1993 as the Nepal-UK Community Forestry Project (NUKCFP), and expanded its coverage to three

[64] The proposal for the fourth phase also mentions organizing UK support to Nepal around three other areas in addition to the forestry sector, i.e. District Development Institutional Support Project, Local Institution Support Project, and Agriculture Project (comprising agriculture, horticulture and livestock) (KHDP, 1992).

additional districts in the Dhaulagiri zone in the west in addition to building upon the foundational work in the four Koshi Hills districts in the East.[65]

As for changes in the forest coverage, data from 1991 and 2001 show that forest coverage in the four KH districts had declined over the years (Table 14).

Table 14: Forest Coverage in the Koshi Hills Districts, 1991 and 2001 (LRMP, 1986 and JFTA, 2001)

Koshi Hills district	1991 (a)		2001 (b)	
	Area (km2)	Percentage	Area (km2)	Percentage
Sankhuwasabha	1,806	51.9	1,599	45.9
Bhojpur	779	51.7	614	40.8
Dhankuta	364	40.8	263	29.5
Tehrathum	246	36.3	200	29.5

2.5.8.2 Project Objectives, Purpose and Outputs

The key goal of the NUKCFP was "Improved living condition of people in seven districts" and the purpose was "Increased effectiveness of forest user groups in managing community forestry areas in an equitable and sustainable basis".[66] Four specific outputs were envisioned to enable the fulfilment of the project goal, namely (i) capability of the DoFs to support community forestry strengthened, (ii) forest user groups established and supported by District Forest Offices and other agencies, (iii) partnership established with other organizations with activities which may support community forestry, and finally (iv) realistic project management system designed, established, operating and periodically reviewed.

This phase of the forestry project was designed with a focus on "the process approach", i.e. an approach where there is "an emphasis on the movement towards a goal as well as on the goal itself" (NUKCFP, 2000). The development of processes to support and build the capacity of forest user groups as a viable institution for forest resources conservation and management through "a learning cycle of action, reflection, critical thinking and planning by all staff from the central level to the DFOs" was the key focus of the project (ibid).

During the lifetime of the project there was a relative shift in emphasis towards building the capacity of the DoF, and other governmental and non-governmental organizations, so that they could better support institutional strengthening of CFUGs. NUKCFP also made necessary adaptations in reflection of the global conceptual shifts towards "gender and development" as an approach for increasing equitable participation and benefit sharing by women and other marginalized groups. Thus in 1996 onwards "gender equity and empowerment" with the inclusion of "disadvantaged, women and poor" in decision-making processes within CFUGs was added as a purpose level indicator (DFID 1998:4).

2.5.8.3 Key Interventions, Outputs and Impact of NUKCFP

Given the emphasis on process and learning, during the period of the project, NUKCFP had a wealth of documentation but much of it had been done "in a somewhat *ad hoc* manner rather than within a clearly defined strategic framework" (Pokharel & Tumbahamphe, 1999:1). Also much of the information was not disaggregated to permit analysis of poorer groups and the impact that interventions may have on improving their livelihoods (LFP, 2003).[67] Pokharel and Tumbahamphe's

[65] DANIDA and the World Bank had been providing direct funding to CFUGs in Dhaulagiri during the time when NUKCFP was being planned/ designed.

[66] Apart from the four Koshi Hills districts NUKCFP also covered three other districts in the Dhaulagiri region namely, Baglung, Parbat and Myagdi.

[67] Many of the studies were concerned with the status of CF processes rather than attempting to link *change to specific project interventions.* Due to the project focus on raising policy issues identified as a result of its findings, Locke and colleagues (1996) mention that the "*emphasis of socio-economic follow-up studies has been on knowing what is going on 'out there' rather than on project's success or failure"* (1996:6).

1999 extensive review and synthesis of more than 160 NUKCFP reports and publications focused on the macro level (policy feedback processes) and micro level actions (empowerment of individual and groups, capacity growth of local institutions, improvement in well being of users) of the project. The following sub-sections briefly describe the various outputs and impact under a number of themes.

(a) DFO Capacity Building

To strengthen DFO and FD capacity to support community forestry, the project focused on changing attitudes and behaviour of staff to address the increasingly diverse needs of the users (NUKCFP, 2000:10). DFO staff were also trained in induction, yield regulation, conflict management, PRA, communication skills photo mapping, non-timber forest product (NTFP) management, gender and equity. Trainings were more field focussed and on-the-job. Forest Guards were also trained as they were recognised as having a pivotal role as a primary interface between the community and the DFO. Two female rangers were placed in each of the seven districts to help increase women's participation in CFUGs.

(b) CFUG Formation and Institutional Development

The project had mixed success in supporting the DFO and other agencies in establishing and providing support to forest user groups. Prior to NUKCFP, 260 CFUGs had been handed over in the four KH districts in 1993. By 2000, at total of 1,881 CFUGs had been formed in the seven project districts, of which 914 had been formed in the KH districts, with over 87,000 ha of forests being handed over (refer to Table 15). The initial focus on quality was replaced by an emphasis on quantity, with some negative repercussions. Springate-Baginski and others (1999) noted that many of the CFUGs were underperforming due to their hasty formation and lack of post-formation support. The hasty formation procedures overshadowed particular needs of different categories of users and adequate attention was not given to increasing awareness and understanding of the concepts and procedure, conflict resolution and post formation support. A 1999 DFO assessment showed that only 16% of all CFUGs were classified as 'active'.[68]

A study by Bauman et al. (1998) pointed out that community forests appeared to be self-sustaining (as cited in Wysocki, 1998:3). Wysocki further pointed out that FUG demand far exceeded rate of formation and argued that "FUG form, quality, and demand for formation appear unaffected by any project inputs, as did the procedures for working adopted by the DFOs". Additional he also states that "there is no evidence that FUGs operate differently within and outside the project and that they are more or less effective managers of the forest resource, or organize themselves any better. Forest management skills appear similar inside and outside the project" (ibid).

Table 15: Forest Area under Community Forestry in KH Districts of NUKCFP, 2000 (Soussan, 2000)

Districts	Total forest area	Area handed over to FUGs (ha)	% of Forest area handed over	Total households involved
Bhojpur	69,611	30,795	44	33,316
Dhankuta	36,383	21,811	60	31,210
Sankhuwasabha*	2,022,245	23,431	1	19,766
Terhathum	23,987	11,621	49	19,740
Total	2,152,226	87,658 ha (to 914 CFUGs)		104,032

*Note: *About 25% of Sankhuwasabha falls under the Makalu-Barun Conservation Area.*

[68] The study defined "active CFUGs" as those managing their forests in a sustainable and equitable way with good levels of forest, social and institution development.

(c) Expanding Partnerships

During this period collaboration with other agencies such as VDCs, DDCs, FECOFUN and other government and non-governmental service providers were also initiated. This supported the FUG formation process, raised awareness about CF and created an important context for additional mechanisms to address the growing demand for FUG formation and post formation support.

(d) Changes in Forest Resources

Branney (1994) and Neupane and Yadav (1995) provide insight on baseline information of the physical resources in the four Koshi Hills districts in 288 sample sites. Branney and Yadav's (1998) follow up study indicated that forest degradation had been reversed and the forests were widely regenerating. The total number of stems per hectare located in the community forests had increased by 51% and that the basal areas of some of the community forests had increased as much as 29% (ibid). Additionally compared to the national forest plots, there was less grazing in the CF plots, and there was an increase in numbers of species. The general user perception was that access to firewood and poles had increased, whereas access to timber and grass and fodder had decreased or was more variable. An emerging concern was that despite the improving conditions of the CFs, member households were getting less forest products due to the under utilization of forests compared to their estimated productive capacity (Branney and Yadav, 1998: 4).

(e) Changes in Socio-Economic Conditions of Households

Springate-Baginski and colleagues (1991) stated that "the forestry aspect of Community Forestry is to date an unambiguous success" and this was partly due to the conservation efforts of the local population who experienced a sense of ownership with the transfer of control of the forest (1999:1). But "the 'community' aspect of community forestry is so far more ambiguous in outcome. In particular, the livelihood benefits from community forestry to households in the villages studied are mixed, and vary widely within and between villages" (ibid, 1991:1).

Many studies had revealed that poorer households were benefitting less from CF than wealthier households and that the burden of the closure and control of the once free forests and it resources were borne disproportionately by poorer groups in most communities.[69] These groups depended on the forest to a greater extent than other households and treated the forests as a safety net. Also "(b)ecause CF is mainly orientated to the production of intermediate products that are inputs in the farming system, and towards subsistence rather than cash generation, those households with more livestock, farmland and people will naturally benefit more" (Richards et al., 1999: vii). NUKCFP studies also documented how poorer user group members felt they had not been properly consulted or helped during the changes in the management policy, and that there was emerging evidence that the poorest were beginning to withdraw from user groups (Graner, 1997).

The continuing focus on the 'forestry' aspect of CF was evident in that no data to address improvement in livelihood of FUG members had been collected by the various baseline studies conducted in the Koshi Hills since 1994. Yet follow-up studies from the 1995 socio-economic baseline study based on 24 case studies revealed a growing demand for income generating activities (IGA) by the users (Rasaily; 1996; Bosma, 1996; Shrestha & Shrestha, 1997; and Shrestha, 1998).[70] Wysocki's review documented that nine of the original 24 (35%) CFUGs had adopted income generating (IG) activities and that some CFUGs who had revised their operational plans had referenced existing or intended IG activities (1998:6). The kinds of income generating activities that were beginning to be implemented around this time were forestry and agro-forestry based activities and cottage industries such as bamboo plantation, cardamom plantation, turmeric cultivation, *Amliso* (broom grass)

[69] Adhikari and colleagues (2003) found that land and livestock holdings, caste, education of family members and household economic status exert a strong influence on appropriating benefits from the CF, disproportionately affecting the poorest households.

[70] The baseline focused on the historical context, the existing practice of forest resource protection and management, equity and sustainability in forest resource use, awareness of group's regulations, level of participation in decision making, group's major problems and attempts to resolve them and user group strength to solve other development problems (Panday, 1995). But Wysocki (1998) points out that this study did not report any income generating activities.

plantation, resin collection and promotion of NTFPs within the community forest. Vegetable gardening, fruit-orchards, livestock development, sewing and knitting and collection of NTFP from the community forest were also initiated in a number of CFUGs.

Up until this point in time, the potential for FUGs to positively support local livelihoods of the forest users, particularly of the poorer households had not been taken full advantage by NUKCFP. Though in some areas livelihood benefiting activities and community development activities had been initiated, these opportunities had not fully been taken up in general (Soussan, 2001). Wysocki also points out that though IG activities were studied as part of the KHCFP (Drona, 1994) little follow-up activity had been conducted (1998:6) and concluded that there was not so systematic attempt to help the FUGs establish IGA activities to benefit the poorest members (ibid).

(f) Gender and Social Equity: Participation of Women and Disadvantaged Groups

The socio-economic baseline study (Pandey, 1995) pointed out that the reality of the times were that women and low caste groups were not included in decision making processes. Different case studies showed that though women were involved on a day to day basis in collecting and using forest resources, involved in harvesting and seedling production, they were less involved in the management and decision making processes of the CFUGs, and they had an increased burden on them due to the restrictions imposed on the forests (Pandey, 1995; Chemjong, 1996; Shrestha & Shrestha, 1997). Though there was growing awareness and recognition of the role of women and the growing need for projects and programmes to address issues of gender and social equity, 'follow up' studies in 1998 comparing women's representation in the CFUG with that in 1996 did not show much evidence of success. One of the study concluded that "there (is) a very big gap in users understanding of gender and equity in the CF process" and that "the team did not observe any positive trend of women's involvement" (Shrestha, 1998:17). Shrestha & Shrestha (1997:17) also reported that the "women and the poor were complaining that they are being used as labourers".

The limited participation of women in the general assembles were not specific to the KH districts only but was also documented in Myagdi (Paudyal, 1997) and Parbat (Devkota et al., 1993; Gurung, 1997) too. Locke et al. (1999) cautioned that while "attendance at an assembly meeting during the process of CFUG formation provides some indication of the breadth of the formation process, it cannot indicate the depth of participation by different attendees".

In some areas in the KHs the poor and low caste households could not afford the costs involved in participating in the community forestry programme due to the lost opportunity costs of having to attend meetings and contribute their labour as members of the CFUG (Loughead et al., 1994). "In most cases, it was found that the CFUG committees, and especially the office holders, tended to come from socially and economically dominant sections of the community. This was especially the case when the level of active involvement of committee members in decision making was considered, with such decisions typically taken almost exclusively by the chairman and a few other office holders. In some cases, it was found that the CFUG committee was becoming a powerful force in the wider arenas of local-level decision-making, developing far beyond decisions connected with the functioning of the CFUG or management of the forest", (Soussan et al. 1999:26).

In the follow-up of six CFUGs, Rasaily (1996) reported consistently lower involvement by poor households (1996:8). She found that "the required needs of the poor are decided by committee members, and in the majority of groups the rich people are in the committee" and that "even where there are a few poor representatives in committees they are afraid to express their opinions openly in front of other members since many of the richer committee members were dominant figures in their village in the past. Poorer members therefore express their feelings after such meetings with their colleagues" (ibid). Similarly, Shrestha and Shrestha (1997:17) found that disadvantaged users played a negligible role in decision-making and that, like women, "their opinion was not normally asked for, even if they were a committee member". In another study Shrestha reports that "during discussions with poor, deprived users and women, it was noticed that the voices of these users were not listened to and decisions have not been made in their interest or according to their need. Therefore, they did not attend meetings, not wanted to lose their wages on that very day. Due to their poverty they don't have spare time to listen to fruitless speeches and suggestions of committee members who are local elites and economically better off" (Shrestha, 1998:24).

(g) Creation of new social relations

Loughhead et al. (1994: 11) point out that "the concept of an organization embracing all interested households, irrespective of caste, wealth and status, and managing a resource jointly, (is) a new

concept with very few precedents to build upon". Management of forests through "user groups" heralded a new approach to social relations that challenged local and historical power relationships, not just in the KH region but throughout the country as well. "Despite the surge in 'user groups' in other sectoral activities such as agriculture and drinking water, none of those were related to ownership and management of a state resource" (ibid). Yet the study concludes that the extension approach adopted by NUKCFP was appropriate and effective in creating a secure institutional base for the forest user groups, ensuring that "the group becomes an integral part of rural life, irrespective of locality, ethnic mix, and local power relationships" (p. 24). Chemjong (1996) documented increasing feelings of ownership by the local communities of the forest areas they were protecting and managing, yet the fact that the new social relations were based on existing social structures and relationships which meant that the participation of rural poor and women was very limited and a planned intervention strategy to equip them with the "tools to express their views and to secure their more active involvement" was needed (Loughhead et al., 1994: 25).

During this period of forestry interventions in the KHs, as in other parts of the country, the viability of local institutions capacity in conservation and management of forests found to be established. As benefits and revenue started flowing from the forests, issues related to the effective utilisation of those resources in reducing poverty also became a growing focus which began to be addressed by the subsequent phase of the UK support for forestry programmes in the KHs and beyond.

2.5.9 Livelihoods and Forestry Programme (LFP) (2001-2011)

2.5.9.1 The National Context

The period covered by the next phase of UK government support in the forestry sector covered almost three different planning periods of the government of Nepal; the Ninth Plan (1997–2002), Tenth Plan (2002-2007) and the Three Year Interim Plan (2007-2010). The period of the Ninth Plan saw the beginning of poverty reduction being established as the main objective of national development with the establishment of long-term goals for improving development indicators in all sectors, based on the potential of each for reducing poverty. The Poverty Reduction Strategic Plan of the Tenth Plan was based on four pillars: (i) broad based high and sustainable growth, (ii) social sector development with emphasis on human development, (iii) targeted programs with emphasis on social inclusion, and (iv) improved governance. Thus programmes in different sectors focused on issues of pro-poor growth, poverty reduction and an emphasis on social inclusion from a gender, caste and ethnic perspective.

The latter part of the 1990s had seen the initiation of the Maoist insurrection with the Communist Party of Nepal (Maoist) making a formal declaration of "People's War" on February 13, 1996, with the aim to unseat the current constitutional monarchy and install a democratic republic. Though the earlier stages of the insurrection were contained primarily in several mid-western districts, from mid-2000 however, the Maoists progressively expanded their campaign nationwide, spreading across rural areas of most of the country. This period experienced disruptions in basic services, communications and development interventions across much of the country. After 2001, the conflict associated with the Maoists insurgency escalated with increased violence, destruction of lives and property, tremendous impediments to basic service delivery, communications and an overall negative impact on development efforts throughout the country, including the KH area. Finally on November 21, 2006 the government and the Maoists signed a comprehensive peace agreement declaring an end to the conflict.

Drawing on experiences from NUKCFP and in response to the changing national focus on poverty alleviation (and perhaps to some extent the concern of the Maoists that development interventions provide real benefits to the poor and disadvantaged), the early 2000s also saw a refocusing of community forestry efforts on conservation and management of forests not only for environmental protection but for poverty alleviation too. The fact remained that the majority of the population of the country continued to rely on agriculture, common grazing land and forest products to meet their basic needs. The restrictions on forest resources due to the handing over of 'control' of forests to the community had had the most negative effect on the poorest households who relied more on forest products and used the forest as a safety net. Increasing evidence of the negative effects of community forestry programme particularly in relation to participation in and benefit sharing by the poorest households, women and historically economically and socially marginalised groups of people, lead to a widening of the goals and purposes of community forestry.

2.5.9.2 Project Objectives, Purpose and Outputs

The objective of the LFP was "reduced vulnerability and improved livelihoods for poor and excluded rural people" and the purpose was "assets of rural communities enhanced through more equitable, efficient and sustainable use of forest and other natural resources". The project was implemented in 15 districts, including the four KH districts.[71] Five specific outputs were envisioned to support the fulfilment of the project goal: (i) sustainable management and utilisation of forest resources; (ii) participation in and benefit from community forestry by poor and excluded people; (iii) increased capacity and coordination amongst institutions for forestry sector development; (iv) testing of innovative and conflict sensitive approaches to field implementation; and (iv) strengthening of national level forest sector capacity.

2.5.9.3 Key Interventions, Outputs and Impact of LFP

LFP's programme-wide activities included capacity- building of GoN institutions, forest users, managers and other service providers; targeted activities for the poor and excluded groups; livelihood diversification; and sustainable natural resource management (i.e. active forest management, improved public land management, soil conservation and watershed management, private forestry, and promotion of alternative energy technologies) (LFP, 2009). The key focus related to improving incomes and livelihoods of the poor was through enterprise and livelihood development, improving access to credit and allocating community land to poor households for income generation.

During the period of the programme LFP worked with over 0.57 million households. In almost all the CFUGs, participatory well-being ranking were conducted by the members and about 53% of the households were identified as poor or very poor, 14 were Dalit and 40% were disadvantaged Janajati or from religious minority groups. Many of the poverty alleviation programmes were targeted towards these groups.

2.5.10 Poverty Reduction and Social Inclusion

In 2008, an impact study was carried out to assess the economic impact of community forestry and LFP, compared against the results of LFP's 2003 baseline study in seven of the LFP districts (those that had been covered by NUKCFP). This was probably the first ever comprehensive study to assess the economic impact of community forestry in Nepal at that point of time. The 2008 study reported a 61% growth in the real incomes of the CFUG member respondents (after adjusting for inflation). The incomes of the largest poor and excluded groups – the Dalits – increased by an average of 93% while the groups with the highest incomes in 2003 increased by only 7% which reflected the positive impact of the focus on the poorest households (LFP, 2009).

Furthermore, the study found that community forestry contributed to the increased incomes in a number of ways. Access to low-interest loans from user group revolving funds was a major factor with a fourteen-fold increase in the number of loans taken between 2003 and 2008.[72] Secondly, LFP's enterprise development and livelihood development activities also had a large impact on increasing incomes among the households that had received income generating support (67% increase) compared to those which had not (45% increase). These activities comprised support for livestock raising, agriculture and forest based local enterprises as well as support for shops, service provision, etc. Plots of land within community forests were also leased to more than 7,000 poorest CFUG members for income generation based on agroforestry activities.

Interestingly, the study also identified that increased remittances accounted for 54% of the changes in household income, while contributions of the community forestry and LFP activities accounted for 25%,

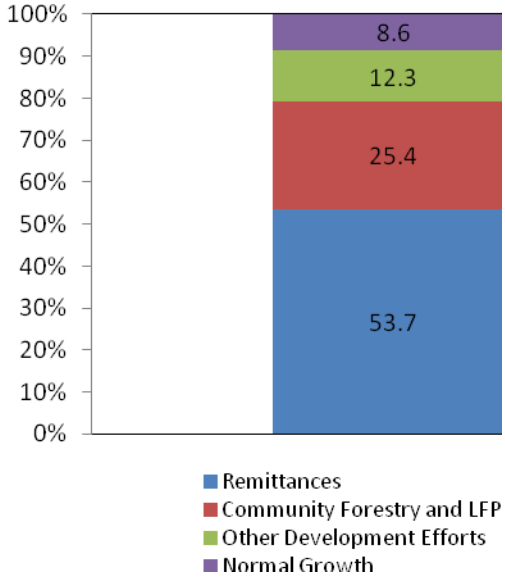
[71] In addition to the four KH districts the LFP was implemented in Baglung, Myagdi and Parbat (in the western hills); Dang, Rolpa, Salyan, Rukum and Pyuthan (in the mid-western hills); and in Nawalparasi, Kapilbastu and Rupandehi (in the western Tarai plains).

[72] The study also noted that LFP income generating support did not directly lead to increased remittance incomes since less than 2 percent of loans for going aboard to work came from user groups revolving funds with most loans for this purpose (64%) came from moneylenders (LFP, 2009:26).

12% increase was due to general economic growth, and 9% due to other development efforts.[73] A 2006 mid-term review found that in the KH districts 71% of the beneficiaries of the income generation activities (IGA) were women and 53% of the total beneficiaries were from disadvantaged Janajati groups (LFP, 2006:19-20). The status of the different IGAs was better where women were supported compared to those of men (ibid).

In 2003 baseline study remittances accounted for 32% of the source of household income and that had risen to 41% by the time of 2008 follow-up impact study. At both times remittance was the biggest source of income for the respondent households. These findings are indicative of the growing importance of migration, and the tremendous economic and social impact of remittances. Thus the LFP study conducted an exercise that attributed 61% of increase in income over 2003-2008 to four key areas outlined in Figure 15.[74]

Figure 15: Attributing Increase in Incomes Study (2003-2008) (LFP, 2009)



The pro-poor and social inclusion focus of LFP was one of the key factors for the forestry programme. A report documenting the achievements of LFP states that there was an increase in the participation of women and socially excluded groups in decision making positions within CFUGs (LFP, 2008). Representation of women and poor in executive committees of CFUG increased from almost none to 36 and 52% respectively (ibid, p. 12). Provisions for poor and excluded groups were legally ensured within more than 2,000 updated CFUG constitutions and operational plans.

2.5.11 The Cost of LFP

The LFP 2009 impact study also calculated the cost of LFP to bring one person above the poverty line to be £34.7 (NRs. 4,446) during the period of 2003-2008.[75]

[73] The study acknowledges that attribution of change is difficult and that these percentages were only "broadly indicative" (LFP, 2009:1).

[74] Refer to LFP (2009:26) for details on the how the study derived the attribution from the different economic sectors to contribute to increases in incomes.

[75] Refer to LFP (2009) for details on the calculation of the costs of LFP. The cost of the programme in seven districts (£3.82 million) was divided by the total number of beneficiaries (433,000 people) giving £8.8 per person. As only 25.4 percent of the increased income was attributed to LFP and community forestry (Figure 1) the cost of bringing one person out of poverty between 2003 and 2008 was calculated as £34.7.

2.5.12 Increased Forest Products

The 2008 impact study also found that the CFs were supplying more than twice the amount of timber, poles and grasses needed by the households compared to 2003 (LFP, 2009:23).[76] Over 4,500 CFUGs had generated about NRs 120 million in funds, of which 54% was from the selling of the forest products (LFP, 2008:4). In the KHs, over 1,400 CFUGs were conserving and managing over 110,000 ha of forest area as shown in Table 16.

Table 16: Coverage in the Community Forestry Programme by LFP

Districts	Number of groups	Beneficiary households	Area handed over (ha)
Total coverage in 15 districts	4,547 (31% of total CFUGs)	536,016 (32% of total CFUG HHs)	396,413 ha (32% of total CF area)
Four Koshi Hills districts	1,427 (31% of LFP total)	131,977 (25% of LFP total)	111,827 ha (28% of LFP total)

2.5.13 Community Development Activities

CFUGs can officially allocate up to 75% of their funds for activities other than forest development, protection and management, such as for community development activities and for activities that support the livelihood improvement of poorest members (CFD, 2009; Luintel et al., 2009). In the districts covered by LFP, CFUGs also invested considerable funds in local infrastructure development activities such as construction of roads (e.g. in Rupandehi), bridges (e.g. in Dang), improvement of irrigation facilities (e.g. in Pyuthan), drinking water systems, and community buildings. The support in the education sector has perhaps been the most important in many areas where CFUG funds have been used in establishing schools, procuring furniture and even supporting the salary of school teachers (ibid, p. 10-11).

2.5.14 Resilience in Times of Political Conflict

During the 10 years of Maoist Insurgency (1996–2006), many community forestry user groups continued functioning effectively in spite of the difficult context. An LFP (2010) study found it was a combination of the sound institutional setup of community forestry and user groups and the creative responses of the user groups that enabled them to continue functioning so well. The study focused on experiences of 18 user groups in the LFP districts. Not all CFUGs were able to withstand the demands of the two conflicting parties, the Maoist insurgents and the Nepal Army, but those that did adhered to a set of principle and practices that worked well. The ability of the user groups to support and use the institutional strengths that they had developed over the years mostly determined their resilience (refer to Box 1).

The strengthening of CFUGs as an institution that has expanded its reach to poor members, to community development efforts and to sustainable management and utilization of natural resources has been a key success, not only in the KH, but throughout the country.

Box 1: CFUGs: Resilient Institutions During Times of Conflict (LFP, 2010)

The main institutional features of community forestry and user groups that underpinned their resilience were:

- the strong sense of ownership that users felt for their forests as valuable and well-managed resources;
- the inclusive and pro-poor management of community forests, which gave users the moral high ground when negotiating with the conflicting parties;
- the strong bargaining power of many user groups due to their good negotiating skills, their proper implementation of community forestry backed up by clear written records, and the good personal contacts many office holders had with Maoist and Nepal Army personnel;

[76] LFP (2008:5) carries photos of changes in a CF plot in Terhathum between 1994 and 2008.

- the generally open and transparent financial systems they maintained that meant they could not be accused of misusing their funds;
- the consensual decision-making that promoted group cohesion and solidarity; and
- the adoption by most user groups of conflict sensitive working practices.

2.5.15 Current Status of Community Forestry in the Koshi Hills

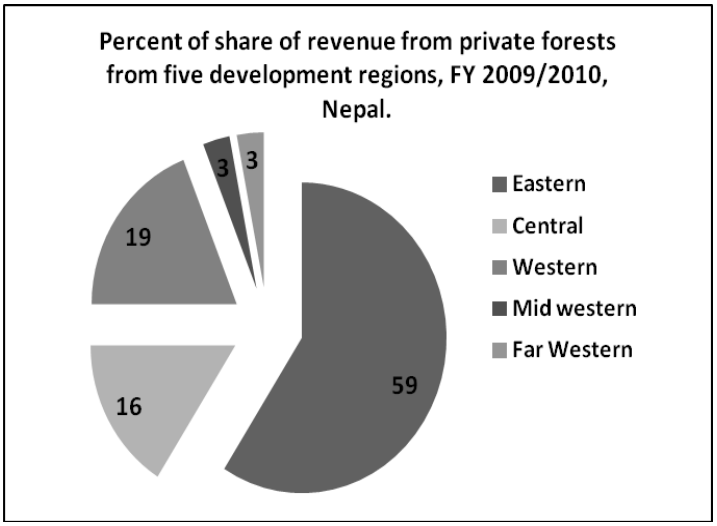
As of 2011, the CFUG database of the Department of Community Forestry indicates that in the four Koshi Hills districts the DFO has handed over close to 115,000 ha of forest (almost 7% of the total area handed over) to a total of 1,449 CFUGs (8% of total CFUGs) (CFD, 2011). Almost 142,000 households in these districts (23% of total) are members of those CFUGs and they are involved in community forestry conservation and management. Of the four districts, Sankhuwasabha has 263 CFUGs, the least number of forest user groups (around 1.5% of national total) whereas Bhojpur has the highest number with 506 CFUGs (3% of national total). Dhankuta has 360 CFUGs and Tehrathum has 320 groups (both around 2% of the national total) (ibid).

2.5.16 Revenue from Forest Products from the Koshi Hills

Data from the most recent report of the Department of Forests show that the total revenue from private, community and national forests together, from the whole of the EDR was 31% of the national total for FY 2009-2010 and was 3% from the four KH districts (at NRs. 6,635,949 or US$84,266) (DOF, 2009-2010)[77]. Of this, the share of revenue from private forests was the highest from the entire EDR at almost 60% of the national total (of which the KH contribution was 9%) as shown in the Figure 16.

Thus private forests are a likely source of good income for the households who own them. Though there is no direct evidence at present many of these households are likely to have benefitted from the earlier forestry programmes that invested in nurseries and increased access to seedlings for plantations in the 1980s and 1990s.

Figure 16: Percentage of Share of Revenue from Private Forests from Five Development Regions (DOF, 2009-2010)



2.5.17 Non-timber Forest Products from the Koshi Hills

Apart from major forest products such as timber, fuelwood and animal fodder, other non-timber forest products (NTFP) have also been an important source of revenue for communities in the rural areas of the country and in the KHs area as well. A survey in the mid 1990s of NTFPs producers, traders and processers from the eastern border of Nepal to the mid-western town of Nepalganj showed that a total of 100 entrepreneurs handled 42 thousand tons of over 100 different NTFPs items, equivalent to

[77] At the current exchange rate of USD1=NRs. 78.75 on Feb 14, 2012.

US$26 million (Subedi, 1997, as cited in Kunwar et al., 2009). Government policy in Nepal has recognised the importance of NTFP based enterprises as a potential means to contribute to poverty reduction as well as an important source for government revenue, yet contradictory and double taxation policies have taken a toll on the income generating potential of the enterprises as a study by Kunwar and colleagues (2009) highlight with examples from the KH areas.

The KH districts also contribute to the national revenues through sale of NTFP though as shown in Figure 17 in FY 2009-2010 the share of revenue from minor forest products or NTFPs from the EDR was only 4% of the national total, the lowest in the country. Yet there are enterprises in the KH districts based on the minor forest products as shown in Table 17 that are a source of income for the communities and households involved in them.

Figure 17: Percentage Share of Revenue from Non-Timber Forest Products (DOF, 2009-2010)

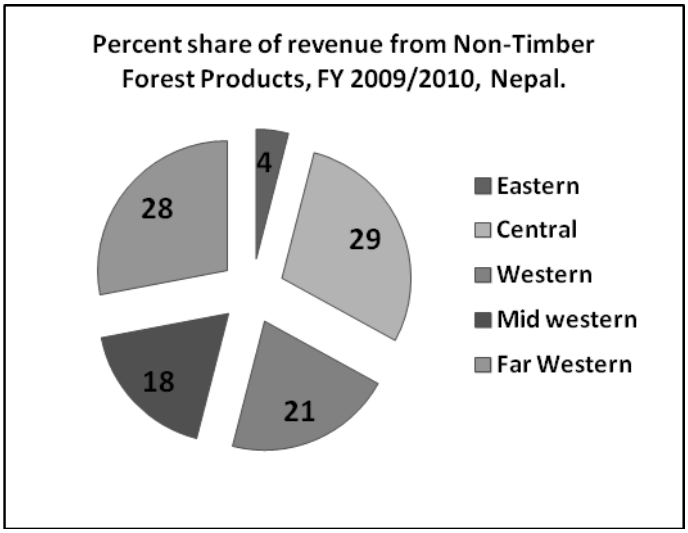


Table 17: Types of NTFPs Enterprises in the Koshi Hills (Kunwar et al., 2009)

District	NTFP based commodities	
Dhankuta	Essential oils Belsquash	Khoto Briquette
Sankhuwasabha	Lokta handmade paper Allo Laligurans squash	Briquette Spices (agriculture base)
Bhojpur	Lokta handmade paper Bel squash	Briquette Spices and vegetable (agriculture base)
Terhathum	Chiraito (*Swertia chirata*)	Ginger

The Koshi Hills has an abundance of Chiraito (*Swertia chirata*), a NTFP of the gentian family, generally found at altitudes between 1,200 and 3000m, mostly on open ground where forest has been cleared by slash and burn system. It is found to be exported from most of the hill and mountain districts of the country, over 70% of the export is from the eastern hills and mountains, mainly from Tehrathum, Sankhuwasabha and Bhojpur, as well as Panchthar, districts. Chiraito is harvested from government land after acquiring permit and paying royalty fee. The trade of Chiraito also has a long history in the region, which according the study by Edwards's (1993) estimated, had an annual turnover of US$427,000 in the early 1990s. Total volume of exports in 1997 was about 140 metric tonnes from the area and this was estimated to be nearly 50% of the world production (ibid). The collection of Chiraito was an important activity for many poor households in the KH area, bringing in around US $280,000 a year to the area at that point of time (ibid). Government records indicate that in FY 2009-2010 alone over 11,000kgs of Chiraito generated almost $2,100 in revenue collectively from Sankhuwasabha, Dhankuta and Tehrathum districts. But as many studies have indicated, the volume of NTFPs traded and exported is far in excess of the official government reports (Edwards, 1996; Banskota & Sharma, 1999).

2.6 Agriculture Sector

This section details the agricultural and livestock development within the Koshi Hills. It begins by detailing the context in the 1970s, particularly focusing on the land, tenure and production followed by government policies and strategies of that period. This is then followed by descriptions, evidences and analysis of various development programmes that were implemented within the Koshi Hills over the past 40 years. Brief overviews of the programmes/projects and the Policies/Acts that have been implemented are provided in Annex 9 and Annex 10.

Table 18: Overview of Donor Driven Agricultural Development Interventions

SN	Name of development intervention	Date(s)	Total cost
1	Pakhribas Gurkha Re-integration Service	1968-72	UK: GBP 800,000
2	Pakhribas Agricultural Centre (PAC)	1972-ongoing*	UK: GBP 8,250,000
3	Koshi Hills Area Development Programme – K1	1976-79	UK: GBP 22,000
4	Koshi Hills Area Development Programme (KHARDEP) – K2	1979- 85	UK: GBP 6,730,000
5	Koshi Hills Seed and Vegetable Project (KOSEVEG)	1993-97	UK/DFID: GBP 5,300,000
6	Vegetable Production through Centre for Environment and Agricultural Policy Research Extension and Development (CEAPRED)	1990-94	n/a
7	Seed Sector Support Project (SSSP)	1998-2000	UK/DFID: GBP 4,200,000
8	Commercial Agriculture Development Project (CADP)	2007-2012	ADB: GBP 3,270,00
9	High Value Crops Project	2008-2013	SNV: GBP 230,000

2.6.1 Agriculture Status in the 1970s

2.6.1.1 Context Within the Koshi Hills: Agricultural Land Use, Tenure and Production

Cultivated land in the Koshi Hills was (and is) broadly divided into two categories based on the production of wet paddy: *Khet* and *Bari/Pakho* (Caplan, 1970; Conlin & Falk, 1979). *Khet* denotes land, which has access to seasonal or year round irrigation, on which paddy is cultivated and is mainly found at lower altitudes in the valleys and the lowlands whereas *Bari/Pakho lands* [78] are dry lands that are used for the production of maize and millet[79] and are found throughout the hills[80] but primarily located at higher altitudes (ibid).

Table 19: Area and Production of Selected Crops (NPC, 1970)

Selected Crops		Districts			
		Dhankuta	Terhathum	Bhojpur	Sankhuwasabha
Paddy	Area (km²) cultivated	39	n/a	21	12
	Production (MT)	10,725	n/a	4,000	3,000

[78] During the KHARDEP Baseline study in 1979, Khet land was considered 3-5 times more valuable (Conlin &Falk, 1979).

[79] Millet is considered a safe crop as it can be grown during water shortages (Conlin & Falk 1979).

[80] Bari lands can be converted to Khet lands by introducing irrigation facilities.

Selected Crops		Districts			
		Dhankuta	Terhathum	Bhojpur	Sankhuwasabha
Maize	Area (km²) cultivated	82	n/a	95	48
	Production (MT)	18,860	n/a	22,087	10,560
Millet	Area (km²) cultivated	21	n/a	22	21
	Production (MT)	2,495	n/a	1,500	2,838
Potato	Area (km²)	12	n/a	12	10
	Production (MT)	6,000	n/a	7,050	5,000

In 1969, a study by NPC for regional planning, which included the Eastern Development Region (EDR), assessed that maize, paddy, millet and potatoes were the main crops being grown within the Koshi Hills (Table 19) (NPC, 1970). Vegetables were also being produced, but only in small quantities for household consumption[81] (Pant & Thapa, 1981; Conlin & Falk, 1979). While above 2,000m (in the mountainous areas) potatoes were cultivated for consumption, but the rearing of livestock was the predominant activity (Conlin & Falk, 1979).

Land holdings were characterized by small, fragmented farms with skewed patterns of land control. In a sample survey undertaken, 43.3% of farmers had less than 0.5 ha of land[82] (Table 20); with the irrigated *Khet*[83] *land* being mostly concentrated within the hands of wealthier farmers (5.7% had control of 23.2% of the land) (Conlin & Falk, 1979:60).

Table 20: Cultivated Land by Farm Size (Conlin & Falk, 1979)

Farm size (ha)	Percentage of farms	Percentage of total area
0-0.25	19.8	3.7
0.26-0.5	23.5	11.1
0.51-1.0	30.6	25.9
1.1-1.5	11.1	14.9
1.6-2.0	5.8	11.9
2.01-2.5	3.5	9.3
+2.51	5.7	23.2

This was despite various land reform measures (Royal Land Reform Commission of 1962; Agriculture Reorganization Act of 1963; Land Act 1964) that had been enacted by the state in the 1960s to secure tenancy rights and abolish damaging traditional practices. These acts had simplified customary landownership systems[84] and placed ceilings on holdings, amongst others. But they failed to bring

[81] The exact quantities of vegetables being cultivated are not available from the reports. Primarily because, the yields were low and collection of data was difficult (Conlin & Falk, 1979). However, it was noted that while they were grown for consumption, within the surrounding areas of the main bazaar areas, production was stimulated and was on the rise. Tomatoes and potatoes were the main types being sold (ibid).

[82] Nationwide, 82% of the farms were less than 0.67 ha (World Bank, 1979).

[83] Khet land is usually low land that has access to seasonal or year round irrigation, and is usually planted with rice in the summer, and either left fallow or planted with a winter crop. Bari land is dry land that is located in higher altitudes and is commonly planted with maize, millet and potatoes as the main crop.

[84] There were six different types of traditional land ownership practiced in Nepal: Raikar, Birta, Jagir, Rakam, Kipat and Guthi which were simplified to private, public and Guthi land. Please refer Regmi (1978) for in-depth details.

about greater agriculture productivity[85] and land re-distribution within the country (Zaman, 1973; Ghimire, 1992) [86] including the Koshi Hills.[87]

Amongst the various systems[88], abolishment of the *Kipat* was especially significant, as it was the most dominant form amongst the indigenous Rai and Limbu ethnic groups within the region (Regmi, 1976). Under this communal-ownership system, land was "inalienable" to people outside the ethnic groups (ibid). But, after its abolishment in 1975, it had led to the accumulation of land by the higher castes (Brahmin/Chhetris), the majority of whom were already large farmers having over 1 ha of land (Conlin & Falk, 1979:68). It also led to further antagonism amongst the different ethnic groups (Conlin & Falk citing Caplan 1970).

Conlin and Falk (1979), however, stress that while landholding size was related to some extent with specific social groups, especially in the case of occupational castes which had small holdings across all districts, at the same time accumulation of land amongst all social groups was also taking place (ibid:68). They note that middle-income farmers were financing their acquisitions in the hills through remittances from migrant work (Conlin & Falk, 1979:47). While larger farmers or ex-Gurkha soldiers were buying land in the Tarai (CEDA, 1975; Conlin & Falk, 1979).

Table 21: Distribution of Land Type by Farm size (Conlin and Falk, 1979)

Farm size (ha)	% of farms by land type				
	Only Bari	Mainly Bari	Khet and Bari	Mainly Khet	Only Khet
0-0.25	53	7	32	5	3
0.26-0.5	21	14	32	28	2
0.51-1.0	15	18	31	36	1
1.1-1.5	10	20	30	39	1
1.6-2.0	10	1	23	45	1
2.01-2.5	14	22	29	35	0
+ 2.51	10	23	42	25	0

Renting of land was also widespread in the hills, especially amongst those with small plots, or those who did not have *Khet* land (Conlin & Falk, 1979:64). While the figures differ between districts, the study by Conlin & Falk (1979) estimate that on average 23.6% of lands were being rented (ibid). There were two main forms of rent tenure arrangements within the hills: *Adhiya* and *Kut*. Under the *Adhiya* system, landowners receive half of the crops that are produced, while under the *Kut* arrangements, landowners receive fixed amounts of the produce or cash (Regmi, 1976).

Livestock rearing is also an important activity for rural households; being an essential component for farming systems, providing manure and draught power, which in turn are provided feed from the residue of crops and fodder from the forests. Most significantly, the activity also acts as a coping mechanism in times of food insecurity as well as a source of income within the region (Conlin & Falk, 1979; Cassels et al, 1987). They also contributed almost 27% of the household income nation wide in 1979/80 (Rajbhandari & Shah, 1981).

[85] According to Pant (1983), agriculture productivity increased by merely 0.7% in the 1970s.

[86] According to Ghimire (1992), the richest 9% of the population owned 47% of the land, while 67% owned less than 17% of the land across the country (1992:15).

[87] Please refer Shrestha (1981) who discusses in detail about why the policies failed to bring about the desired objectives.

[88] Other tenure systems prevalent within the hills: Guthi and Rakam (Conlin & Falk, 1979).

Table 22: Livestock Population in the Koshi Hills in 1981[89] (Agriculture Census, 1981)

Livestock	Cattle	Buffalo	Goats	Sheep	Pigs
Bhojpur	24,343	15,665	18,734	1,037	12,127
Dhankuta	10,563	4,236	9,660	227	6,899
Sankhuwasabha	16,797	5,815	14,236	2,422	8,421
Terhathum	10,242	5,987	9,544	1,480	4,826
Koshi Hills	61,945	31,703	52,174	5,166	32,273
%	5	4	7	5	20
Nepal	1,261,916	7,78,627	7,86,966	99,851	1,64,059

Within the Koshi Hills, the size of a livestock unit was found to be positively correlated with the land holding size (Rajbhandari & Shah, 1981; Conlin & Falk, 1979). For example, the study by Conlin & Falk (1979) recorded that, within their sampled households, 73% of the small farmers (<0.5 ha) had no buffalos, 48% had no goats and 27% had no cows. Compared to large farms (>1 ha), where 53% had buffalos, 94% had cows and 86% had goats (1979:105). This is not surprising considering the greater capital required to purchase larger livestock, but other studies have shown that, in addition, labour demands to tend the animals, as well as fodder requirements, were also significant (Cassels et al, 1987). The types of livestock reared, especially pigs, were found to be related to Rai and Limbu ethnic groups; primarily, as the other higher castes considered pigs as to be unclean (Conlin & Falk, 1979).

The study by Conlin & Falk (1979) further showed that small and marginal farmers were increasingly under stress, with regard to food access and availability. Households that cultivated 0.5 – 1 ha of land produced 70% of their household requirements, while those with less than 0.5 ha produced only 38% of their needs. Most made up their food deficits through various means: renting out additional lands as sharecroppers, taking loans from money-lenders, or engaging in seasonal off-farm work as wage labourers (CEDA, 1972 & 1975; Conlin & Falk, 1979). Furthermore, those with additional off-farm sources of income fared better than those who had no such additional sources of income (this was also the finding of the ODSG study[90] in the mid 1970s in the hills area of the west central region of Nepal). The same study, along with others (CEDA, 1975), also revealed that farmers were experiencing problems associated with an increasingly fragile resource base, particularly the erosion of land and a decline in productivity, leading them to migrate out of the hills (CEDA, 1975:405).

2.6.2 Government Interventions

2.6.2.1 Policies and Strategies

In the mid 1970s, the failures of previous strategies of growth-led development in the Nepal, had led the government to the adopt *Basic Needs* theory and policies, that prioritised agriculture and irrigation (Metz, 1995). As a result, a greater allocation of budget was prioritised for the sector. For example, till the fifth year plan (1975), almost 60 perc ent of all investment was put to transport, communication and power (Khadka, 1991). But, afterwards there was a dramatic rise in the budget of agriculture from NRs 722.2m (Fourth Plan) to NRs 2,245.8m (25.4%) during the Fifth Plan (1975-80) and later to NRs 4,353.5m (27.9%) during the Sixth Plan (1978-85). [91]

During the Fourth Plan a “corridor development” strategy was initiated to integrate the Tarai, Hills and Mountains to reduce regional disparities (Yadav & Rawal, 1981). The approach was to establish a development centre and a major growth corridor that emphasised the natural comparative advantage of the three geographical locations. Whereby, cereal and cash crops were to be focused in the Tarai,

[89] Figures for 1971 are unavailable.

[90] Blaikie, P, Cameron, J and Seddon, D (1977): The Effects of Roads in West Central Nepal. Overseas Development Group. University of East Anglia.

[91] The transport and communication allocation did however remain high at NRs 2442.8 (27.6%) and NRs 3,009 (19.35), respectively (Khadka 1991).

horticulture in the Hills and livestock in the Mountains (CEDA, 1975; Conlin & Falk, 1979; Yadav & Rawal, 1981).

2.6.2.2 Institutions and Agencies Involved in Agriculture

Development efforts within the Koshi Hills were divided into two types of projects: those that were carried out by the centre and those by the district. This demarcation was mostly in terms of budget[92] and the requirement of technical assistance (Conlin & Falk, 1979).

Within the districts, since the introduction of the *District Administration Plan* (DAP) in 1974, the coordination of development interventions were mostly centred on the Chief District Officer (CDO). Many studies however note that this position was hampered by the weak institutional capacity and the comparative strength of the centre, which channeled funds directly to the respective ministry line agencies (Conlin & Falk, 1979:16; Nabarro et al, 1987:11).

Within the agriculture sector, assessments conducted by CEDA (1972, 1975), Conlin & Falk (1979) point out that the institutional set up was weak; with "… government support for agriculture outside a few special areas around Dhankuta and Terhathum bazaars utterly ineffective" (CEDA, 1975:449).

Extension services were carried out through *Agriculture Service Centres* (ASCs), which were planned to provide regular in-service training for the Junior Technical Assistant (JTAs) and farmers (Yadav & Rawal, 19181). These centres were controlled by the District Agriculture Development Officer (DADO). But, as the CEDA report notes, these positions were not always fulfilled in all the districts.[93] The centres were mostly understaffed (Yadav & Rawal, 1981). At the time of the study there were only 24 JTAs for the entire Koshi Zone, which had 160,000 households (i.e. one JTA was responsible for over 5,000 households) (CEDA, 1975), which was ten times the number generally regarded as being reasonable. Furthermore, the assessments go on to note that most lacked basic knowledge about the variations within the district with regards to soil type, crop varieties, and suitable farm inputs. Later studies also note that the since the majority of the extension workers were not from the hills and were educated in the Tarai or Kathmandu valley, they were also disinclined to work in the hills (WS Atkins, 1992). In addition to the ASC, support was also provided through parastatals such as the Agricultural Inputs Corporation (AIC), Agricultural Development Bank (ADB) and cooperatives such as *Sajhas.*

The AICs were responsible for the distribution of seeds and fertilizers in the Hills; where the fertilizers were sold at subsidized rates.[94] This was due to price and transport subsidies that were provided to districts not connected by roads, which had begun since 1973/74 (CEDA, 1975; Pant, 2002; Shrestha, 2010).[95] But, the supply was always inadequate, with the demand always out striping the supply (Shrestha, 2010). Furthermore, CEDA notes that due to transport and storage difficulties, the bulk of the ASCs operations were more pronounced in the Tarai than in the Hills. The report notes that over 2,700 tonnes of seeds and 144 tonnes of fertilizers were sold in the Tarai in 1973/74, compared to just 200 tonnes of seeds and 57 tonnes of fertilizers in the Hills; even though the hills had a larger farming population in the 1970s. Within the Koshi Hills, there was only one AIC located in Dhankuta, while the other districts had only depots (Nabarro & McConell, 1990:25).

Similarly, the credit provided by the ADB was also skewed towards the Tarai. With the CEDA report noting that NRs 23.6 crores had been loaned to farmers in the Tarai as compared to merely NRs 2.04 crores in the Hills. In the hills, the loans were also not always accessible to small farmers, with most turning towards moneylenders (Conlin & Falk, 1979; Cassels et al, 1997). *Sajhas* or cooperatives were also functioning in the Koshi Hills, by supplying loans, inputs and marketing of the produce such as seeds. Most notable was the compulsory savings that were deposited into the ADBN (Agricultural Development Bank, Nepal), which were used to start by the Sajhas (Yadav & Rawal, 1981).

---

[92] Projects that were estimated to cost over NRs 500,000 were carried out by the centre (Conlin & Falk, 1979).

[93] At the time of the study in 1975, the report notes that the office in Sankhuwasabha was handled by a junior technician.

[94] According to Shrestha (2010), "… the subsidy policy was brought in to serve two purposes; first, encourage farmers to use fertilizers by providing at relatively low price, and second, discourage outflow of fertilizers from Nepal to India by keeping price 15-20 percent higher than that of India" (2010:127).

[95] These subsidies were later abolished in the 1990s, with the onset of structural adjustment programmes.

Dhankuta, being designated regional centre was also the location of the only veterinary hospital, which was responsible for all veterinary work in the Koshi Hills (CEDA, 1975: 483). However, due to the lack of staff, funds and direction, many assessments note that this hospital, along with its dispensaries in Terhathum and Chainpur were ineffective and were not providing support for the development of livestock within the region (CEDA, 1975:483, Conlin & Falk, 1979).

Most notable was also the absence of an irrigation department. The CEDA (1975) report notes that there were no irrigation programmes or personnel (engineer or technician) within the Koshi Hills. As a consequence, farmers were forced to be dependent on seasonal rainfall and/or water diverted from rivers (Conlin & Falk, 1979:5). Majority of the irrigation was operated through Farmers Managed Irrigated Systems (FMIS), which were indigenous irrigation systems that are managed throughout the country.

2.6.2.3 Donor Supported Interventions Within the Koshi Hills

In the 1970s, interventions within the agriculture sector were focused on transferring "subsistence" or "traditional" farmers to be more productive through the transfer of technologies. The efforts were primarily on increasing the yield of cereal crops. Efforts were also made to improve service centres in the provision of inputs and access to credit. Table 23 shows that maize, paddy, and millet were the main crops that were cultivated within the Koshi Hills in the 1970s. Whereas cultivation of High Value Crops, such was cardamom, were negligible at merely 7 ha (MOAC).

Table 23: Area, Production and Yield in 1976/77 in Koshi Hills (MOAC)

Selected crops	Area (ha)	Production (mt)	Yield (kg/ha)
Paddy	22,878	54,339	2,375
Maize	32,340	60,789	1,880
Wheat	3,318	3,554	1,071
Millet	8,960	10,678	1,192
Barley	538	370	688
Sugarcane	72	961	13,347
Oil seed	1,393	749	538
Potato	7,198	30,700	4,265

2.6.3 Pakhribas Agriculture Centre (1972-ongoing)

2.6.3.1 History and Activities

The Pakhribas Agriculture Centre (PAC) was originally established as the Gurkha Reintegration Service (GRS) in 1968. Its sole mandate was to provide training and resettlement demonstration farms for returning ex-Gurkha soldiers. Later in 1972, on request of the GoN, it was renamed as PAC and its activities were extended to serve entire farming communities in the designated target areas. Within these target areas PAC was to function as an agriculture centre to provide agriculture research, farmer training and extension services (Gupta, 1984). Operating outside the GoN system, the institute was managed and funded by the Overseas Development Agency (ODA – the then DFID), with the advisory support of South East Asian Development Division (SEADD).

The PAC activities were focused on fifteen *Panchayats* in Dhankuta, Terhathum and Taplejung districts, which were termed as 'command areas.[96]' Between 1975 and 1990, the centre's activities

[96] The two command areas included: the Local Command Area, this covered seven Panchayats within Dhankuta district, which adjoined the PAC's location and the Northern Command Area, This included eight Panchayats (seven in Taplejung and one in Terhathum) which were at least 2 days walk from PAC (Gupta, 1984).

were multidisciplinary and mainly included: (i) generation of new crop varieties[97] and technologies; (ii) introduction of new livestock breeds and development of drugs; (iii) establishment of woodlands; and (iv) horticulture and input supply (Gupta, 1984; PAC, 1989; Hocking et al, 1995).

Later in 1990, the centre along with *Lumle Agriculture Centre* (LAC) was integrated within the Nepal Agriculture Research Centre (NARC); with PAC being designated as the '*Regional Research Centre'* for eleven hill districts within the Koshi, Mechi and Sagarmatha zones (Hocking et al, 1995). One of the main consequences of this integration was the shift in focus towards a more research orientation (Hocking et al, 1995). During this transitional period, the centre was subsequently renamed as the *Pakhribas Agriculture Research Station* (PARS) with DFID supporting the institutional strengthening and providing research funding through the *Hill Agriculture Research Projec*t (HARP) from 1996 to 2001 (ODA, 1996; Coffey, 2010). After which the management and funding were fully handed over to the GoN.

2.6.3.2 Interventions and Impacts

The establishment of PAC coincided with the government's interest and priority during the Fifth Five-Year Plan[98] (1975-80) for agricultural development, which was at that time characterised by inefficient institutions and stagnant productivity. In the 1970s, the national cereal grain production had increased by an annual rate of just 0.95%, while the productivity had declined by 0.46% (Yadav, 1987). Numerous shortcomings within the sector were highlighted by the socio-economic study in 1975 undertaken by CEDA in the East: thinly spread and poorly trained technical staff (24 Junior Technical Assistants (JTAs) for 160,000 households, who lacked knowledge about variations within districts about soil types, crop varieties and farm sizes); no irrigation programmes; and insufficient access to improved seeds, fertilizers and institutional credit[99], amongst others.

Within this context, the activities conducted by PAC, particularly the adaptive research to develop varieties of cereal crops suited towards the specific agro-climatic conditions of the Koshi Hills was assessed to be particularly beneficial. These were mostly associated with the improved varieties of wheat and rice, which were adopted widely (Hocking et al, 1995[100]; SEADD, 1994[101]). Most assessments carried out on PAC activities in the 1990s concluded that the activities of the centre had led to farmers benefitting in terms of increased food production (Hocking et al, 1995; SEADD, 1994; Bharati et al, 1992; Cromwell et al, 1992).[102]

In addition, an increase in the income levels[103] was also noted by the same studies within the command area. The assessment by SEADD in 1994 concluded that "…the investments made by ODA

[97] PAC was promoting an agriculture development based on exogenous 'Green Revolution Technologies which emphasized the use of "…improved seeds, agrochemicals and fertilizers, better methods of cultivation..." (Bebbington, 1993:9).

[98] The previous five-year plans had emphasized the need for improved physical and administrative infrastructure, particularly roads.

[99] Similar to fertilizer usage and improved seeds, the CEDA (1990) report points out that the Agriculture Development Bank (ADB) loaned NRs 23.6 cores in the Tarai as compared to NRs 2.04 cores in the Hills.

[100] This study is also known as the MASDAR assessment.

[101] This SEADD assessment was based on a survey of the farmers in the PAC research command area (RCA) and farming systems models to represent different conditions in the command area and how individual technologies have interacted with the rest of the farming systems.

[102] SEADD (1994) identifies 31% of the respondents, within the PAC command area, having increased food production over the last 10 years; to 33% who said that there were no changes to 36% who identify a decrease. Similarly, the study by MASDAR puts the figure at 29% (increased), 42% (no change) and 28% (decrease).

[103] According to the SEADD assessment the perceived change in incomes were 56% (increased), 24% (no change) and 20%(decrease). The farming system model also showed that most technologies were economically viable "…producing a higher net farm income (for each unit of the technology introduced)" (SEADD 1994). The MASDAR study had lower figures, but nevertheless pointed out that there had been an increase in incomes (25%), followed by 41% (no change) to 34% (decrease).

in research at Pakhribas (and Lumle) has been justified by the economic gains that have been acquiring to farming households in their command areas over the past 20 years" (SEADD, 1994).

Curiously the average adoption rate of new technologies for PAC varied considerably according to different studies. According to the MASDAR study led by Hocking et al in 1995, the adoption rate was 65% whereas the study by SEADD during the same time frame in 1994 put it at 22%.[104] This discrepancy was primarily as a result of how the adoption rates were calculated, either as the number of households adopting the technology as a percentage of households that were "aware" and had "tried the technology" (Hocking et al, 1995[105]) as in the case of the former or to households that had adopted the technology as a percentage of the population of the Research Command Area (SEADD, 1994) as in the latter. Both studies were however in agreement that technology related to fodder trees, maize and wheat were the most successfully adopted.[106] These had widespread applicability and high priority, as most farmers within the Koshi Hills were subsistence farmers dependent upon these cereal crops as their staple food sources (Conlin & Falk, 1979) and requiring trees to maintaining their farming systems (Hocking et al, 1995). Whilst other technologies such as Angora rabbits and vegetable seeds had the lowest adoption levels, primarily as they had limited relevance and being dependent on access to inputs, technological know-how and markets.

With respect to livestock production, PAC activities were found to have primarily focused on the introduction of new breeds (through cross breeding of exotic breeds with local varieties) and the development of drugs. The primary focus was on pigs, buffalos and poultry; amongst which an ODA evaluation in 1989 identified pigs as being the most successful (ODA 1989:25). The Study by Hocking et al (1995) also calculated that there was 67% adoption of these pigs.

Studies also showed that the adoption of new technology was strongly correlated with food sufficiency, ethnicity and access to extension services; with non-occupational caste households having greater food sufficiency and access, displaying higher adoption (Hocking et al, 1995; SEADD, 1994). In fact, most studies, both external and internal[107], concluded that the better-off households had enjoyed the majority of the benefits, even though at the strategy level the programme had emphasized the need to look at disadvantaged groups. Though the studies did not assess which social groups the poorer households belonged to, one can infer that given the socio-economic context, most of the poorer households belonged to the Janajati and Dalit groups.

On average, the occupation castes adopted 1.24 technologies less than other groups (Hocking et al, 1995). This is not surprising, as poorer households, with limited land and resources, are predictably reluctant to bear the risks of new varieties and practices. However, early PAC documents indicate the emphasis on *equity* was much less of a priority than *growth*. A review of PAC activities (NRI, 1993) points out that, an internal PAC analysis argued that since *all* farmers in the PAC command areas were poor relative to those in the Tarai; all of PAC's activities were by definition geared towards the poor. Interestingly, the SEADD assessment in 1994 also reasons that if some farmers were not able to take advantage of the new opportunities presented by PAC, then "…it is the *internal* constraints within these households (poorer) that has prevented them from responding…" (ibid). The report however does not explain the reasons for their 'reluctance', or how they can be overcome.

Others such as Hocking et al do however point out that measures to become more pro-poor were discussed such as the establishment of a *Disadvantaged Group Thrust* to develop strategies, implement and monitor research work for disadvantaged groups (small farmer with low access to land,

---

[104] An internal study conducted by K.C. and colleagues (1993) also assessed that the adoption levels were low.

[105] According to Hocking et al, calculating the rate of adoption as a percent of those who have once tried is a better interpretation of assessing real adoption, rather than assessing the technologies independently based on extension services and inputs flow.

[106] Hocking et al, 1995: Tree planting (92%), Maize (74%), Wheat (72%); while SEADD 1994: Tree planting (43%), Maize (34%), and Wheat (36%).

[107] Even within PAC, a retrospective analysis of farmer households conducted in 1992 showed that a large number of the participants of PAC activities fell into households having food surplus, able to full fill their needs through self-production or faced deficiency less than six months (NRI, 1993). This retrospective analysis was conducted by the Social Science Group based on a wealth ranking exercise of 7,226 households within the PAC command area.

capital, labour and markets). But, the same report goes on to remark that they were never actually implemented. This lack of pro-poor focus was also highlighted by a World Bank study which stated that "…while the work of PAC has been targeted effectively at farm households in the hills, it has not been specifically aimed at the poor households" (Nickson 1992 citing World Bank 1990).[108] Conlin & Falk (1979) do however point out that in the case of pigs[109] and poultry; it is the poorest members of the community (primarily the ethnic communities) who had benefitted the most. But this was chiefly because they were the ones who raised those particular classes of livestock, rather than any planned focus.

Women were also found to be largely ignored by PAC till 1986 either as farmers[110] or staff within PAC. Most readings indicate that participating farmers were largely male as a result of the staff perception of farmers and decision makers (NRI, 1993:56). However in the following years, women were actively encouraged to participate in PAC activities (e.g. in vegetable production)[111] and fill in staff positions.

In the case of extension services, the lack of priority towards the poorer segments was particularly striking as this had already been identified as being significant for adoption.[112] Instead, assessments consistently echoed that access to these services was being captured by the wealthy, higher social groups located near the outreach stations (Hocking et al, 1995; SEADD, 1994; KC et al, 1993).

Furthermore, it is worthwhile to mention that the extension services were actually gradually being reduced, primarily as a result of the orientation of PAC towards a more research focus and the handing over of the extension functions over to the Department of Agriculture (DoA) and other donor projects (e.g. Koshi Hills Area Development Programme) after the integration with NARC (Hocking et al, 1995; Bebbington, 1993). PAC did however maintain an extension research section at Dhankuta. But even earlier it was noted by Gupta (1984) that there had been a gradual reduction and deterioration of the extension services. He states "…the number of visits to the farmer made by the field assistants were neither constant nor regular, which dependent upon the seasons, time available with them and the urgency of the seasons" (Gupta, 1984:6-7). Various assessments identified the cuts in funding[113], staffing[114] and institutional arrangements[115] as being significant in resulting into a decrease in the number and quality of extension services (Gupta, 1994; Howell, 1984; Borman, 1990).

---

[108] World Bank (1990), Nepal relieving poverty in a resource –scarce economy. World Bank, Washington DC. Report No. 8635-NEP, 1990. Vol.2. p 143.

[109] Amongst the new varieties of livestock introduced, an ODA study in 1989 identified "…the pig programme as being the most successful, showing that under traditional husbandry and feeding regimes, exotic and exotic cross-bred pigs are superior to local pigs" (ODA, 1989:25).

[110] According to the NRI (1993) assessment10% of households in the PAC command areas were headed by women and constituted a higher proportion of poorer households (NRI 1993:56).

[111] According to an ODA assessment (1989:27) vegetable production only started to gain success after extension services started to provide emphasis on women farmers in 1986; which resulted in kitchen gardens increasing from 75-210 (in 1986).

[112] According to SEADD (1994:13) "…in areas served by enhanced extension provided by the centres, adoption counts are higher, with very few households being non-adopters, and many being multiple adopters. By, contrast, in areas of 'normal' extension activity (served only by HMG/N extension activities), the pattern in reversed, with fewer multiple adopters". Similar, findings were also seen in Lumle, where a study by Floyd et al (1999) pointed out that the benefits were skewed to those households that were more favoured by extension services.

[113] According to Borman (1990), the then Director of PAC, along with low project resources staff morale was also low due to the uncertainty regarding the future of PAC and low investment.

[114] In addition to reduction in staff, Gupta (1984:6) points out that the level of supervision by senior staff was also reduced rapidly.

[115] Gupta (1984:8) also points out that the changes to the institutional structure of extension services also created problems. Before, he states there was a single section that was fully responsible for planning, programmes and reporting of all elements of development from the centre to the farmers and vice versa. But, this was later split into different units, resulting in poor coordination.

In particular, expenditure cuts pushed within PAC to bring it under the HMG/N line were highlighted as being significant (Gupta, 1984:2).

According to Hocking et al (1995), the cost of running PAC on average equalled GBP 2.5 million per year (at 1996 prices) which was proportionately and drastically higher than the GBP 2.4 million that was being spent by NARC[116], which covered 35 other research centres and had staff three times that of PAC and LAC taken together (Hocking et al, 1995). He goes on to note that without the cost reductions, both PAC and LAC would have been too expensive to be absorbed into NARC especially in an unfavourable climate of declining expenditure on agricultural research.[117]

The contribution of PAC to agricultural research particularly in the development of new varieties of crops, introduction of livestock and planting practices, has however been important and has been widely recognised (Goldsmith 1981; Howell 1984; NRI 1993; Hocking et al 1995; SEADD 1994). This was in contrast to the *Patle Agriculture Experimentation Farm* that was set up by the government in Dhankuta in 1962, which according to the CEDA assessment in 1975 was poor. The report points out that there were no extension follow-up and even though the centre's work was mainly in citrus fruits and vegetable seeds, the local population was more inclined towards the Agriculture Development Bank (ADB), which had follow-up mechanisms for its loans.

According to Hocking et al (1995), till 1989 the research at PAC was responsive to the needs of the farmers[118], but mostly *ad hoc*. It was not strategically oriented towards a defined policy goal. For example, though the HMG/N policy had prioritised the Hills to take advantage of its agro-climatic conditions by focusing on horticultural products for exports, it was only from 1986 onwards that a section on horticulture was established at PAC. Even then, according to Bebbington (1993) this represented the weakest section.

Hocking et al point out that it was only later in the 1990s after the integration with NARC that HMG/N policies began to gain greater influence. But this also created conflicting policy demands. On the one hand, as ODA continued to want PAC to respond to its policies and support UK assisted projects, which according to Bebbington were starting to focus on equity, while on the other hand, PAC also had to adhere to NARC and HMG/N policies that focused more on increasing productivity, which as the author points out cannot always be achieved by focusing on groups who face the greatest difficulty in incorporating new technologies. Other authors such as KC et al (1995) also argue that a lack of clearly defined policies of the HMG/N also made it difficult for PAC to identify its research priorities. According to them the only readily discernable priorities were in citrus, tea and cardamom, which were duly taken up.

The scaling back of extension services from 1990 onwards also affected the "demand-led" research of PAC due to the erosion of downstream linkages with farmers, which previously were being fed back into the research objectives and processes (Bebbington, 1993; K.C. et al, 1995).

Along with the research, the transfer of new technologies and ideas through training were also another significant activity conducted at the centre. As documented earlier, while initially direct trainings were provided to the returning ex-Gurkhas, they were later extended to other lead farmers, government and development programme staff. Till 1989, a total of 2,100 lead farmers and 1,640 staff had been trained at the centre. This was particularly important as the training was based on the agro-climatic conditions of the Koshi Hills, which was a technical shortcoming previously highlighted in the CEDA (1975) baseline study. The report stated that as the majority of the JT and JTAs were trained in the Tarai (Rampur) or Kathmandu, they lacked relevant knowledge about the Koshi Hills, which resulted in poor extension services (ibid 1975:476).

---

[116] NARC was funded by the HMG/N, with the support of donors (42%); principally by USAID, World Bank, Asian Development Bank and Swiss Development Corporation.

[117] In 1992, the research expenditure was NRs 335 million, which represented just 0.46% of the Agriculture GDP (SEADD 1994). This is less than the 0.79% that was spent in 1985 (Upadhaya, 1999); and far less than the 2% recommended by the World Bank.

[118] This was particularly exemplified by Samuhik Bhramans; field visits based RRA techniques undertaken by PAC staff, to interact with local farmers. According to KC et al (1995), these field visits have led to a total of 225 recommendations of which 115 were adopted.

PAC also remained an important partner for other programmes. The most notable being its support to seeds and livestock, provided to the UK supported Koshi Hills Area Rural Development Programme (KHARDEP)[119], the Koshi Hills Development Programme (KHDP) and the Koshi Seed Vegetable Project (KOSEVEG). Details are discussed in the subsequent sections.

2.6.4 Small Area Development Programme (1975 – 1977)

2.6.4.1 Objectives and Evolution

The Small Area Development Programme (SADP) was a government programme initiated by the National Planning Commission (NPC) during the Fifth Five Year Plan (1975-80) (Gurung, 2005). This was a nationwide programme, which was focused on implementing rural development activities within a limited geographical area, primarily due to the lack of resources by the state for large scale programmes (CEDA 1975).

Within the Koshi Hills, the SADP was initially implemented only in Khandbari of Sankhuwasabha district and later extended to the entire district where it focused on small-scale agriculture and irrigation activities. Later, according to Gurung (2005) this programme went on to become the precursor of Integrated Rural Development Projects (IRDPs) such as the Koshi Hills Area Development Programme.

2.6.5 Agriculture Status in the 1980s

2.6.5.1 National Context

During the 1980s, government's focus was on strengthening agricultural extension services through infrastructural development, providing in service training to staff, and the provision of financial assistance to the districts in support of their regular programmes.

The Fifth Five-Year Plan (1975-1980) had accorded the sector the highest priority and during its implementation the *Ten-Year Agricultural Plan* (1975-85) was also initiated. Its focus was to increase production to meet the needs of the growing population; promote the increase of agricultural commodities to develop and sustain the nascent industries; and to pursue regional specialization of agricultural products based on the geographical comparative advantages of the Tarai, Hills and Mountains (Yadav, 1987).

Within the Koshi Hills, between 1980 and 1990 there was a steady rise in the area of all crops cultivated, except Barley[120]. The most significant being the doubling of cultivated area for Paddy, Wheat and Millet (Table 24). Indicating, in the case of Wheat, greater productivity as it is a winter crop and mostly grown through inter-cropping with Maize.

Table 24: Area, Production and Yield of Selected Crops (in ha)

Selected crops	1976/77			1980/81			1990/91		
	A(ha)	P (mt)	Yield (kg/ha)	A(ha)	P (mt)	Yield (kg/ha)	A(ha)	P (mt)	Yield (kg/ha)
Paddy	22878	54339	2375	27720	57170	2062	42040	97870	2328
Maize	32340	60789	1880	40710	61430	1509	57160	88020	1540
Wheat	3318	3554	1071	4440	5330	1200	7950	9870	1242
Millet	8960	10678	1192	10330	9780	947	21880	23060	1054
Barley	538	370	688	520	450	865	470	460	1000

[119] PAC's association with KHARDEP began in 1982 and onwards and continued with KHDP until 1989. According to Bebbington (1993:9), the relationship soured and was later cut.

[120] The area, production and yield of crops in the four Koshi Hills district, Koshi Tarai districts and the neighboring districts of Ilam and Khotang are presented in Part 2 of this report.

Selected crops	1976/77			1980/81			1990/91		
	A(ha)	P (mt)	Yield (kg/ha)	A(ha)	P (mt)	Yield (kg/ha)	A(ha)	P (mt)	Yield (kg/ha)
Sugarcane	72	961	13347	60	980	16333	120	1780	14833
Oil seed	1393	749	538	1050	600	571	1680	1200	714
Potato	7198	30700	4265	6300	38140	6054	7450	49060	6585

2.6.5.2 Donor Supported Programmes within the Koshi Hills

Similar to the past decade, donor supported programmes were focused on increasing productivity within the hills; through the provision of technical support to farmers and the enhancement of government service centres. Koshi Hills Area Development Programme (KHARDEP), an Integrated Rural Development Programme (IRDP), was the most significant intervention.

2.6.6 Koshi Hills Area Development Programme (K -1 and 2): 1977 -1985

2.6.6.1 Historical Evolution

Koshi Hills Area Development Programme (KHARDEP) began in 1979, following a two-year study period, known as K-1[121] and remained till 1985, which included a series of baseline studies and small projects in irrigation, drinking water supply and trail improvement (Nabarro & McConnell, 1990). These studies identified various structural and technical conditions that had restricted agriculture and livestock production within the Koshi Hills; the most significant being the an equal access to land[122], both in terms of quantity and quality; utilisation of inefficient agriculture technology; and the necessity of people to migrate to overcome food deficiencies (Conlin & Falk, 1979).

Later, the experiences gained from these projects, along with the socio-economic studies, went into devising the larger KHARDEP, also known as K-2. According to Nabarro & McConnell (1990) the genesis of KHARDEP (K-2) arose from the view within ODA that the Dharan-Dhankuta road, started in 1976, would not in itself be enough to bring benefits to the region, and those complementary interventions would be required within the catchment area. This explanation of its origin also supported by Nickson (1992) who points out that the submission by SEADD for the latter project had recommended the need of an associated rural development project at Dhankuta, appropriately staffed to provide technical assistance to help HMG/N exploit the agriculture potential after the 'opening-up' of the area by the road.

When KHARDEP was implemented within the four hill districts (Dhankuta, Terhathum, Bhojpur and Sankhuwasabha), between 1979-1985, its objectives were to strengthen local services and to build up local institutions, so as to help HMG/N promote balanced economic and social development of the Koshi Hills Area (Upadhaya, 1986 citing the KHARDEP Phase 2 Plan). This was an integrated rural development programme (IRDP). One of a number of IRDPs that were implemented in the 1970s[123]; which were highlighted by the sixth five year plan (1980-1985) as being an important strategy for providing for the basic needs of rural people.

As an integrated development programme KHARDEP was designed to work within the framework of government agencies, coordinating the activities of different agencies to ensure that local populations have easy access to services and inputs. The programme was controlled by the Ministry of Panchayat and Local Development (MPLD) in Kathmandu while financial and technical assistance was provided by the ODA.

The programme consisted of a number of projects, of varying size, scope and coverage, which encompassed agriculture, livestock, community forestry, infrastructure, health, water supply, cottage

[121] According to Howell (1984) the cost of K-1 was GBP 22,000.

[122] It identified 43 percent of households had access to less than 0.5 ha of cultivable land and were able to produce only half of their food grain requirements from their own land (Conlin & Falk, 1979).

[123] In the mid 1970s, 16 IRDPs were initiated covering 41 districts (Gurung, 2005).

industries and education. The agriculture component was however one of its main priority (Dunsmore, 1987; Nabarro & McConnell, 1990) along with roads. The programmes model was to strengthen the Department of Agriculture's (DoA) extension services by constructing Agriculture Service Centres (ASC) to provide basic agricultural and veterinary services such as access to improved seeds, fertilizers and technical assistance; establish Small Farmer Development Programmes to enable farmers to have access to institutional credit; build a number of irrigation schemes to lessen the dependence on rain as well as to enhance capabilities of government institutions by financing new posts (JT and JTA positions)[124] and enhance their technical knowledge through trainings (Classels et al, 1987; Dunsmore, 1987; Nabarro & McConnell, 1990). Here, the linkages with PAC were of the particular important, as KHARDEP was dependant on the research centre for improved seeds to distribute as well as provide trainings (KHARDEP, 1982).

Similarly, support for livestock development had three main components: breeding new varieties, improving the nutrition of the animals and providing health services (through curative services such as vaccinations and provision of drugs) (Howell, 1984).

2.6.6.2 Interventions and Impacts

After three years of implementation, an interim assessment undertaken in 1982 commented that agricultural development within the target area had generally been slow and that the anticipated increases in service utilization were not always evident (KHARDEP, 1982). The report highlighted problems in planning, recruitment of senior qualified staff, financial and management constraints working with the HMG/N departments, and the lack of coordination amongst the various sectors (KHARDEP, 1982). Problems, which also were echoed in later assessments in great detail (Howell, 1984; Upadhyaya, 1984; Pant, 1986; Nabarro et al, 1987; Nabarro & McConnell, 1990).

It was noted that resources earmarked for agriculture development and cottage industries were shifted towards the construction of roads (Upadhaya, 1984; KHARDEP 1982). An IDS assessment in 1981 pointed out "…activities to promote the directly productive sector including agricultural and cottage industries, in particular, remain more or less unimplemented, with the road namely, Dhankuta-Hile, claiming a major share (40%) of the resources spent so far" (IDS 1981). By the end of the programme this trend continued with the major bulk of the spending (28%) on roads followed by agriculture (16%)[125] (KHARDEP 1982).

According to an ODA assessment conducted by Howell (1984:28) even though the ASCs[126] were seen by the programme as being central to agricultural development, due to costing and staffing[127] problems only 12 were built[128], out of the 24 that were planned. As a consequence, he indicates nearly 60% of the hills families fell outside the catchment area of the extension services of the programme.

Another significant problem was that of integrated planning and implementation. In the early 1980s, it was noted by Pradhan (1983) that "…line agencies consider their respective IRDP components as something imposed from the outside and accord low priority to them in their overall programme" (Dunsmore 1987:16 citing Pradhan). Various authors note that this may well have been a factor in the problems within KHARDEP with respect to coordinating with government agencies (Howell, 1984; Upadhaya, 1984; Nabarro et al, 1987). According to Upadhaya (1984) one reason for the lack of coordination amongst the various line agencies and KHARDEP's project coordination office was that no administrative powers were provided to the coordinator, who was looked upon by the district agencies as merely a representative of the MPLD. An early interim assessment was critical in its

[124] According to Nabarro & McConnell (1990), KHARDEP established and financed one Junior Technician (JT) to 12 ASCs and 1 Junior Technical Assistant (JTA) per two panchayats.

[125] GBP 1.8 million was spent on roads while 1.03 million was spent on agriculture (KHARDEP, 1982).

[126] Each ASC was to consist of offices, stores and accommodation for staff from the Departments of Agriculture, Livestock Development and Animal Health, Agricultural Inputs Corporation (AIC), the Agricultural Development Bank (ADB) and government run cooperatives (Sajhas) (Nabarro, 1987).

[127] According to Howell (1984) by 1984, only half of the JTA and JT positions were filled.

[128] Howell (1984) further notes that among the 12, only 5 were in good working order, at the time of the assessment.

review that "… (KHARDEP) is a collection of disparate activities whose only source of coherence and integration if any is the ODA advisors…"

The same report goes on to remark that "...the line agencies upon whom falls the burden of executing the schemes do not actively participate in the planning exercise. The annual plans are largely prepared by the UK technical team" (Nickson 1992 citing IDS review of KHARDEP). Along similar lines, Howell (1984:28) also noted that various agencies such as the Agricultural Development Bank (ADB), Agricultural Input Coorporation (AIC), Department of Livestock Development and Animal Health were not always willing to open branches at the various ASCs and disagreements about the management of the physical facilities were seemingly critical issues that affected the operation and maintenance of the centres.

However despite, the difficulties associated with an integrated strategy and the apparent poor extension efforts through the ASCs coverage, various assessments do account for the fact that by the end of the programme in 1985, there had been an increase in the production of maize, wheat and potatoes[129] (Pant et al, 1986; Nabarro et al, 1987; Cassels et al, 1987). These rises were mainly associated with the increase in usage of improved seeds and fertilizers (through the ASCs and Sajhas) and the better marketing opportunities provided by the increase in the demand from the expanding population in the urban centres[130], as opposed to greater coverage provided by irrigation systems, which as will be later discussed were poor.

Quoting figures from the AIC, Howell (1984) points out that the total usage of fertilizer usage increased from 254 tonnes (in 1980/81) to 477 tonnes (in 1983/84); with the sharpest increase from 14 tonnes to 207 tonnes seen in Terhathum. This sharp rise was primarily due to the establishment of AIC branch in Terhathum (Howell, 1984: 35); which highlights the difficulties associated with access to inputs within the Koshi Hills. Problems of access and cost[131] were more pronounced for fertilizers, as seeds could be obtained from other farmers, through the exchange of labour or grain (Conlin & Falk, 1979). But, chemical fertilizers needed to be brought from the AICs, which were not readily available and expensive.

Within the KHARDEP catchment areas, an Impact Study (Cassels et al., 1987:35) [132] noted that amongst the Koshi Impact Sampled (KIS) households improved seed and chemical fertilizer usage increased from 4-28% and 6-18% respectively, between the later years of the programme. With most of the increases seen amongst the wealthier groups[133], who were using twice the amount of fertilizers Nabarro et al. (1987). Other studies also noted that access to these inputs, through the extension

[129] According to Pant (1986), the average production of maize increased from 400 kg in 1979 to 600kg in 1984. Similarly, there was an increase in the production of potatoes by 40% and for wheat by 26%.

[130] This was particularly true for Dhankuta bazaar, which became increasing food deficit as the population rose due to the inflow of government officials after it was designated as a regional developed centre for the Koshi Hills (CEDA, 1975:447).

[131] Main reasons for farmers not utilising fertilizers were due to the high costs, the perception that the chemicals would pollute the soil and the lack of knowledge about how to use them, farmers perceiving that the full benefits could only be achieved if the seed and fertilizers were planted in highly fertile land with adequate irrigation facilities (Goldsmith, 1981; Cassels et al 1987). Interestingly, Goldsmith (1981), in a land and soil resource study, had pointed out that the cost of chemical fertilizers would limit its applications, so the report recommended that KHARDEP should instead focus on developing higher yielding and more disease resistant crop varieties and to emphasis production of compost and more efficient collection and storage of organic manure.

[132] The KHARDEP Impact studies were longitudinal impact assessments that were conducted from 1980-85. These were unique as they were initiated as a sequel to the detailed baseline survey conducted by Conlin & Falk (1979). They collected information from 270 households, from six project sites, stratifying the sampled households into two groups of households that would most likely benefit from the programme activities to those which would not. These studies collected anthropometric as well as data on land and agriculture production.

[133] The wealthier groups were categorised based on access to land, in particular Khet land, and annual food deficit (Cassels, 1987:11).

services, were patchy, confined to areas close to the ASC[134], and accessible to mostly the better-off and those who had high social status[135] (Howell, 1984; Pant et al., 1986; Nabarro et al., 1986; Nabarro et al., 1987). This was in line with nation wide trends whereby, 90% of government subsidized fertilizers and 89% of subsidized credit was going to the richest 5% of the landowners (Ghimire, 1981:43).

Particularly disappointing was the development of the irrigation systems[136], which according to Howell (1984) had been a major failure. The programme had initially targeted the construction and renovation of a number of irrigated schemes to cover 1,100 ha, later expanded to 2,000 ha through the construction of 44 schemes. But, near the end of the programme Upadhaya (1984) reported that of the total projects planned, 30% had either been cancelled or been left incomplete and amongst those that were completed 90% were not in operation[137] (1984:64-66). According to Howell (1984) the reasons for this were due to technical difficulties, problems in planning, corruption and the lack of maintenance as being significant. By the end of the programme, Nabarro concluded that the proportion of total land cultivated that was irrigated (38%) showed no change and that "…production (was) still highly dependent on the vagaries of the climate" (1987:24).

He further noted that despite the rise in production there was only a marginal improvement in food sufficiency by the end of the 5th year (ibid 1987:26). Furthermore, the majority of the benefits were accruing to the better-off segments; who not surprisingly, were the first to take advantage of the new opportunities by being able to afford to invest in inputs (Pant et al, 1986; Cassels et al, 1987; Nabarro et al, 1987; Nabarro & McConnell, 1990).

According to Nabarro et al (1987), in 1984, 40% of the wealthier households were facing food deficiency compared to 84% of poorer households. The food gap ranged from an average of four months for poorer households to under one month for better-off households, depending upon the timing and quality of rainfall in the previous years (Nabarro & McConnell, 1990:65). Furthermore, the impact studies of the KIS also showed that despite increases in production, nutritional status of the household members, both adults and children, did not improve between 1980 and 1985 (Cassels et al, 1987; Nabarro et al, 1987). According to the report, annual fluctuations in weight of both adults and children[138] were observed reach year and were found to be dependant on whether there was a good harvest or not. This led the report to conclude "…the positive effects of development activities on Koshi Hills area households were not sufficient to counter the adverse influence of a failed harvest on nutrition and, perhaps, child death rates" (Nabarro et al, 1987:6 citing the impact study).

The study went on to recommend that to ensure, all households benefited, the programme must renew its focus and continue in the provision of "low interest production credit" accompanied by insurance schemes and back-up services, so that farmers could protect their investments and maximise their returns. Till then KHARDEP, through its support to the Small Farmers Development Programme SFDP) [139], had disbursed loans equalling NRs 36,00,000 to over 2,000 member households by 1983/84 (Nabarro & McConnell, 1990). Most of the loans were for livestock (70%), followed by crop production (23%) and cottage industries (5%) (ibid,1990:48). But, similar to access to extension services Howell (1984:33) had pointed out that though "…the SFDP has brought credit to

[134] For example, by the fifth year of implementation the percentage of households using chemical fertilizers in Chainpur panchayat was 60% within close areas to the ASC, compared to 18% in distant areas (Nabarro, 1987).

[135] According to Nabarro et al. (1986:28) "… only 10-20% of all households reported a visit from an extension worker in years 4-5".

[136] Here, the main support provided by the programme included the supply of grants to village panchayats for the construction or repair and technical training to overseer, sub-overseers and community technicians (Howell, 1984:41).

[137] Interestingly, a review of KHARDEP's activities by SEADD in 1992 went on to report that in addition to technical difficulties, the socio-political environment of the panchayat system was to blame for fostering inefficiency and allowed the misappropriation of funds (KHDP, 1993:19, citing the SEAD study).

[138] The impact studies point towards an increase in the proportion of children who were stunted by the end of the studies from the poorer households (Nabarro, 1987:7); indicating the vulnerability and inability of poorer households to withstand the adverse climatic conditions.

[139] The SFDP is discussed in more detail in section 4.

many who would not otherwise have received it, it has not been particularly successful in reaching the poorest households". According to the review by Howell, only 5% of the SFDP were famers with land less than 0.5 ha; while the majority (55%) were farmers with over 1 ha of land. In addition, Cassels et al (1987) go on to point out that even if loans are taken for productive purposes, families have difficulty in making proper use of it due to their indebtedness from outstanding loans already taken to overcome consumption needs[140]. As a result, the report concludes, institutional loans inevitable go into making interest payments and during times of hardship, being utilized for buying grain.

In addition to taking out loans to cope with food deficits, the study by Cassels et al (1987) identified off-farm work[141], in particular the employment opportunities generated during the construction of the ASCs and the roads component, in temporarily easing their situation along with the sale of livestock, which remained an important coping mechanism for overcoming food deficiencies (Cassels et al, 1987; Nabarro et al, 1987).

According to Nabarro et al (1987) within the five years of KHARDEP, an increase in the number of animal holdings was seen most prominently in programme high-intensity sites, compared to remote areas and amongst larger farmers (1987:29). Which they point out were not only more likely to visit the ASCs but were also visited much more by extension service providers. The authors point out that along with the provision of technical know-how (through the ASCs and two new veterinary hospitals that had been established by the GoN) access to markets was also an important determinant, as the numbers of holdings were found to change according to an increase in the demand, such as festivals.

Temporary migration was also common (Cassels et al, 1987:31). A socio-economic study by CEDA in 1972 had estimated that in some villages over 5% of the population were migrating, which was further accelerated in the later years with the eroding of resource bases (CEDA, 1975:405). According to the study by Cassels et al (1987: 31) in spite of the development interventions, households continued to migrate; with Assam, a city in Northern India, becoming the preferred main destination at that time. The study goes on to note that while previously the migratory workers were working as labourers, later in the mid 1980s they started working in the emerging coal-mines under terrible conditions.

The poorer households did not however resort to the selling of their land when faced with food deficits (Nabarro et al, 1986:36). The impact studies reported that disinvested of land was a last resort in times of food scarcity and as such the amount, type and distribution (between wealthier and poorer households) of cultivable land remaining fairly constant (Nabarro et al, 1987; Cassels et al, 1987). Renting out of land, by the wealthier segments did however start to occur. According to Nabarro et al (1987) the reasons for this are complex and varied due to the new labouring opportunities, market facilities and off-farm business activities that were created with the onset of KHARDEP activities. Other authors such as Pant (1986) indicate that this process may have been because the land rich, who produce just enough for their food but lack cash to meet other recurrent expenses prefer to mortage land out to fulfil their cash needs than become labourers, which is associated as being demeaning.

Nickson (1992) meanwhile argues that the whole approach "transferring technology" was inappropriate and ineffective because the programme did not address the issues of small farmers. It was therefore, not surprising according to him that in spite of the development activities, farmers were forced to feed themselves through seasonal off-farm portering, petty trading, and seasonal or permanent out-migration. Citing the socio-economic studies that were conducted by CEDA (1972 and 1975), he points out that even though these studies indicated the lack of land as being the single most significant limiting factor- none of the programmes, including KHARDEP, addressed this problem head on by looking into ways of providing loans or lands for land purchase. Rather, they focused on transferring new technology, which Nickson argues was not successful as the poor farmers did not have adequate land to take advantage of new improvements introduced, nor did they have sufficient access to the extension services as indicated by other impact studies.

[140] Nabarro & McConnell (1987:66) report that over 70% of poorer famers were in debt despite the efforts to provide cheap institutional credit through the SFDP.

[141] According Nabarro (1987:26) over one third of all adults (above 15 yr) were regularly participating in off-farm paid employment.

Instead, he points out that one of the most significant impacts of KHARDEP's interventions on institutional development has been the financial benefits provided to the HMG/N. He states that under the IRDP arrangement, while budgetary support provided by the UK government was to be transferred via the Ministry of Finance to the line agencies to purchase capital equipment, the funds were often re-assigned for the payment of recurrent expenditures in the form of salaries and allowances of the staff operating in the Koshi Hills. As a result he argues "…the British aid programme effectively contributed to the maintenance of a grossly overstaffed and ineffectual bureaucracy in the project area. The effects of which have been inimical to the development needs of the local population" (ibid).

After the termination of the project in 1985, a two-year period of gap followed, during which the ODA and the HMG/N laid the plans for a third phase of the programme which was renamed as Koshi Hills Development Prorgramme (KHDP), also known as K-3 (Section 5).

2.6.7 Small Farmers Development Programme

2.6.7.1 Objectives and Targets

The Small Farmers Development Programme (SFDP) was initiated nation wide through the ADB in 1975, and implemented within the Koshi Hills under KHARDEP, through UK funding since 1979/80 (Nabarro & McConnell, 1990).

The main objective of this programme was to improve the socio-economic status of the rural poor by providing access to credit, through group liability (Nabarro & McConnell, 1990). Loans were provided for the purchase of land, food and payment of debt as an alternative to the high interest rates offered by moneylenders in villages. In addition, it was also envisioned that the groups would develop as "…multipurpose development units at the ward level to bring about rapid progress of rural areas" (Marsh & Dahal, 1984).

2.6.7.2 Impacts

As earlier discussed in section 3.2, a total of loans equalling NRs 36, 00,000 had been disbursed through the SFDP (Nabarro & McConnell, 1990). An assessment conducted by Marsh & Dahal (1984) reported that the programme had been successful in reaching many households, who would not have access to institutional credit; but also remarked that in spite of the programme targeting poor households, the programme had not been as successful in reaching them. Only 25% of the loans were provided to small farmers[142] (Marsh & Dahal, 1984).

In addition, it was also noted that the vision of the farmer groups going on to become catalysts of change was premature; due to the lack of increased additional support by the SFDP staff and an increase in the emphasis on on-loan activities, which was lacking. As a consequence, Marsh & Dahal (1984) go on to note that for most of the SFDP members, the only reason for participating in the SFDP was to access loans.

2.6.8 Agriculture Status in 1990s

2.6.8.1 National Context

As the government shifted its policies towards a more market-oriented system, national plans such as Agriculture Perspective Plan, the Eight National Plan (1992-1997), the Ninth National Plan (1997-2002) and policies including the Fertilizer Deregulation Policy (1997) [143] and National Seed Policy (1999)[144], all reflected a greater attempt to encourage private sector participation and investment within the sector.

---

[142] The range of small farmers (<0.5 ha) ranged from 0% (in Ankhisalla, Kharang panchayats) to 11% (Jirikhimti); while for farmers with land >1.5 ha the range was 19% (Kharang) to 56% (Ankhisalla) (Marsh & Dahal, 1984).

[143] The elimination of fertilizer subsidies, which had been provided through the AICs since 1973/74, due to the Fertilization Deregulation Policy in 1997 and the subsequent entry of the private sector in the distribution system along with the end of subsidies for shallow-tube wells also represented significant shifts in the mid 1990s (Pant, 2002; Shrestha, 2010).

[144] Please refer to Annex 10 for brief details of the national policies and strategies.

Amongst these, the Agricultural Perspective Plan (APP) formulated in 1995, through the support of the Asian development Bank, represented a comprehensive attempt to map out a twenty-year future for the sector. This major policy document was based on the argument that agriculture would provide the "engine" for economic growth; and as such four priority areas were identified: shallow tube-well irrigation, chemical fertilizers, infrastructure (Agricultural feeder roads) and technology dissemination – the lack of which had, it was assumed, had resulted in stagnant growth (APP 1995).

An assessment in 2001, commissioned by the government and ADB, concluded that the performance of the agricultural sector had improved, compared to the past (ANZDEC, 2003). Scholars such as Seddon et al (1998), Cameron (1998), and Pradhan (1985) however point out that these improvements had varying levels of impact across different areas and groups of people. According to Cameron (1998), the plan had implicitly assumed that the majority of farmers in the country were "middle sized farmers" who were "willing to take significant uninsured risks based on technical advice from the state or private sector to seek higher net incomes by using market forces" (Cameron, 1998:11). No initiatives were introduced for the most vulnerable (eg. distributing common property to the hands of the poorest) and neither were migration and its impact discussed, except to assert that less people would be migrating to Kathmandu if the plan was successful (Cameron, 1998:13).

The plan had also sought to stress greater emphasis on production according to the "comparative advantage" of the three agro-ecological zones − Mountain, Hill and Tarai giving priority to their respective agricultural production potential (APROSC/JMA, 1995). The focus was therefore on livestock production (yak, sheep, goat) apples, and potato seeds in the mountains; horticulture, dairy livestock, off-season vegetables, vegetable seeds, apiculture and sericulture in the Hills and grains (rice, wheat, and corn), vegetables, fruits, and livestock in the Tarai (APP, 1995).

Chitrakar and Singh (2004) however point out though seeds stand a good chance of becoming an export commodity, especially in the hills due to the agro-ecological conditions, as envisioned in the APP and FYPs, the reality is that despite the emphasis on the sub-sector in the hills, over the past years Nepal has managed to export only one type of seed (radish) to only one market in Bangladesh (ibid). Conversely, they point out that the country has started to become more dependent on the import of hybrid seeds, with 60% of the total domestic seed demand estimated to be met from imports (Chitrakar and Singh, 2004).

Table 25: Vegetable Seeds Import and Export (Chitrakar and Singh, 2004)

Description	Balance sheet of vegetable seeds in Nepal: 1998-2002 (in MT)				
	1998	1999	2000	2001	2002
Domestic sales	285	373	849	800	911
Total import	108	76	264	243	219
Total export	94	45	124	30	71
Domestic production	271	271	717	588	700
Sale of hybrid seeds	8	6	7	9	19

Off-season vegetable production has, however, shown a growing trend. Banskota and Sharma (1999) argue that the improvement of the north-south transportation system between the hills and lowlands in the country has facilitated transportation and thereby led to year round supply to meet growing demands. They point out that there has been a steady rise in the cultivation from 1975 (82,000 ha nation wide) to 144,368 ha in 1996.

Table 26: Area, Production and Yield of Vegetables in 1995/96 (Banskota & Sharma, 1999)

Region	Area		Production		Yield
	ha	%	MT	%	kg/ha
EDR	10,795	18	88,924	16	8,238
CDR	27,273	46	280,244	50	10,276
WDR	9,274	15	84,452	15	9,106

Region	Area		Production		Yield
	ha	%	MT	%	kg/ha
MWDR	8,962	15	74,782	13.5	8,344
FWDR	2,898	5	24,392	4	8,416
Nepal	144,368		1,327,298		9,194

Note: EDR: Eastern Development Region, CDR: Central Development Region, WDR: Western Development Region, MWDR: Mid Western Development Region, FWDR: Far Western Development Region.

Donor Supported Programmes within the Koshi Hills.

Within the Koshi Hills, the 1990s saw a gradual withdrawal of large-scale multi-sectoral interventions towards more focused sub-sector approaches (e.g., off-season vegetables and seed production). The disenchantment with the performance of government partners also led many of the programmes to search for other partners within the NGO sector, which in the 1990s were establishing themselves as agents of change. At the same time, as a result of market oriented frameworks, there was also greater emphasis on building "participation and partnerships" between the public and private sector.

2.6.9 Koshi Hills Development Programme (K-3): 1987-1992

2.6.9.1 History, Objectives and Targets

KHDP was designed to minimise some of the organizational problems faced by KHARDEP during planning and implementation, by moving away from a multi-sector IRDP approach (SEADD, 1992a). As a consequence, the number of sectors was reduced to seven, such as Agriculture, Livestock, Forestry, Local Development, Uttarpani Agriculture Technical School (UATS), Roads, and Technical Assistance to PAC (KHDP, 1992).

Most notable was the absence of the Irrigation, which was originally included in the project memorandum (WS Atkins, 1993) and a number of small renovation and extension projects[145] were initially carried out within the initial two years, but later was dropped after a SEADD review in 1989. The main reasons cited were the difficulties in accounting, monitoring, the need to focus its activities and the assumption that the then proposed Eastern Hills Development Project[146], supported by the European Commission, would cover irrigation (SEAD, 1989:6).

Each component operated within a framework of a separate agreement with the respective line ministries[147] so as to avoid working exclusively with the MPLD as was the case with KHARDEP. But, this also created new handicaps as the various sub-projects began to operate independently and in isolation. For example, while Koshi Hills Community Forestry Project (KHCFP) with the support of the District Forestry Office (DFO) was responsible for fodder seedlings, liaisons with the DFO and the Department of Livestock Services (DLS) was minimal and seedling distribution was low (WS Atkins 1992a).

Overall the programme was coordinated by a Programme Management Office (PMO), with technical and management assistance being provided by WS Atkins Land and Water Management, under contract from the ODA[148]. Initially designed to run for three years, the programme was extended twice and came to an end in 1992.

---

[145] According to WS Atkins (1993:18) two irrigation schemes were renovated in Dhankuta district, leading to the increased coverage of 25 ha of land under irrigation.

[146] The project did not however come into effect.

[147] The agriculture component worked with the DOA, the livestock with Department of Livestock Services (DLS) and UATS with CETVT.

[148] According to Nickson (1992) the involvement of WS Atkins and not the setting up of a Technical Cooperation Officer (TCO) reflected the increasing ODA decision to work with the private sector.

2.6.10 Interventions and Impacts of Agriculture, Livestock, UATS and Support to PAC

The agriculture component, also referred as the Koshi Hills Agriculture Project (KHAP), was primarily focused on increasing the supply and distribution of locally produced seeds and supporting extension services (WS Atkins, 1993).

Here, one of the major changes from KHARDEP was the emphasis on *Farmer's Group Approach* for extension services. This change had been highlighted by a KHAP review in 1889, which indicated that the previous approach, of working directly with farmers, was constrained by inadequate human resources, inequitable distribution of advice and instruments and the failure to adopt new technologies; similar to those experienced during KHARDEP. The report had therefore recommended the group approach, to establish a system that would allow limited number of technicians to reach large number of farmers and that the approach would "…strengthen groups and encourage the formation of new groups with the aim of using them to spread new technologies and extension messages" (WS Atkins, 1993:5). Furthermore, this strategy was also in line with the then Ministry of Agricultures guidelines for a group approach initiated in 1992[149] (ABTRACO, 2007).

By the end of the project, a total of 36 Seed Producer Groups (SPG), 40 Women Groups (WG) and nine Seed Potato Producer Groups (SPPG) were established (WS Atkins, 1993:22). Whether all these groups were active with all members aware and having access to inputs from the project is unfortunately not discussed in the terminal reports or the reviews[150]. Though, considering that the criteria for the selection of the farmers needing to be food sufficient, able to provide the required inputs and with adequate fertile land for the production of seeds (WS Atkins, 1993); one could infer that they were mostly the larger land-owners.

According to the project documents, this bias if any, was not relevant, as the main targeted beneficiaries were the seed users; and though the project did not keep any records, the terminal report prepared by WS Atkins (1993) notes that buyers from the Sajha offices were consistently being reported as medium-poor farmers (1993:49). The reports are however clear that the 'mini-kits[151]' being distributed were biased towards the wealthier farmers and recommended that a quota system be placed for distribution within certain geographical areas and socio-economic groups (WS Atkins, 1993:11). It is worth noting that none of the project components' objectives were specifically addressed to the needs of the poor.

The seed groups[152] nevertheless did go on to increase the production[153] of improved varieties of seeds from 5 MT (1987/88) to 156 MT (1991/92) (WS Atkins, 1993:14); with the most notable rises seen in the production of staple crops (maize, rice, millet and potatoes). The project documents go on to argue that the increased production of seeds led to an increase in incomes and consumption levels. Particularly, that an additional 185kg of food (equivalent for two months sustenance) had been produced from the usage of improved seeds (WS Atkins, 1993:16). But, this was based on

[149] According to ABTRACO (2007) other significant reasoning for the development of the approach by the HMG/N was to orient farmers towards commercialization by creating an outlook and behaviour to produce more marketable bulk crop; accommodate poor and deprived groups by bringing them into contact with services (2007:1).

[150] According to a World Bank report on the adoption of farmer's group approach, throughout the country, 50-80 percent of the groups were found to be inactive due to the lack of follow-up activities. World Bank (WB) (1999). Report on performance indicators and baseline data for monitoring and evaluation of Agriculture Research and Extension Project. Kathmandu, 1999.

[151] A total of 10,799 improved seed extension kits and 7.8600 off-season vegetable packets were distributed (WS Atkins, 1993:13).

[152] This component later went on to evolve into the most important activity of the project (KHDP 1992, WS Atkins, 1993).

[153] Early on this programme was located within PAC, but later it was transferred to KHAP and was implemented by HMG staff, through the assistance of the project. PAC did however remain responsible for quality control. Near the end of the project, the seed production programme was integrated within the DOA.

assumptions and calculations and not on actually studies; which was actually an overall weakness of the entire programme, which lacked a strong M&E system.

This is also reflected in the lack of information on the support provided to the government extension services, which was initially an important component of the programme, but was later over shadowed by the focus on seeds. Assessments are lacking, but a study by Pant (2002)[154] in the late 1990s on poverty within the Koshi Hills does provide some indication that despite programme support, the institutions were still largely inefficient and unresponsive to the needs of the people. He notes that the AICs in Dhankuta and Bhojpur were understaffed, were closed on most occasions with very few services and that the presence of extension workers were hardly felt (2002:87).

As per the climate of "public-private partnerships" was gaining emphasis, near the end of KHAP, there was an increasing emphasis on building links with the private sector (traders and seed companies); with a contract for 3 MT of vegetable seeds being signed near the termination of the project (WS Atkins, 1993:16). Till then, the seeds were stored and sold through the Sajhas, later to be controlled by the farmer groups themselves.[155]

One notable aspect about the KHAP was the increased attention and targeting of women. Previously, KHARDEP had slowly started incorporating women's concerns into its programmes, but this was chiefly confined to the construction works (e.g. Women's Training Centre in Dhankuta, Women's Club House) and setting up women extension workers in the ASCs (Nabarro & McConell, 1990:45). But, with KHAP, greater efforts were made to train women JTAs at the newly established UTS (25% of the students in 1991/92 were women); the recruitment of the graduates into the extension services; and establishment of Women Farmers Groups (KHDP, 1992; WS Atkins, 1993). According to the review conducted in 1991, while women accounted for 46% of all farmers group members, the most direct economic benefit had accrued due to the rise in vegetable seed production and the selling of fresh vegetables (WS Atkins 1993 citing the review report).

The training provided by the Uttarpani Agricultural Technical School (UATS), coordinated by the Council for Technical Education and Vocational Training (CTEVT), was also considered as a success (WS Atkins, 1993). Construction of the building had begun in 1980[156], during KHARDEP, when it was realized that extension workers lacked technical knowledge[157] relevant[158] to the hills soil and climatic variations (WS Atkins, 1992). The school opened in 1984 and was later handed to the GON in 1992. Till then 204 trainees had been trained, with most coming from the Koshi Hills and the neighbouring Mechi Zone (WS Atkins, 1992c).

According to the terminal report, most of the graduates went on to enjoy subsequent high rates of employment. It noted that women graduates had a particular easier time in gaining employment than their male counterparts due to the development projects actively seeking to employ women. Another significant aspect of this component was the development of the curriculum relevant to the needs of the hills (KHDP, 1992c).

Of less success was the livestock project, which was referred as the Koshi Hills Livestock Project (KHLP). The primary objective of this component had been to raise the productivity through improved animal husbandry (WS Atkins, 1992b). Efforts were on improving the genetic makeup of the local varieties, which were regarded to have evolved to survive the difficult conditions (caused by low nutrition) but were regarded to have low potential to respond to improving conditions (ibid). Initially, cattle and buffalo bulls were freely provided to farmers to cross breed with local cows, but later the farmers had to buy them. New breeds were also introduced, but, the terminal report points out that

[154] The study was titled "Changing Faces of Poverty in East Nepal". It focused on two districts: Dhankuta and Bhojpur and sampled 16 VDCs.

[155] The reason for this was due to the inefficiency of the Sajhas (KHDP, 1992).

[156] Later, it opened in 1984 and provided a two year study course to locals within the Koshi Hills and Mechi Zone (ibid).

[157] In addition to UATS, other technical schools throughout the country were being established: Karnali Technical School (Jumla in 1980), Jiri (Dolakha in 1984) and LTS.

[158] It was noted that most of the extension workers had been educated in the Tarai or the Kathmandu valley and therefore lacked local knowledge or were disinclined to work in the hills (CEDA 1975, WS Atkins, 1992c:2).

they had high mortality rates and that only the buffalo and pig programmes[159] could be considered as successful (WS Atkins, 1992b). For example the *Jamnapari* breed of goats was found to be inappropriate to the hills, as they required greater nutrition and did not thrive at altitudes above 1,000m (Gatenby et al, 1990).

The same report states that one of the significant reasons why other animals did not succeed were due to the lack of the understanding of local practices. For example, while *Jersey* cows were introduced, they did not catch on, as buffalos were the main "milch animals" which not only gave milk, but were also used for their draught power and manure. In the case of buffalos, the reports do however provide some measure of success, as it was estimated that 15% of all buffalos within the Koshi Hills in 1991 were of the improved varieties (WS Atkins citing Poudel & Bohra 1991[160]).

Efforts were also made to establish a milk collection scheme to market excess milk along the command of the Dhankuta-Basantapur road. According to an assessment of the scheme, over 1,000 farmers were involved and though there were initial concerns that children were being deprived of milk, the WS Atkins (1992b) terminal report goes on to claim that an in-depth evaluation 1991[161] had shown that this was unfounded as parents were only selling excess milk and that households from all socio-economic groups were taking part.

2.6.11 Vegetable Production with the Support of the Centre for Environment and Agricultural Policy Research Extension and Development (CEAPRED): 1990- 1994

2.6.11.1 Objectives

CEAPRED a Kathmandu based NGO, which with the support of DANIDA, started an off-seasonal vegetable production scheme in Dhankuta in 1990. The focus of its activities was to encourage farmers to produce and export fresh vegetables along the Hile-Basantapur road corridor (Banskota & Sharma, 1999).

2.6.11.2 Interventions and Impacts

The project was started in 3 VDCs in Dhankuta and also amongst 8 cooperatives (which were already a part of CEAPRED's Income Generating Project for Women Farmers). With the area of vegetable farming covering 20 ha and 500 ha respectively. Within the Dhankuta households, production was mostly for own consumption while the cooperatives were focused on sales; cultivating Beans, Aubergines, Cauliflowers, Capsicum, Chilli, Cucumber, Tomatoes, Gourd, Peas and Swiss Chard (Banskota & Sharma, 1999).

The project first organized the farmers into 'producer groups' into cooperatives and providing technical support (ANZDEC, 2003). According to a CEAPRED Progress Report 1996, this reduced transaction costs for the delivery of inputs, dissemination of technology and output marketing. The groups were also set up to collect monthly savings, which were then used for lending to group members for credit.

A 'marketing committee', comprised of members from the cooperatives, was also set up to strength the bargaining of the projects beneficiaries. The committee was itself responsible for facilitating the marketing of vegetables by directly transporting vegetables, thereby bypassing middle men, to access markets in Dharan, Biratnagar and even Jogbani and Siliguri in India (CEAPRED, 2005; Banskota & Sharma, 1999).

According to Banskota & Sharma (1999), by 1994, the cooperatives were producing 900 mt of vegetables of a value of NRs 35m annually. Depending on the vegetables grown, farmers are making NRs 3,000-5,000 per ropani (0.75 ha) or NRs 15,000 per household. Most significantly, the authors citing CEAPRED reports noted that due to the higher returns (up to 6 times) farmers were switching

[159] According to one estimate 25% of all the pigs within the Koshi Hills had improved blood due to the efforts of KHLP (WS Atkins, 1992b).

[160] Poudel, K & Bohra, L. (1991). A Detailed Survey of Livestock Population and Fodder Availability in Terhathum District. Koshi Hills Development Programme.

[161] Koshi Hills Development Programme (KHDP) (1992). An Evaluation of the Milk Collection Scheme. KHDP.

from Maize (the staple crop) to vegetable cultivation. With the farmers, allotting at least one-fifth of their cultivable land into vegetable cultivation (Banskota & Sharma, 1999:59).

2.6.12 Koshi Hills Seed and Vegetable Project: 1993 - 1997

2.6.12.1 Objectives

KOSEVEG project was the direct successor of the previous ODA funded agricultural programmes. It was designed to increase food production and incomes by strengthening the local seed and vegetable production, distribution and marketing systems; so that they could be exported from the hills. Initially, the project was implemented within the Koshi Hills. But, later in 1996 it was also initiated within other four districts[162] in West Nepal (ODI, 2000).

The Project was implemented by the project team with the support of the DADOs. This included the distribution of seed extension kits, demonstration trainings, trainings and workshops on handling of seed equipment and marketing (ODI, 2000). Quality seed certification was also undertaken with the support of PAC.

2.6.12.2 Interventions and Impacts

The project continued with the Group Approach, which had been practiced by KHAP, while working with three types of seed producers- Seed producer Groups, Seed Potato Producer Groups (SPPG) and Women Farmers' Groups (WFG).

By the end of the project in 1997, a total of 86 different types of farmer groups (37 SPG, 35 WFG, 4SPPG) had been established through the support of the project and 935 farmers had participated in various project activities. At the time, nationwide figures showed that in 1997/98 the Koshi Hills was the highest producing region within the country; producing over 18 MT of seeds compared with the western region's 13 MT (Chitrakar and Singh citing Hada and Chitrakar, 2004).

Amongst the farmer participants of KOSEVEG, 177 (19%) were categorized as being "poor"; with poverty being dependent on whether households had food self-sufficiency for less than 6 months or not. A review of the project by an ODI assessment was however noted that, though the project did document the number of poor farmers, there were actually no mechanisms in place to assess how they were benefiting from the project activities. The assessment was also critical that the project had no clear strategy towards the landless (ODI, 2000). In its appraisal that the landless and small farm holders were not provided priority. It reported that the project staffs were more concerned about increasing production and incomes, with the assumption that it would automatically lead to poverty reduction.

The project also supported the establishment of the Koshi Hills Seed Entrepreneurs Producers Association of Nepal (KOSEPAN), as a seed producers cooperative, to bring together scattered seed producers groups and link them with emerging markets and traders, was also established under KOSEVEG (ODI, 2000).

Interestingly, after the completion of the project, one of its recommendations was to limit the number of line agencies to ensure greater efficiency and success and building up partnerships with other agencies, particularly NGOs (Full Bright, 2008c).

Overall, data from the MOAC shows that between 1993/94 and 2003/04, there was a doubling of the area of vegetable production within the Koshi Hills, with the most pronounced growth seen in Dhankuta district (Table 27). Various studies have pointed out that this rise in production has been contributed by a number of factors- technical support and know-how provided by DADO and projects (eg. CEAPRED, KOSEVEG); the presence and development of markets (eg. Dhankuta bazaar which has historically been the centre for the region); as well as the linking of the region with the lowlands (and markets in the cities) through the construction of roads within the region (Banskota & Sharma, 1999)

[162] These include Baglung, Myagdi, Parbat and Kaski (ODI, 2000).

Table 27: Area, Production and Yield of Vegetables (MOAC)

	1993/94			2003/04		
	Area (ha)	Production (mt)	Yield (kg/ha)	Area (ha)	Production (mt)	Yield (kg/ha)
Bhojpur	823	6,584	8,000	1,305	12,267	9,400
Dhankuta	1,269	10,616	8,366	3,071	32,150	10,469
Terhathum	794	6,352	8,000	1,290	13,400	10,388
Sankhuwasabha	1,070	8,560	8,000	1,160	11,647	10,041
Koshi Hills	3,956	32,112	8,117	6,826	69,464	10,176
Nepal	140,500	1,197,496	8,028	172,586	1,890,100	10,952

2.6.13 Seed Sector Support Project: 1998 - 2000

2.6.13.1 Objectives

The Seed Sector Support Project (SSSP) was implemented in 1998 to consolidate the work initiated through KOSEVEG with the SPGs and KOSEPAN in the East. Coverage was also extended to the West and Far- West, as a consequence of the Special Support Programme, initiated by DFID, to undertake development activities in areas affected by the Maoist conflict (SSSP, 2004:16). Six districts[163] in the West and Far-west were selected with the programmes designed to help increase the production of seeds and fresh vegetables.

There were four main components of the project: (i) support to the SPGs for production and marketing; (ii) support to PAC and LAC for seed services; (iii) financial and training support for DADO; (iv) support to seed marketing organizations, i.e. KOSEPAN, Lumle Community Seed Processing Centre (LUMPROCC) and Western Hills Seed Entrepreneurs and Producers Association (WESEPAC) (SSSP 2004). Here PAC and LAC were both important partners of the programme; with the research centres providing the essential source seeds, laboratory testing and field inspections.

The management of the project was contracted out by ODA to HTS Development Ltd, a consortium of UK organizations[164] and METCON, a national consultancy company. While the overall direction was guided by the Project Steering Committee (PSC) lead by the MOAC, including DIFD.

2.6.13.2 Interventions and Impact

SSSP activities were concentrated on providing technical assistance to SPGs, as well as on creating a conducive environment for the expansion of the seed industry. This included financial[165] and technical support to the respective DADO staff, Agriculture Inputs Corporation (AIC).

By the end of the project, the final assessment reported that the production of seeds had risen up from 50 MT (in 1995/96 prior to the project) to over 160 MT (in 2002/03); with increases seen across all years since the commencement of the project (SSSP, 2004). This was according to the assessment report in spite of difficulties faced during the conflict, which had affect field supervision, constrained the movement of goods and had led to a drop in the demand for vegetables.

The project documents clearly indicate that inclusion of disadvantaged groups was a priority; yet the figures shown in the final assessment show that while the overall involvement of women as seed producers and recipient of trainings was moderate, the inclusion of Dalits and other socially disadvantaged groups was very low. For example, amongst the 20,500 seed growers who were

[163] These included Dadeldhura, Doti, Achham in the Far-west and Kaski, Myagdi, Baglung and Parbat in the West.

[164] This included: Scottish Agricultural Science Agency, Scottish Agricultural College and University of Edinburgh (SSSP 2004).

[165] Support totalling GBP 456,000 was provided to the government for trainings, establishment of Seed Quality Control Center (SQCC) and matching funds to the DADO for seed production and marketing (SSSP 2004).

provided with trainings, 32% were women.[166] But, only 6.4% belonged to Dalits and occupational groups (SSSP 2004). In the east, the figure was even lower at only 1.3%.

An impact study in the east further showed that the majority (59%) of seed producers belonged to less poorer groups (i.e. having more than 6 months of food self- sufficiency). With these groups, on average earned 14% of their total household incomes by selling seeds (SSSP, 2003). The findings showed that in the east, poorer groups were found to be less inclined towards seed production, due to the constraints faced in the need for suitable irrigated land and the risks of delays in payment (SSSP 2003).[167] Instead, fresh vegetable production was found to be preferred; with 88% of the project supported households growing them for the markets. The report notes that this was primarily due to the quick cash returns associated with fresh vegetables.

Project documents do however point out, while the SPGs have belonged to the better-off, poorer segments have benefited through the creation of employment opportunities. It documents over 14,000 labour days of employment that was created directly as a result of the programme activities. Interestingly, the project reports further assess that its activities, chiefly the employment opportunities created during the winter crop cycle, had also been successful to some degree to slow down the migration within its project areas (SSSP, 2004:93). This was especially the case in the east, where only 22% of the beneficiaries were migrating, compared to the west which had highest figures of up to 67%.

Another significant, role of the project in the east has been in supporting the marketing organizations, such as KOSEPAN, which was initially set-up during KOSEVEG and had been active in seed marketing but also had ventured into providing inputs. During SSSP, technical assistance and support were provided along with the direction that KOSEPAN should work closely with the SEAN Seed Support Centre (SSSC), to facilitate source seed production and contract out seed packaging and sales (SSSP 2004). After the completion of the project, an assessment of the ADB's Commercial Agriculture Development Project (CADP) in 2003, however noted that there had been a decrease in the magnitude of seed being contracted through the KOSEPAN. According to the reports assessment, this was due to the downturn of the national seed market (as more farmers turned towards hybrid seeds) and the delay in payments (ANZDEC, 2003).

Nevertheless similar to KOSEPAN, Lumle Community Seed Processing Centre (LUMPROCC) was also set up in the West through this project support based upon KOSEPAN, but it was found to be not effective and as a result, the project ended up removing its support. Later, the Western Hills Seed Entrepreneurs and Producers Association (WESEPAC) was set-up by the growers themselves. Support was also provided to the national level, Seed Entrepreneurs Association of Nepal (SEAN), in the construction of office space, storage facilities and setting–up the Seed Sector Service Centre (SSSC). According to the project documents, SSSP also played a role in contributing towards the sectoral policies. Particularly, in drafting of a modified Seed Act and an early training on the likelihood of Nepal's entry into the WTO (in 2003) and its consequence on the seed sector, especially with respect to the Intellectual Property Rights and how they impinge on the Farmers Rights (SSSP, 2004).

2.6.14 Agriculture Status in the 2000s

2.6.14.1 National Context

Within the agriculture sector, the emphasis of both the Ninth (1992-2002) and Tenth (2002-2007) Five Year Plans were on high value crops to bring about poverty reduction (NPC, 2002). Under the Tenth plan, the agriculture reform strategies included the mobilization of the private sector and NGOs, create favourable climate for investment, promotion of cooperatives/contractual farming, and the strengthening of agriculture stations to ensure the supply of quality seeds and planting/breeding materials (NPC, 2002).

During this period, the National Agricultural Policy (NAP) was also promulgated in 2006. The main objective of the policy, which is in line with the APP, are to "…commercialize agricultural commodities

[166] Out of 84 SPGs, 15 (18%) were women groups.

[167] Another impact study in the Far-West showed that the beneficiaries were more inclined towards seed production (SSSP, 2004).

based on comparative advantage and speciality of geographical setting to make agricultural products more competitive in the regional and international markets…" (MOAC, 2006). A year later, in 2007, the Agriculture Business Promotion Policy (ABP) was also enacted to promote the development of HVCs, based on commercial pocket areas (MOAC, 2007).

Nepal's entry into the World Trade Organization (WTO) in 2004 also had significant repercussions on the agricultural sector. Of particular significance were the agreements on: the Application of Sanitary and Phytosanitary Measures (SPS) [168]; Technical Barriers to Trade (TBT) [169]; Trade Related Investment Measures (TRIMS) and Trade-Related Intellectual Property Rights (TRIPS).[170]

2.6.14.2 Donor Supported Interventions within the Kosh Hills

Development programmes within the Koshi Hills continued their emphasis on HVCs in the 2000s, with a shift of focus on "value chains[171]" of specific crops. According to the programme documents, commercialization was being negatively affected due to the lack organization of isolated farmers in small groups (which had difficulty in accessing inputs, credits and technology) and the gaps in the linkages between farmers and traders with markets (ANZDEC, 2003).

A preparatory study conducted in the Eastern Development region (EDR) prior to the initiation of the Commercial Agriculture Development Project (CADP) by ANZDEC (2003) identified that though farmers were producing commercial crops for the market (and not merely the surplus after their consumption), which in turn passed through organized, mostly private-sector channels, the level of commercialization was still low and undeveloped.

Table 28: Area and Production of Selected Cash Crops in 2000/01 (ANZDEC, 2003)

Description	EDR	Nepal	EDR as% of Nepal	
Cardamom	Area (ha)	10,979	11,175	98.25
	Production (MT)	6,309	6,355	99.28
	Yield (MT/ha)	0.57	0.57	101.05
Tea	Area (ha)	11,497	11,997	95.83
	Production (MT)	6,638	6,638	100.00
	Yield (MT/ha)	0.58	0.58	104.35
Ginger	Area (ha)	2,188	9,054	24.17
	Production (MT)	22,220	88,298	25.16
	Yield (MT/ha)	10.16	9.75	104.13

[168] Sanitary and phytosanitary measures are defined as any measure that is applied to protect animal or plant life or health within the domestic territory from risks arising from the entry, establishment and spread of pests or diseases carried or caused by organisms, animals, plants or products (Jull, 2003).

[169] The Technical Barriers to Trade (TBT) Agreement requires member countries to use WTO technical standards and regulations on goods to prevent economic deception and fraud. The Agreement is targeted towards all types of consumer products and covers existing standards such as quality requirements for food (ibid).

[170] The TRIPs agreement was designed to promote the effective and adequate protection of intellectual property rights, and to ensure that measures and procedures to enforce intellectual property rights do not themselves become barriers to legitimate trade. The key provisions of the TRIPs agreement for the agricultural sector are the geographical indications (eg. place names to identify products with particular characteristics from the places they come from) and protection of plant varieties (by patents or by an effective "sui genesis" system or both) (ibid).

[171] Where value chains were being defined as a"…full range of activities required to bring a product or service from conception, through intermediary phases of production, to delivery to final consumers" (ANZDEC, 2003).

Description	EDR	Nepal	EDR as% of Nepal	
Potato	Area (ha)	45,766	129,019	35.47
	Production (MT)	443,450	1,313,717	33.76
	Yield (MT/ha)	9.69	10.18	95.16
Oil seeds	Area (ha)	31,011	188,455	16.46
	Production (MT)	21,061	132,331	15.92
	Yield (MT/ha)	0.68	0.70	96.72

The report was also critical of producers associations and pointed out that except for the usage for accessing inputs and credit, farmers were reluctant to join due to the ineffectiveness of the organizations, lack of knowledge, and the difficulty of organizing smallholders from various castes and ethnic groups under one umbrella. The absence and awareness of "standards" amongst farmers and traders, along with the lack of enforcement of contracts, both amongst farmers who renege on commitments and on traders who delay payments and weak linkages with research centres were identified as obstructing the commercial growth of the region (ANZDEC, 2003).

Data from the MOAC however recorded that while development programmes have increasingly been focused on commercial crops (eg. vegetables, Cardamom), farmers have continued the cultivation of all cereal crops which saw a steady increase for all, except Barley (Table 29). The productivity has however remained low with the yields far less than the national averages[172].

Table 29: Area, Production and Yield of Cereal Crops (in ha) (MAOC)

Selected crops	1990/01			2000/01			2008/09		
	A(ha)	P (mt)	Y (kg/ha)	A(ha)	P (mt)	Y (kg/ha)	A(ha)	P (mt)	Y (kg/ha)
Paddy	42,040	97,870	2,328	50,848	114,639	2,255	50,174	109,685	2,186
Maize	57,160	88,020	1,540	63,996	108,337	1,693	67,606	133,918	1,981
Wheat	7,950	,9870	1,242	10,130	15,794	1,559	10,823	10,971	1,014
Millet	21,880	23,060	1,054	25,962	29,038	1,118	25,211	25,539	1,013
Barley	470	460	1,000	238	306	1,286	170	189	1,112

2.6.15 High Value Crops Project, 2004 – ongoing

The Netherlands Agency for Development (SNV) has been working in the eastern development region to promote Orthodox Tea and Cardamom[173] (also referred as *Alaichi*) since 2004. Geographically, its activities have primarily focused on those districts that have traditionally been the main producers of the HVCs. Within the KH, this has included Terhathum, Dhankuta and Sankhuwasabha.

[172] The national averages of yields for paddy: 2907, maize: 2205, wheat: 1934, millet: 1101, barley: 900.

[173] Cardamom seeds are valued as a spice in food preparation and for its oil in the perfume industry.

Table 30: Area and Production of Cardamom (Chhetri, 2007)

Top Five Cardamom Growing Districts, 2005			
District	**Cultivable (ha)**	**Production (MT)**	**Yield (MT/ha)**
TP	3,270	1,940	0.59
IL	2,738	1,453	0.53
SS	2,150	1,118	0.52
PH	1,550	930	0.60
TH	595	292	0.49

Table 31: Area and Production of Tea (NTCDB, 2008)

Top Five Orthodox Tea Growing Districts, 2006			
District	**Cultivable (ha)**	**Production (MT)**	**Yield (MT/ha)**
JH	89,996	13,191	0.14
IL	5,052	1,520	0.30
PH	815	216	0.26
DH	377	116	0.30
TH	158	42	0.26

Note: TP=Taplejung, IL=Ilam, SS=Sankhuwasabha, PH=Panchthar, TH=Terhathum, JH=Jhapa, DH=Dhankuta.

SNV's involvement within these sub-sectors has been based on improving the "value chains" of the HVCs. Its area of focus has been on capturing market opportunities by working with actors within the supply side (producers and local organizations) to be more commercially viable.

One of the main areas of focus has been on strengthening farmers and farmer groups to be more powerful with their linkages with traders, agro-enterprises and exporters. At the same time efforts were also conducted to help build up the capacities of Traders Associations to be more in tune with the demands of the market.

2.6.15.1 Cardamom Sub-sector: Interventions and Impacts

Within the cardamom sub-sector, a detailed sub-sector assessment was first carried out in 2004; which later fed into the SNV strategy (2004-2009) that prioritised: forming and strengthening institutions and organizations; enhancing production and managing diseases; improving processing, quality and marketing and creating an enabling environment (SNV, 2010a).

In 2006, a project titled "Promoting Improved and Sustainable Cardamom Farming Practice through the Conservation and Sustainable Use of Biodiversity and Adoption of Renewable Energy" was initiated in partnerships with Global Environment Facility (GEF), Nepal Forum for Environment Journalists, but it was only implemented in Taplejung district[174] (SNV, 2007).

Later, activities were also extended to Sankhuwasabha, Ilam and Panchthar in 2009. As per the SNV's strategic plan, the focus of support was on the entire value chain, rather than just focusing on

[174] Project activities included technical and financial support to improve the quality (eg. construction of dryers, establishment of demonstration plots); marketing (eg. identification of buyers and their linkages with farmer groups); and building institutional linkages; and organizing study tours to Delhi and Sikkim (Chhetri, 2007).

individual farmers. As a consequence, farmer groups were established (80 groups within the four working districts) and supported through technical trainings; linkages and partnerships were also built up with the private sector organizations such as the District Chambers of Commerce and Industry (DCCIs) and Large Cardamom Entrepreneurs' Association of Nepal (LCEAN). Support was also provided to LCEAN to develop grading standards and their enforcements, which were till then informal with farmers applying their own standards.

Furthermore, within each of these districts, Cardamom Farmer's Networks[175](CFN) were formed to provide coordination amongst the various stakeholders as well as to work together to lobby the government on issues of relevant to the sub-sector (SNV, 2010a). Price information was also collected and disseminated by the DCCIs via local FM stations, with the support of the AEC.

An internal review of the Cardamom sector conducted by SNV in 2007 concluded that on average the production of cardamom was between 27-35 kg per ropani (or 540 – 700 kg per ha[176]) with a farmer being able to earn a gross income of (at 2007 prices of NRs 167 per kg) NRs 90,180 from one hectare (Chhetri, 2007). Interestingly, the report went on to assess that 60% of the incomes were being retained within the village, for payment for harvesting, sorting, cleaning, drying and hauling (Chhetri citing Khatiwada and Franciso).

Table 32: Field Costing of Cardamom, Taplejung District (Chhetri, 2007)

Activities	Unit (kg)	Cost per kg	Total Cost
Production	40	48.75	1,950
Harvesting and hauling	40	30	1,200
Drying cost	40	27.25	1,090
Total production		106	4,240
Sale	40	167	6,680
Net profit			2,440

These figures were however only for Taplejung district, which had been the main focus of the review. Nevertheless, they do provide some indication of the sub-sector within the region, including the neighbouring Koshi hills. Particularly, with regards to the difficulties: quality[177], degradation of the resource base[178], lack of financial support and price fluctuations which were identified by the report as being significant to the development of the sub-sector Chhetri, 2007).

Another important feature of Cardamom production, as highlighted by Banskota et al (1991), is that since the crop grows in damp areas (that are generally unsuitable for other crops) there is no competition for land. However the same study went on to report that in Sankhuwasabha, more and more farmers were switching to Cardamom production instead of Paddy in their *Khet* lands due to the greater returns.

2.6.15.2 Tea Sub-sector: Interventions and Impacts

SNV's involvement within the Orthodox Tea[179] sector has been on: improving production, productivity and quality of orthodox tea; ensuring equitable sharing of benefits; and identify and leveraging employment opportunities within the value chain for socially excluded groups (SNV, 2010b).

[175] This network consists of representatives from DADO, DDCs, VDCs, farmer groups as well as the private sector.

[176] 1 ha is equivalent to 19.965 ropani.

[177] The report highlighted that most farmers use traditional curing systems which has several drawbacks. The spoiling the flavor being the most significant (Chettri 2007).

[178] Use of old stock and problems with pests and diseases (ibid).

[179] Two types of tea are produced in Nepal- CTC (cut, tear, curled) and Orthodox. Both types come form the same plant Camellia sinensis and can be classified as Black tea (the others being Green and Oolong). The differences in taste, colour and aroma are caused by the variations in growing regions, time of harvest and

It has primarily supported trainings to over 1,090 farmers (in all of its working districts) to enhance the capacities of small tea farmers to raise production and improve quality; who produce the largest share of orthodox tea. In 2009/10, small farmers produced twice the amount (at 1,425 MT) compared with tea plantations at 710 MT (USAID, 2011).

The organization has also worked hard, with other actors, such as Himalayan Orthodox Tea Producers Association (HOTPA) to develop Codes of Conduct (CoC) for the sub-sector. According to programme documents, by 2009, 1,110 tea farmers were CoC compliant and 88 farmers had become CoC-certified (SNV, 2010b).

Figures in 2010 show that within the main producer districts, there have been incremental increases in terms of the expansion of cultivated area and production. However, how much this was a result of the programme activities are unfortunately difficult to assess, due to the limited data is available.[180]

2.6.16 Commercial Agricultural Development Programme (2007-2012)

2.6.16.1 Objectives

The programme was implemented in 2007 by the Department of Agriculture (DoA) with the grant support of the Asian Development Bank (ADB). The main objective of this programme is to establish a network of value chains for High Value Crops (HVC), primarily tea, cardamom, ginger, citrus fruits, tomato, and potato to sustainably increase the level of commercialization of agriculture in the Eastern Development region (EDR) (ANZDEC, 2003).

The programme is based on the assumption that isolated farmers and agro-business are themselves unable/unwilling to invest in new technology, infrastructure and post-production systems; which in turn does not allow for new innovations, nor the capture of new opportunities arise from the increasing regional and international linkages. As such, the emphasis of the programme has been on facilitating the exchange of information; facilitate the transformation of loosely-organized famer groups into more efficient and active networks; development of a market information system; construction of infrastructures for improved market access and the enhancement of project partners capacities (CADP, 2008b).

Table 33: Top Five Orthodox Tea Growing Districts, 2010

District	Cultivable (ha)	Production (MT)	Yield (MT/ha)
Jhapa	90,880	14,471.6	0.15
Ilam	5,262	1,636.82	0.31
Panchthar	878	230.95	0.26
Dhankuta	452	126.78	0.28
Terhathum	260	47.65	0.18

According to the programme documents, the EDR was chiefly selected for the programme due to its 'comparative advantage' in producing a range of crops both within the hills (seed production, citrus, spices, off-season vegetables) and across the Tarai (vegetables, oilseed, cereals). The close proximity with Indian markets in Siliguri, Calcutta and New Delhi along with Bangladesh were also identified as being significant and an important market potential, which needed to be tapped due to the rising population and income levels.

---

processing methods. In Nepal, CTC is processed from the leaves harvested from gardens in the Tarai (plains). It is characterized by being granular and dark in colour. Orthodox tea on the other hand is plucked from tea bushes that are grown at altitudes from 3,000 to 7,000 ft (NTCDB, 2010) and are known for its pleasant aroma, bright liquor and subtle fruity flavour.

[180] At the time of the study, SNV were in the process of conducting a review of the sector. A report is expected to be released in February 2012.

At the time of the project planning, in 2001/02, data shows that shows that pulses, ginger, cardamom and vegetables were the main exports from the region (ANZDEC, 2008b). There are however inconsistencies with regards to the data of the magnitude of trade across different sources. For example, the Nepal Rastra Bank (NRB) had estimated the export of NRs 26m worth of tea from the EDR, while the Trade Promotion Centre (TPC) puts the figure at NRs 69 m.

Nevertheless, according to a baseline study of the programmes key indicators, over 31,232 ha of land within the hilly areas of the EDR[181] were under HVC production in 2006/07; accounting for 13.2% of the overall cropped area. Assessments of the value chains of selected 10 HVCs[182] also showed that the volume of production of all the HVCs, except ginger, has been increasing (Fulbright Consultancy 2008a, 2008b, 2008c, 2008d, 2008e, 2008f, 2008g, 2008h, 2008i, 2008j). Table 34 provides a brief overview of the production volume at the time of the programmes launch.

Table 34: Volume of Production of Selected HVC in 2006/07 within the CADP Districts (CADP Value Chain Reports)

HVC	Ginger	Cardamom	Tea	Banana	Cabbage	Mango	Onion	Tomato	Potato
Production (MT)	4,4987	7,015	15,168	5,715	94,388	18,354	72,393	34,461	34,700
Yield (MT/ha)	13.0	0.61	0.9	15.0	17.1	10.5	15.0	18.6	12.5

2.6.16.2 Interventions and Impacts

The progress reports note that the programme has been successful in creating a Commercial Agriculture Alliance (CAA) of over 267 members by 2011; with farmers groups representing 49.44%, cooperatives 29.9%, traders 12.7% and processors 7.8% (CADP, 2011). Unfortunately, these reports do not mention how the alliance has been functioning, nor they have been active in improving the commercialization of HVCs as intended by the programme. Though the reports highlight that the number of membership requests coming from all of the programme districts has far exceeded expectations, leading one to infer that membership has lead to benefits.

The same reports however go on to point out that the construction of infrastructure projects, market roads and market development centres, have been slow, with up to 1 year lags. Within the Koshi Hills, two road improvement projects[183] and one collection centre was established within Dhankuta district; while only an agricultural production collection centre was built in Terhathum by the end of 2011. These projects were built with the support of the Commercial Agricultural Fund (CAF)[184] (75% of costs), DDC (15%) and local communities (10%). Financial support was also provided for 75 on-infrastructure projects to procure processing equipment, setting up storage facilities, marketing and packaging plants (CADP, 2011). According to the annual report of 2011, the immediate effect of these projects, both infrastructure and non-infrastructure, has been the generation of over 63,000 person days of employment.

In addition to the support provided to physical structures, the programme has also sought to increase access to information through the use of local radio and the setting up of a website; with the former circulating daily price bulletins on 15 radio stations and the later providing relevant information to partners. According to an internal assessment conducted by the programme in 2011, 28% of the

[181] This includes Dhankuta, Ilam, Panchthar, Taplejung and Terhathum (Business Promotion and Research and Communication 2009).

[182] This includes ginger, tea, cardamom, banana, cabbage, mango, onion, orange, tomato and potato. Reports are available at www.cadp.gov/np/reports.

[183] This includes: the Sidhuwa Maua Mahabhir Gramin Road and the Hile Bhirgaun Gramin Road (CADP, 2011).

[184] The CAF was established as a cost sharing grant facility, which is supported by the Ministry of Local Development.

respondents had utilized the daily radio updates to fix the prices of their produce resulting in better prices ranging from 8-36% increases (CADP, 2011 citing the internal assessment).

The programme documents do not however provide information on how the various components have or have not led to greater commercialization within the region, either in the increase or diversification of employment opportunities (both on farm and post-production) in HVC. One reason this maybe due to the fact that the programme is still on-going and as yet no evaluations, neither internal nor external, have been conducted.

Some of the problems identified in the programme documents include issues related with production, marketing as well as international fluctuations in prices (Fulbright Consultancy, 2008g; CADP, 2008b, 2011). One of the most significant being the inadequate research directed towards HVCs. An assessment of the value chains for off-season vegetables, notes that though efforts have been made, particularly in PAC, it still lags behind in terms of addressing the needs of the farmers (Full Bright Consultancy, 2008g). The lack of dry season irrigation systems was also another important factor affecting production (Fulbright Consultancy, 2008a, 2008g, 2008e). It was noted that most of the production was confined to the monsoon period, when water was available. The over-dependence on Indian markets for certain commodities, such as tea and cardamom, was also reported to make the sector increasingly vulnerable to price fluctuations (Full Bright, 2008b).

The programme objectives also do not specifically mention excluded groups such as the landless, small farm holders, ethnic minorities and women. But, there is an underlining assumption that poverty reduction will take place when these groups, particularly small farmers are organized efficiently, their capabilities enhanced and linked with up- and down-stream providers (input suppliers, processing units, traders) to enable them to access technology, credit, markets and cope with risks. Furthermore these groups are however included in the targets within the Log Frame and reports were found to have monitored the progress with respect to their inclusion in programme activities. For example, capacity enhancing trainings were provide to 3,168 trainees; amongst which 22.8% were women, 28% belonged to Janajatis, while Dalits only constituted 2.4% (CADP, 2011).

Vocational and technical trainings were also provided to small farmers to develop and strengthen income generating activities. While efforts through local NGOs were also conducted to raise awareness, mobilize and integrate women into the value-chains through trainings and workshops. As a result, the reports note that 30% of the CAAs were women.

The programme has also worked closely with the Japanese Fund for poverty Reduction (JFPR), which is also an ADB supported programme that is seeking to "…improve the livelihoods of farmers and disadvantage groups" (CADP, 2011:2). This programme, which is also implemented in 4 of the CADP districts[185], through the support of a national NGO, Development Project Service Centre (DEPROSC), is focused upon organizing small farmers into Self Help groups (SHG) to help them mobilize themselves and link them with the DADO; provide trainings to build up their capacities and support in income generating activities. The 2011 annual progress report notes that by the end of 2011, 449 SHGs had been formed; which included 41% Dalits, 50% Janajatis, and 10% other castes (CADP, 2011).

2.7 Roads and Transportation Sector

2.7.1 Growth and Development of Roads

Nepal has a short history of highway development. Road development in the country began only after the advent of democracy in 1950. Before 1950, the only road network was concentrated in the Kathmandu Valley. The first motorable road was constructed in the Kathmandu Valley by the then Rana rulers in 1924. The 42km all weather gravel road from Amlekhganj (Tarai) to Bhimphedi (Foothill) was the first road constructed in 1929 outside the Kathmandu valley (DOR 2010). Motorable roads were almost non-existent in other parts of the hills and mountains where steep trails provided the only means of transportation.

[185] These include Dhankuta, Morang, Sunsari and Saptari.

The first long distance road linking the Kathmandu Valley with the Tarai was initiated in 1953. This 115km long road between Thankot (Kathmandu) and Bhainse (Makawanpur) was opened to traffic in 1956. Since then, the acceleration of the development of roads has been made on the planning basis. By now there are 15 highways (Rajmarg) of national importance, joining major parts across east to west of the country (Annex 11). The length of the road transport network over the last four decades has grown gradually from 2,730 in 1970 to 20,264 in 2010 (Table 35). In terms of density measure of SRN, it is currently 7.36km per 100km^2 and likewise, the accessibility of people by SRN is 2,136 persons per km road by 2010. By the end of 2010, seventy-one district headquarters have been linked with road, while four district headquarters of Dolpa, Humla, Manang, and Mugu are without road link (NPC 2011). Until now 1,197 motorable bridges have been constructed.

Table 35: Growth of Roads (km) 1970-2010, Nepal (Sharma (2011); DOR (2007; 2010) Road Statistics)

Year	Highways	Feeder roads	Urban roads	District roads	Total
1970	1,487	679	243	322	2,730
1975	1,728	789	282	374	3,173
1980	1,967	1,603	546	824	4,940
1985	1,960	1,875	866	1,224	5,925
1990	2,111	1,822	1,098	2,299	7,330
1994	2,734	1,520	1,339	3,941	9,534
1998	2,905	1,835	1,868	6,615	13,223
2002	3,029	1,832	2,198	9,775	16,834
2004	3,339	4,196	2,260	7,486	17,281
2007	4,198	5,201	2,260	7,223	18,828
2010	4,718	6,117	2,473	6,956	20,264

The current road density still remains quite low in terms of serving the population and in providing accessibility to various parts of the country, in spite of high priority being given to road building by the governments and donor agencies in the recent years. Significantly high levels of investment are needed to build roads on the country's mountainous terrain (Ranjitar 1997). The priorities have been to link up district headquarters, and construct feeder roads from the main highways to the rural hinterlands (NPC 2002).

The national road network comprises of highways[186], feeder roads, urban roads, district roads and village roads. Further, the roads are classified into bituminous (blacktop), gravelled and earthen (Figure 18). In terms of transport service, the first and second types of roads are known as 'all weather roads' whereas the last type of road is called as 'fair weather road' or seasonal road. Most of the feeder and district roads come under the earthen roads.

Besides roads, other transportation modes available particularly for the hills and mountains of Nepal are trails and airports. Trails on the hills and mountains have been existed for years (see detail in separate unit of 'trail bridges'). Estimates made in 2001 suggest a total trail length of 16,000km (NPC/UNDP 2006). A total of 3,026 trail bridges were reported in 2001.

Air transportation is available to link the places of the hills and mountains through 42 domestic and one international airport across the country. Domestic airports are crucial to the growth of trade and tourism in the hills and mountains where there are no roads. In the Koshi hills, two headquarters such

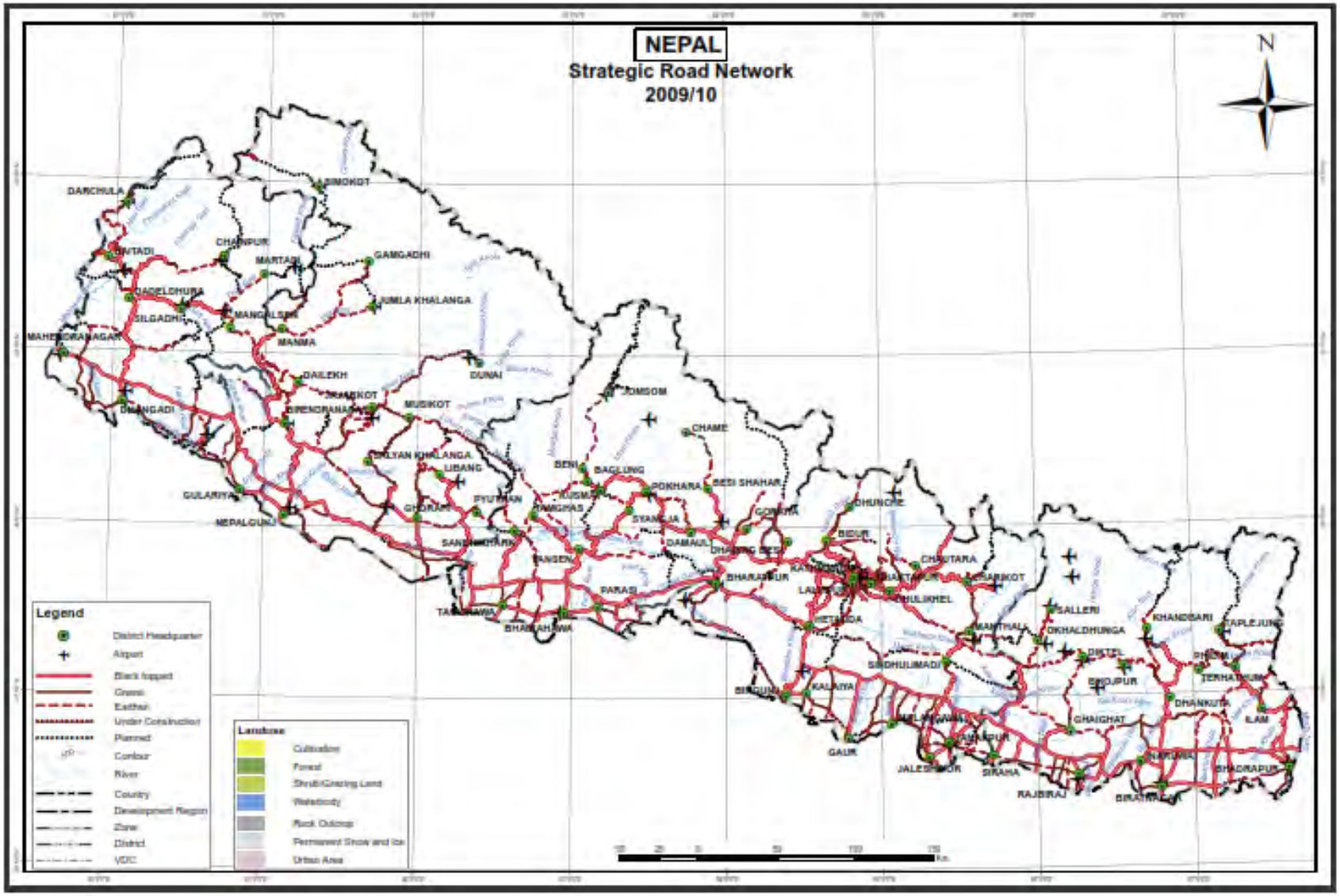
[186] In Nepal 'highway', which is simply a main road or a thoroughfare, refers to the east-west and the north-south oriented roads linking two or more districts or zones or geographical regions and the construction expenditure and whole work of which are fully under the domain of the national government.

as Bhojpur (Bhojpur district) and Tumlingtar (Sankhuwasabha district) have air service links with Kathmandu (capital city) and Biratnagar (Morang district of Tarai plain region).

2.7.2 Road Development Policies and Strategies

In Nepal, road transport has a crucial role, because it is the only infrastructure for overall socioeconomic development, as well as a means for public transportation service except the limited air service in some parts of the country which is not affordable to common people. Since two-thirds of Nepal's populations are concentrated in the hills, her development efforts are to concentrate on the opening up of hitherto inaccessible areas by means of transportation and communication. This is based on that assumption that the vicious circle of "no economic activity – no road – no economic activity" can be broken by a simultaneous action of road construction and the comprehensive planning of regional economic activities (NPC 1972).

Figure 18: Road Network and Transportation, Nepal (Source: DOR 2010)



Road building has long been an integral part of Nepal's development strategy. The national plans have always accorded top priority to the transportation and communication sector. In the First Five-Year Plan (1956–61), the transportation and communication sector received top priority with over 36% of the total budget allocation and the priority to this sector remained to be continued till the Fourth Plan (1970–75). Again in the Three Year Interim Plan (2007-2010), priority was given to the transport, storage and communication sector, with sharing nearly 25% of the total estimated investment which was highest among all other major sectors (NPC 2007). The current Three Year Plan (2010-2013), too has given top priority to the transport, storage and communication sector, sharing 19.63% of the total plan budget, and moreover the road sector alone shares 15.11%, which is the largest among the sub-sectors (NPC 2011).

In 2001, GoN devised a Road Transport Policy and developed a 20-year road master plan. Recently, DOR has completed 'Integrated 10-year Sector-wise Plan' and 'Priority Investment Plan' (PIP) for 2007-2016 for the development and management of strategic roads, including institutional development requirements. The PIP has been based on the GoN's accessibility targets such as to bring the entire hill population within a four hour walking to an all weather road and the Tarai population within two hours. This objective was formulated in the Local Infrastructure Development (LID) Policy-2004. The policy also focused on to a decentralized governance system for rural roads development, operation and maintenance in the districts.

The Roads Board Nepal (RBN) has been established under the Roads Board Act 2058 (2002), with the aim of providing sustainable fund for planned maintenance of the roads. RBN is a self governing, self sustaining and organized organization based on Public-Private Partnership (PPP) model. The major function of RBN is to collect, manage and allocate fund for road maintenance. RBN is fully devoted in providing better road service to the road users as they pay in the form of direct road toll, fuel levy and vehicle registration fee. However, RBN still requires improvement for adequate resource generation and efficiency to be able to fulfill its mandate.

Since 2007, the concept of Build, Operate, Own and Transfer (BOOT) has been initiated by the government with a view to enhance the involvement of the private sector in the building of physical infrastructure including roads. This effort is however not being effective enough to attract the private sector investments in the road sector to the expected extent.

Two major road development strategies of national importance conceived in the recent years are as follows:

Roads Corridor Development – Nepal's development strategies should aim at wider sharing of benefits through fuller exploitation of varied resources of eco-regions without slowing down the growth itself. Its development should be viewed in the following two ways: (i) development planning is no more a closed system of hard choice among eco-regions within the country, and (ii) planned development should be directed not towards accentuating inherent disparity but should rather be a conscious effort towards minimising the regional differential. The strategy for development of different ecoregions should not be competitive, but rather complementary providing scope for specialisation. The advantages of such a wider regional complementarity seems realistic if one notes that the Tarai is densely populated area and has potential developments of extensive agriculture and industries, the Hill and the Mountains specialise in sub-tropical and temperate products that would find favourable markets in the south. Therefore, the planning considerations should turn to the development of greater inter-ecoregional link. They require exploiting unique environmental resources of each ecoregion so that the products can be exchanged between them.

This policy measure indicates the potentiality of the corridor development and provides policy guidelines to systematic spatial growth pattern. Road development should be aligned north south as main corridor of development with other (feeder) roads bifurcating towards the east and west to connect major market settlements (Table 36). The north south corridor development is intended to integrate diversified eco regions. The potential market centres or towns connected by feeder roads should be equipped with a wide range of social and economic services so that they could act as growth or service centres and generate growth. It is only through such growth centres that the regional circulation between regional centres and dispersed rural centres can be articulated.

Table 36: Development Regions, Growth Centres and Growth Corridor

Growth axis	Development region	Hills regional centre	Tarai growth centre	Mountain growth points
Koshi	Eastern	Dhankuta	Biratnagar	Hedagna
Kathmandu	Central	Kathmandu	Birganj	Dhunche
Gandaki	Western	Pokhara	Bhairahawa	Jomsom
Karnali	Mid-Western	Birendranagar	Nepalganj	Jumla Khalanga
Doti-Dipayal	Far-Western	Doti-Dipayal	Dhangadhi	Chainpur/Darchula

The strategy of the main road development programmes includes eight different north-south trade and transit road corridors linking the border places of Nepal with China on the north and India on the south. One of these, lying in the Koshi Hills region, is the 419km long Dhankuta-Hile-Khandbari-Kimathanka road corridor.

The Mid-Hill East-West highway is also known as 'Lokmarg' to begin from Phidim of Panchthar district at the eastern border to Dadeldhura at the western border of Nepal. The total length of this highway will be approximately 1,442km. Preliminary road alignment survey indicates that the major road sections from the east to the west to be included are: (i) Phidim-Terhathum: 60km, (ii) Terhathum-Dhankuta: 60km, (iii) Dhankuta-Kathmandu: 370km, (iv) Kathmandu-Pokhara: 200km, (v) Pokhara-Surkhet: 400km, and (vi) Surkhet-Ridikot-Dadeldhura: 352km. The construction of this mid-hill highway will provide a road transportation network across the hill districts and, thereby, contribute to integrate all of the major hill centres with other smaller centres by feeder roads for national integration.

2.7.3 Roads and Transport Organizations

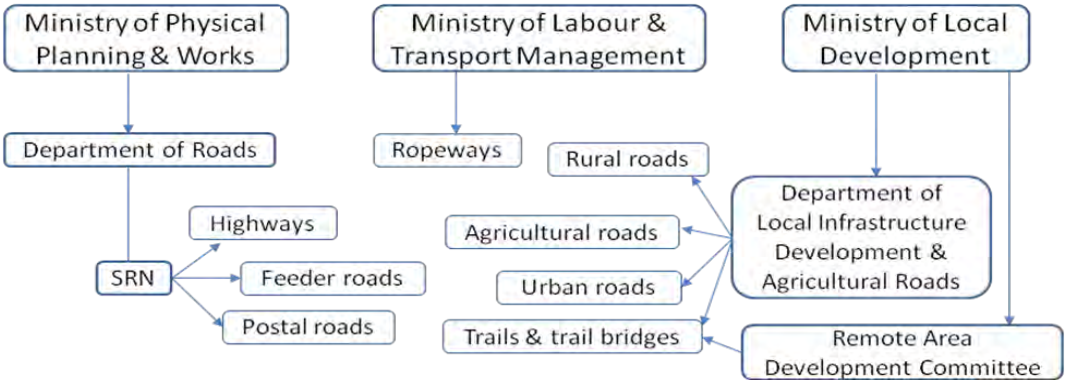
The roads and transport infrastructure across the country comes under the domain of two major government agencies such as Department of Roads (DOR) and Department of Local Infrastructure and Agricultural Roads (DOLIDAR).[187] The road network consisting of highways and feeder roads branching off from the highways is a part of the 'Strategic Road Network' (SRN)[188] and falls under the responsibility of DOR (Figure 19). SRN includes existing, postal[189] and mid-hill roads, as well as under construction and planned roads. SRN is therefore crucial part of the National Road Network. DOR is also responsible also for the maintenance of SRN.

[187] GoN has received support from donor agencies like Swiss Agency for Development and Co-operation (SDC) Asian Development Bank, (ADB), USA, UK, World Food Programme (WFP), World Bank, JICA, GTZ and so on through their programmes and projects in building roads and transport infrastructure in the country.

[188] The DOR's SRN data is available at both hardcopy and in *pdf* format (downloadable from www.dor.gov.np). Its digital GIS data is also available in *shape file* format, containing route feature class and attribute tables.

[189] Postal road or *Hulaki Sadak* is running from the east to west close to the border with India.

Figure 19: Agencies Responsible for Roads and Transport Infrastructure Development in Nepal



DOLIDAR is responsible for the construction and maintenance of rural roads and agriculture roads within the district and urban roads, as well as for trail bridges (Figure 19). The network of these roads is known as 'Local Road Network' (LRN). DOLIDAR thus coordinates the District Development Committees (DDC) and municipalities for LRN. It is also responsible to build a separate District Transport Master Plan (DTMP) for each district, which is being prepared on the basis of available and expected resources. Activities of the Remote Area Development Committees partly cover construction of trail bridges as well.

In addition, the army (Defence Ministry) also sometimes builds roads in special case particularly in the remote region. Ministry of Labour and Transport (MOLT) is responsible for providing transport services, as well as for building ropeways in areas where there is no access of roads.[190]

2.7.4 Roads and Transport Development in the Koshi Hills Region

In 1982, the Koshi Hills was accessed for the first time by road after the completion of Dharan-Dhankuta highway.[191] Before that year the only available mode of transport for the movements of people and goods between two important traditional centres: Dharan[192] and Dhankuta[193] of the Koshi region was foot-trail. Since the very beginning, situated at the foothills of the Mahabharat range, Dharan has been acting as an important trading and service centre and enjoying break of bulk opportunity for the places between the Tarai and the Hills in the Koshi region (Leeson, 1949; Tilman, 1952). Most of the Koshi hill trails appear to have converged at Dharan, which was already linked by motorable road with Biratnagar[194], a principal manufacturing town of eastern Nepal, which is just close to Indian railhead at Jogbani across the border.

---

[190] Ropeways were initially perceived viable only within the tourism industry. However, since the introduction of small-scale gravity goods ropeways for vertical movement of cargo there is now renewed interest in such facility (NPC/UNDP 2006).

[191] In addition to road, Bhojpur and Sankhuwasabha are linked with Kathmandu and Biratnagar by air service.

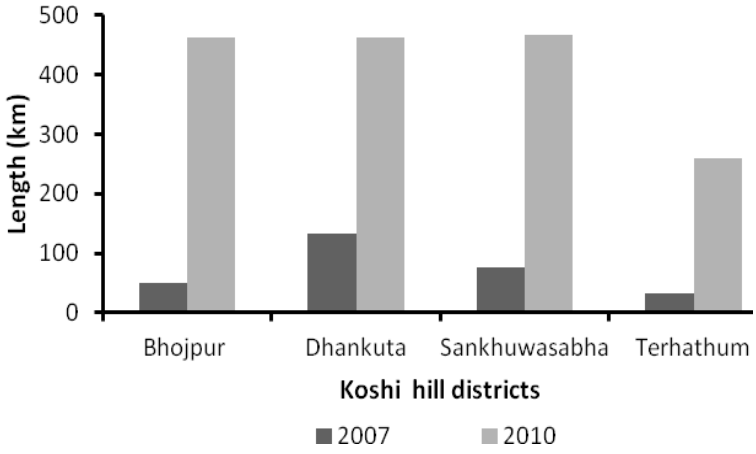
[192] The town of Dharan was established when a thick jungle was cleared for a small human settlement in 1890s. In 1902 the then Prime Minister Juddha Sumsher Rana established a small village at the foot of Bijayapur hillock and named Chanrdranagar (now Purano Bazaar. It was once the location of recruitment centre for the British Gorkhas in 1953. The recruitment centre is closed and the campus is now the home of B. P. Koirala Institute of Health Sciences since 1993.

[193] Until 1963 Dhankuta Bazaar was the headquarters of the north-eastern region of Nepal as well as an important trading centre, serving the extensive hinterlands of the Arun valley and Bhojpur, Sankhuwasabha, Terhathum and other north-eastern districts. It was made the administrative headquarters for the Eastern Development Region in 1975 (NPC 1975).

[194] It was not known the exact date about the road link between Biratnagar and Dharan, but the US expedition team of ornithological study travelled to Dharan from Biratnagar by a truck in January 1949 and then to

The building of Dharan-Dhankuta road also called as “Koshi highway” was begun as part of KHARDEP with British ODA (later DFID) support in the late 1970s (Cross 1982). Since then other districts of the Koshi Hills began to have roads. In 2005, three districts of the Koshi Hills viz Dhankuta, Sankhuwasabha, and Terhathum had motorable roads with lengths: 245, 32 and 63km respectively (DoR 2006). There was no road in Bhojpur district until 2005 and now it has total road length of 116km (DOR 2010). By 2007 all four districts of the Koshi Hills got roads and the lengths of road increased tremendously but with differential ratios in its all four districts by 2010 (Figure 20) and that much of its southern half has accessed with roads (Figure 21).

Figure 20: Growth of Roads (2007-10), Koshi Hills



Dhankuta and other places in the northern Koshi hills walking through the existing trails and indigenous suspended foot bridges (Leeson 1949). Even before that year, the Koshi Hills was known to have visited by several groups of foreigners. Tilman (1952) mentioned that in 1948 a party of Indian scientists had been allowed to investigate the upper basin of the Koshi River in eastern Nepal and quite before, a team of fourteen Indian surveyors in three seasons during 1924-27 surveyed the whole 142,449km² from the Tarai along the Indian border to the Himalaya.

Figure 21: Development of Road Networks, Koshi Hills Region

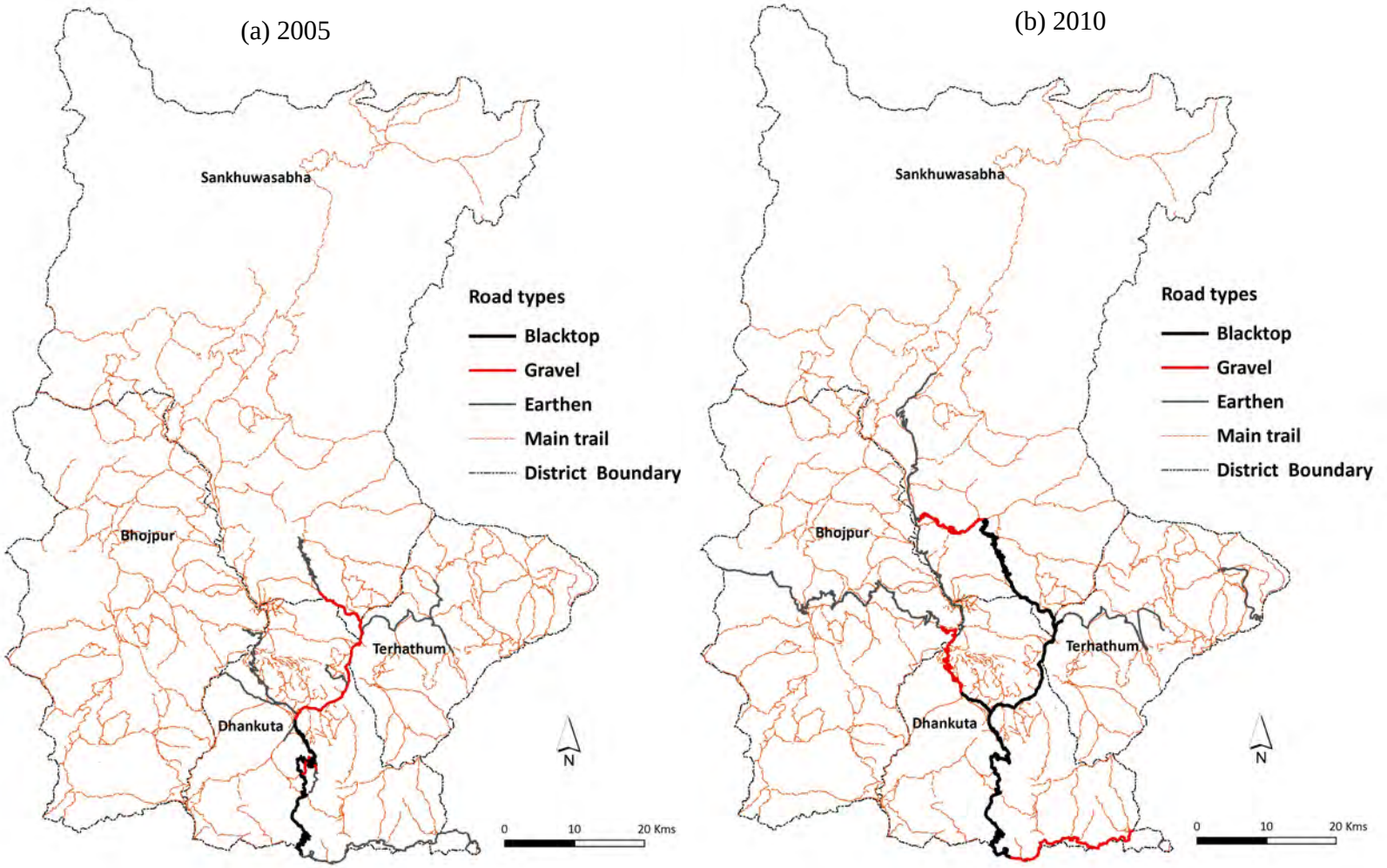


Table 37: Existing Road Networks in the Koshi Hills Districts, 2010 (DOR, 2010, p. 2; District and Urban Roads DOR 2006.)

Bhojpur		0 (2005)
Names of roads	Class	Total (km)
Leguwaghat-Bhojpur (Midhill)	MH	66.00
Bhojpur-Nagi (Midhill)	MH	50.00
Total (2010)		**116.00**

Dhankuta		245 (2005)
Names of roads	Class	Total (km)
Bhedetar-Mulghat	NH	18.4
Mulghat-Patle Khola	NH	11.6
Patle Khola-Hile	NH	18.3
Hile-Guranse	FRN	4.2
Guranse-Chitre	FRN	13.2
Bhedetar (KRM)- Kopche	FRN	34.0
Dandagaon-Budhabare	FRN	2.0
Leguwaghat-Kewabesi	FRO	7.0
Hile-Leguwaghat (Mid-Hill)	MH	26.0
Total		134.68
District roads		88.7
Urban roads		20
All Total (2010)		**243.4**

Sankhuwasabha		32 (2005)
Names of roads	Class	Total (km)
Deurali - Mudhe Sanischare	FRN	10.70
Mude-Chainpur	FRN	37.00
Chainpur-Sawa Khola	FRN	25.00
Sawa Khola-Khandbari	FRN	19.30
Khandbari-Kuwapani	FRN	21.70
Kuwapani-Num	FRN	0.00
Num-Kimathanka	FRN	0.00
Kewabesi-Sabha Khola	FRO	21.00
Total (2010)		**134.70**

Terhathum		63 (2005)
Names of roads	Class	Total (km)
Chitre-Basantapur	FRN	4.1
Basantapur-Terhathum	FRN	26.7
Basantapur-Deurali	FRN	2.3
Tamor River-Sankranti (Midhill)	MH	26.6
Sankranti-Myaglung (Midhill)	MH	25.0
Total		84.67
District roads		28.0
Urban roads		2.6
All Total (2010)		**199.9**

The current road accessibility in terms of area is better in Terhathum and Dhankuta than the rest two districts of the Koshi Hills whereas Terhathum and Sankhuwasabha have shown better in population size served by road than other two districts. The population accessibility by road for the Koshi Hills as a whole (925 persons/km²) is about fourfold better than that for the Koshi Tarai, as well as fairly better than those for each of Neighbour districts and nation. But in terms of road density/100km², the Koshi Hills is poorer than all other areas – the Koshi Tarai, Neighbour Districts and the nation (Table 38).

Table 38: Road Accessibility in the Koshi Region, 2010 (*DoR (2010); **CBS (2011))

District	Total road (km)*	Population (2011)**	Area (km²)	Road density	
				Population	Area 100km²
Bhojpur	116	203,018	1,507	1,750	7.7
Dhankuta	243	166,479	891	1,236	27.3
Sankhuwasabha	135	159,203	3,480	654	3.9
Terhathum	200	113,111	679	566	29.4
Koshi Hill	694	641,811	6,557	925	10.6
Morang	216	843,220	1,855	3,900	11.7
Sunsari	191	625,633	1,257	3,276	15.2
Koshi Tarai	407	1,468,853	3,112	3,607	13.1
Ilam	248	295,824	1,703	1,193	14.6
Khotang	197	209,130	1,591	1,063	12.4
Country	**20,264**	**26,620,809**	**147,181**	**1314**	**13.8**

Much road building has been carried out in the Koshi Hills over the last two decades through British government sponsored projects. This began with KHARDEP (Koshi Hills Integrated Rural Development Project), and more recently has been carried out by the DFID implemented Rural Access Programme (RAP). It has aimed to combine road building with social development activities that will maximise the benefits of road access for underprivileged groups (RAP 2004).

An evaluation by RAP emphasises the need for assessing the distributional benefits of these transport interventions, and their effectiveness for poverty alleviation in the Koshi Hills (RAP 2002). Studies are needed that pay attention to the factors affecting agricultural output and crop diversification; the structure and dynamics of marketing; and the impact on employment and migration" (RAP 2002). A review of impact assessment of road construction undertaken by RAP in 2000 (Seddon 2000) showed how rare it was for impact studies to be undertaken and even more rare for them to reveal information about differential impact on different social groups and categories.

2.7.5 Existing Roads

2.7.5.1 Dharan-Dhankuta Road or Koshi Highway (under KHARDEP)

The Dharan-Dhankuta highway is the only and main road thoroughfare available in the Koshi hill region. This road with a 52km long linking the Tarai with the hill and the mountain of the Koshi region was opened for public transport service in 1982.[195] The zero point of the road is located at the

[195] This road was built under the UK Government's then Overseas Development Administration (ODA) aid programme (later DFID) to Nepal. Feasibility studies for the road began in the early 1970s. Construction of the road began in late 1976 and all the earth works were completed by early 1982 and then opened to public

southern junction of the Dharan-Dhankuta Road with the Dharan-Phusre road. Following extension of the road network north of Dhankuta to Hile and Basantapur by the early 1990s, the Dharan-Dhankuta Road was included as part of the 'Koshi Highway' from Biratnagar to Basantapur. The aim of this road project was to link Dhankuta to other district headquarters of the eastern region as well as to the national road network and thereby to promote regional development in the east Nepal. The road's total construction cost was £15.4 million (Cross 1982).

The road runs through the rugged terrain of low and middle Himalayas, which are formed in crushed and folded weak rocks. Rates of landsliding and erosion on these slopes are among the highest in the world, aided by active seismicity and intense summer monsoon rainfall (Martin 2001; Lawrance et al 1992).[196] Over its 29 years of operation, the road has been seriously affected by one large earthquake and several major floods in the Leoti Khola.

After opening of the road, there has been changed in the travelling and marketing patterns of the local community.[197] The impacts were in terms of traffic flows of people, goods and vehicles based on the traffic surveys study that was made for three consecutive years of 1982, 1983 and 1984, which allowed direct comparisons before and after the opening of the road (Marsh 1984).[198]

Before opening of the road, all goods taken north of Dharan lying beyond the road network were carried by porters, locally called as "Dhākar". The study by Marsh (ibid) revealed that the daily porter traffic was estimated to be over 800 in 1975. The level of foot traffic between Dharan and Dhankuta was negligible. Only 4 travellers were recorded in 10 days compared with peak level of over 3 000 per day before opening of the road in 1982. But the number of foot traffic on the trails from Hile (road access point) to Basantapur and other places of Terhathum and Taplejung districts (where no road was built) increased by 30 to 130% in May 1984 over May 1982 levels.

There have been changes also in the amount of goods carried by vehicles and on foot since the opening of the road. The traffic survey of the same study showed that the mean daily traffic on foot on Dhankuta-Hile route declined sharply in 1984, while the daily mean vehicle traffic increased. In 1984, the daily foot traffic on the Dharan-Dhankuta route was zero. The annual numbers of foot traffic to Dharan and Dhankuta were 310 and 5,521 respectively, which meant that Dhankuta was the important centre than Dharan for foot travellers.

Change also occurred in the amount of imported goods such as mixed supplies, construction, rice, salt, wheat, consumable items, agricultural inputs, and others. Of these, particularly significant were increased imports of construction goods and agriculture inputs.[199]

---

traffic. The ODA continued to support the project and funded maintenance of the road from 1983 to 2002. Since then the Department of Roads, the Government of Nepal has taken over maintenance of the road. The road has 12 bridges and c. 33,012 culverts (Cross 1982).

[196] Two natural events which caused extensive road damage were major storms, flooding and landslides in September 1984, and the earthquake of Richter Magnitude 6.6 on 21 August 1988, with an epicentre in Udayapur district about 65 km to the west of Dharan (Lawrance et al 1992). The earthquake killed over 800 people in eastern Nepal and northeast India. Three weeks after the earthquake, heavy rain and intense storm occurred. The 24 hour rainfall recorded in Dharan was c. 160 mm, most of which fell within a few hours. The road remained closed to full traffic for several months. More recent flooding destroyed part of the Leoti Khola alignment again in 1997 and 2002. Again a magnitude 6.9 (M_w) earthquake, known as the '2011 Himalayan Earthquake' with an epicentre in northeast India hit eastern Nepal on Sunday 18 September 2011. Thus apart from routine maintenance, larger-scale remedial works have been required on several occasions over the last 25 years.

[197] Based on traffic predictions of 80 vehicles per day initially, with 10 per cent annual growth for the next 20 years, the road was designed to cater for 2-lane and 2-way general operations with exceptional 1-lane/1-way operation for passing broken-down vehicles.

[198] All surveys were carried out in the month of May for all three years.

[199] Marsh's study did not specify the types of agricultural inputs (fertilizer, machinery, etc), but they could be fertilizer, because the farming system is still labour intensive.

By mid-1997 according to Lawrance et al (1992), the first few kilometres of the Arun Access Road beyond Basantapur on the Hill Route and Hile on the River Route had been constructed by DOR and the Nepalese Army (NA) respectively. Earthworks, retaining walls, breast walls and drainage works had been constructed. An inventory was carried out of each of these constructed sections of road to gain an impression of the effects of the construction on local slope and drainage stability. The initial aim of the environmental monitoring programme was to provide the means by which the geomorphological impacts of the construction of the Arun Access Road could be quantified. Although this has not been possible, some initial conclusions can be drawn from observations of the short lengths of road constructed so far in the area by the DoR and the NA. The wider context was also examined on the basis of observation from other sections of the mountain road network of Nepal (Lawrance et al 1992).

2.7.6 Rural Access Programme (RAP)

Rural Access Programme (RAP) Phase 1 was launched in 2000 and ended in 2008. RAP Phase 2 came into operation on 1 August 2008 and expired on 31 July 2011, but extended to March 2013 (RAP 2010).[200] RAP is being managed on behalf of DoLIDAR and DFID by the consulting firm contracted by DFID. The firm provides technical and financial management for RAP-2 funds. This includes direct management of construction work and support for funds channelled through DDCs.

The purpose of RAP-1 was to improve poor peoples' access to goods, markets and facilities. The programme has been designed to promote road transport infrastructure as a means of improving the livelihoods and economic development of the poor and disadvantaged in seven hill districts across Nepal, which have been divided into two clusters such as eastern cluster including Bhojpur, Khotang, Sankhuwasabha and Terhathum and the western cluster comprising Dailekh, Achham, and Doti. It has already built 633km rural roads and aims to further building of 365km roads within those seven districts.

RAP-2 had to complete the construction of the district roads planned under RAP-1. RAP-2 also included the construction of supplementary infrastructure (water supply, health, education, markets, etc) selected by the communities of the road corridors. Also included in the current phase are capacity building and institutional support to develop local government capacity and benchmark district performance, as well as the preparation of way out for joint donor support to the rural roads or small scale infrastructure sector.

RAP's activities have followed the principle that access does not stop at road building and complementary income generating activities are an essential part of the programme. The building of the rural roads has followed the labour based, environmentally friendly and participatory (LEP) approach. This has allowed for not only the immediate employment of almost 47,000 workers from the poor and the most disadvantaged communities like the Dalits and the Janajatis, but also for training on income generating activities. The reputation of RAP has allowed it to influence major national policies, including the Government's 3-year plan. For example, the government now has adopted labour-based, environmentally friendly and participatory approach in its Local Infrastructure Development Guidelines and Rural Road Maintenance Directives. Due to these, RAP received the prestigious Global Roads Achievement Award for 2009 in the advocacy category[201] by the Washington based the International Roads Federation (IRF).

RPA's evaluation studies indicate that positive impacts found to have occurred among the beneficiaries or targeted communities (poor, women, Janjatis and Dalits) living in the road corridors at varying levels such as increased in average income and accumulation of landholding - khet land, changed in traditional crops and increased in their production, improved in food sufficiency, increased

[200] The UK Government through its Department of International Development provided £36 million for RAP-1 (Phase I) and £17 million for RAP-2 (Phase II) plus £10 million for the roads and bridges (www.rapnepal.com).

[201] This category recognizes public and private organizations that have significantly contributed to a better understanding of the role of roads in economic development, to the promotion of road transport infrastructure, and to the development of road construction.

access to health and school, reduced price of essential goods due to motor vehicles, increased in off-farm enterprise activities such as groceries, hotels, tea shops, tailoring, shoes, etc.[202]

Change in the traditional transport means such as mules that have been displaced by the motor vehicles to the areas where there is no road and likewise, traditional labourers for transporting goods between the market towns such as '*Dhākar*' have been changed into coolies for loading and unloading of the goods carried by trucks and buses in the local bazaars. However, these activities found to have occurred on seasonal basis, because the earthen roads are being operated only in the fair-weather season.

On the other hand, the negative impacts are that, the local stakeholders and targeted groups have raised the concerns about the prolong time taken to complete the construction of roads and their maintenance. There has been low level of side effects on local environments such as landslides due to the earth roads and the movement of vehicular traffic only during the fair-weather season (lack of bridges). It is yet to verify the magnitude and number of landslides (Landsat image of 2010). Two basic features of the earth road such as dusty air during the dry season by vehicular traffic (environment – greenhouse effect and health problems - respiratory infection) and muddy road during the wet season affecting the vehicular movement (machinery and fuel consumption) are yet to be assessed. Also to be noted is the loss of traditional handicrafts and other value added products based on local technology and resources due to import of cheaper manufactured goods. Some of these possible side effects and others due to plying of the motor vehicles over the earth roads are to be verified in the report (RAP final report is yet to obtain).

2.7.7 Impacts of Roads on Economic and Social Aspects

2.7.7.1 Improving Market Access to Local Products

Studies indicate that the coming of roads has improved the market access to the local agriculture and other products along the road corridors and in their vicinities at varying levels in the Koshi Hills. For instance, the study of Sugden (2004) based on three market towns in Dhankuta district having different types of road access and different commuting times such as Leguwaghat (earth road under construction), Pakhribas (complemented earth road), and Sidhuwa (main Koshi highway or all weather road) has revealed differential impacts of intervention such as roads on levels of agricultural production.

Sidhuwa, which has had road access for the longest period, has by far the highest income from agricultural produce sales. Further, Sidhuwa has high levels of market participation, which was partly a result of many successful interventions by development institutions to encourage commercialisation. CEAPRED (Centre for Environmental and Agricultural Policy Research, Extension and Development) a NGO has had much involvement over the years since the Koshi highway was built, and the main objective of this project was to increase the income of farmers through encouraging the commercial production of off-season vegetables such as cabbage and cauliflower, potato, and beans for which the environment of Sidhuwa is suitable (CEAPRED 2005). Since the road was completed a large number of farmers, both small and large had replaced traditional subsistence crops with vegetables. They established linkage with centres outside of Dhankuta such as Dharan, Biratnagar and even Siliguri in India through selling those vegetables. Information about the volume of vegetable production actually achieved by interventions of CEAPRED and by the road is yet to find out.

The study by Pant (2002) also shows improvement in agriculture in the northern part of Dhankuta. The experience of farmers has shown a switch from traditional cereal crop production to high-value cash crops, such as fresh vegetables. The study argues that such improvement can help improve household food availability without increasing the size of the farm and concludes that it is the productivity of the farm and the market incentives to increase productivity, but not necessarily the size of the farm which are keys to improving household food availability.

In Pakhribas road access and the creation of new market based opportunities have improved the economic situation of some households, although they were mostly the wealthier ones. With a few

[202] This has been based on the presentation notes of the impact study. The final report is yet to receive from RAP office.

exceptions, medium farmers' benefits have been marginal, often just involving small increases in sales in the weekly markets. They were limited by uneasiness over the risks involved, and the lack of extension services. The high levels of inequality in material assets have made it very difficult for the small farmers to take up new opportunities, and they have remained virtually unaffected. Differential impact and differential involvement in vegetable production and sales, and increased incomes, generating increased inequality and arguably increased relative poverty for the majority—unless they are employed by producers, which is rare as most employ family labour.

Leguwaghat which has had road access for the least amount of time has the lowest income. In this market centre, only households receiving substantial market based opportunity from new roads wee the shopkeepers and merchants who have settled in the bazaar to sell consumer goods. Most of the farmers who were participating in the market were selling in the local, well established economy only and are thus relatively unaffected by road access. However, the road has not been there for long, and is still low quality. There are signs that some wealthier farmers are beginning to recognise the potential for producing commodities for external markets and are planting fruit trees. There was once again evidence that the poorest farmers with the least productive assets, who were locked into semi-feudal modes of production, were likely to encounter numerous further constraints.

Further, the study claims that road access has been able to increase the incomes of households from a wide range of economic groups through providing them with market based opportunities. A number of explanations have emerged throughout this study. For example, Sidhuwa has had a road for a lot longer than Pakhribas and Leguwaghat, and there has been time for production skills and knowledge to diffuse. The road has also been successful in these goals through the impact of marketing co-operatives and excellent extension services, which is debatable.

Not only road impacts vary considerably, but the geographical conditions such as soil, climate and topography affect considerably to grow commercial crops such as off-season vegetables and cardamom. Sidhuwa has a particularly favourable environment for producing competitive high value crops such as off-season vegetables, while cardamom production seems to have had some successes in Pakhribas. Leguwaghat's tropical climate completely lacks the comparative advantage for off-season vegetable or cardamom production that Sidhuwa and Pakhribas have.

The evidence that market-oriented agriculture does not guarantee a less vulnerable livelihood to farmers, as well as the lack of comparative advantage for areas such as Leguwaghat. Also argued is that, improved access through roads can enable growth, but it does not cause it. Though roads are considered as a vital factor for overall development, they alone are not enough to stimulate development.

In this context, it may be time to consider alternative means to provide economic opportunity rather than road building. For example, small scale marketing opportunities such as Dhaka cloth within the local economy could be developed, or investment in healthcare and education could be increased, given the vast amount of investment that states put into transport infrastructure. It is thus suggested to examine about costs and benefits of different types of development intervention.

2.7.7.2 Improving Access to Social Services

Improved access to primary schools to reduce the walking distance to school, including the girl children to obtain education has occurred in east Nepal including the Koshi Hills. Pant's (2002) study has shown that the majority of children (up to 88% in 8 to 11 years age group) including girls were in school, at least for a short period. However, there were wide variations in both the access and opportunity to go to school between social, economic and spatial groups. Girl children from the occupational castes were least likely to go to school, as were the young children from areas where the walking distance to school was more than half an hour. Further, the literacy classes being provided to adult women, the author argued, has been an opportunity not necessarily merely to intend to impart about the literacy and numeracy skills, but most importantly to promoting solidarity among women and increasing their participation in community life.

Access to health services (hospital, health posts, etc), age of mother and birth intervals are some of the important determinants of child mortality. Access to health services has improved in the Koshi Hills although the quality of the curative health services still remains poor. Pant's study (2002) found out that the utilisation of health services was higher in land-poor areas and among the individuals from the land-poor households. The evidence also suggests that child mortality was declining in the East Nepal, largely due to the improvements made in the provision of immunisation and family planning services, and the availability of curative treatments, at least in some areas. Pant argues that, improved access

to health services and the quality of local level health workers are keys to improving the use of health services, such as immunisation and family planning. Further, disregarding the cost that people have to pay for health services, the direct and the opportunity costs of receiving curative treatment were very high in the rural areas. Likewise, apart from the cash income required to pay for medical care, it is the freedom (in terms of time and ability to walk to the health post) that are important in accessing proper health care.

Though the ability of households and individuals to achieve basic physical and social functionings has improved over the years, such improvements have not been experienced equally by all (Ibid).

2.7.7.3 Change and Development of Market Towns and Rural Urban Linkages

The study by Shrestha (2006) concerned with the impact of the Koshi highway on change and development of three market towns such as Hile, Sidhuwa and Basantapur and their role in the linkages of local off-season vegetable products. They lie at every 13km along the Koshi highway.

Until 1963, Hile had contained mere 10-12 households including Tibetan refugees and acted as centre for long distance trade service. After the opening of Dhankuta-Hile road in 1982 its trading importance has been broadened greatly by serving as a break of bulk centre particularly for the eastern parts of Bhojpur, as well as some parts of Sankhuwasabha, Terhathum, Khotang and Taplejung districts. Since the very beginning, Hile has been popular for domestic tourists, as well as for its unique beverage product such as *Tongba*.[203] After 1982, the opening of Hile-Sidhuwa road further enhanced its trading role mainly in marketing of local agricultural produce, but however it also lost some of its trading activities to Basantapur particularly after the construction of Sidhuwa-Basantapur road and the road linking Basantapur to Mudhe and Myaglung of Terhathum district in the late 1990s.

Sidhuwa was affected greatly by the 1988 earthquake and declined its commercial role, but revived again due to the introduction of new agricultural innovations. With the introduction of off-season vegetable crops such as cabbage, cauliflower, carrot, radish, beans and squash and potato along the Hile-Basantapur road corridors in 1993, it has been an impetus for the development of the market towns and vice versa (CEAPRED 1999). Selling of these vegetables at Sidhuwa for exporting to the Tarai cities and to India increased from mere 25 metric tons in 1990 to 17,000 metric tons in 2004.

Basantapur locating at the junction of two roads: Basantapur-Myaglung as a part of Koshi highway to the east and Basantapur-Khandbari via Chainpur (Sankhuwasabha) to the north has been serving long distance trade with Taplejung, Sankhuwasabha and Solukhumbu and even with Tibet. It grew slowly after 1950 and rapidly after 2005, with the migration of population from surrounding places contributing nearly 85% of its population. Compared to this, the two centres, Sidhuwa and Hile, also grew in their size by in-migrants with less magnitude such as 64% and 56% respectively.

[203] Though *Tongba* a millet-based traditional and indigenous alcoholic beverage drink of the Limbu people of eastern Nepal, it has become an icon for the hoteliers at Hile. Tourists visit this place because of its richness in scenic beauty (*http://Pakhribasupdates.Blogspot.Com/2012/01/Tongba-Brief-Introduction.Html)*.

Figure 22: Roads and Types in the Koshi Hills under DOLIDAR, 2010

With the roads and growing of the off-season vegetables, period markets locally known as hāts are known to have persistently existed in providing weakly marketing and other services to local inhabitants, though the three market centres and others have expanded, and in some cases evolved to permanent markets at the same locations. In other parts, the hāts often seem to have evolved into permanent market towns, or disappeared due to expansion of market towns.

Shrestha's study (2011) concerns the general description about backward and forward linkages of Bhojpur bazaar with its surrounding villages within the district, as well as with other districts. After 1995, Bhojpur bazaar, the headquarters of Bhojpur district[204] since linked with Hile by a-89km long fair weather road, has become the main destination centre of agricultural surplus of the rural hinterlands and then to export them to other parts of the Koshi districts that are linked with the Koshi highway. As the earth road passable only during the winter dry season, the local products being exported during that time include vegetables, fruits (orange, junar, lemon, etc), and local metal crafts products (khukuri, ānti, karua, etc). In recent years, two earth (seasonal) roads with a length of 116km available are Leguwaghat-Bhojpur (66km) and Bhojpur-Nagi (50km). Public buses and jeeps services are available between Bhojpur bazaar and Hile and Dhankuta. Tractors and trucks are available means of transport for the people between Bhojpur bazaar and the villages having earth roads. Three major earth roads such as Bhojpur-Chyandada (42km) to the west, Bhojpur-Dingla (49km) to the north, and Bhojpur-Ghoretar (83km) to the south (Figure 22), which are under construction, will have significant impacts after completion of the work on improving economic and social conditions of the people, or information on flows of goods, people and others, as they link major parts of Bhojpur district.

2.7.7.4 Evolution of Traditional Market Towns and Trade Routes across Nepal

Historically roads and transports are usually found to be related to the evolution and emergence of market towns in Nepal. There are studies about the impact of roads elsewhere in several parts of the country.

Studies indicate that traditional towns were developed in the Hills and Mountains, particularly after the unification of Nepal in 1769. Two important factors appear to have played role in the evolution of

[204] Historically, Bhojpur together with Khotang district is the traditional home of *Rai* (Kirat) indigenous ethnic group of Nepal and is a part of *Majh* Kirat. In addition, other ethnic groups residing in the district are Magar, Gurung, and Tamang, as well as castes like Chhetri, Bahun, and Dalits (*http://www.digitalhimalaya.com/collections/nepalcensus/form.php*).

towns throughout the hills and mountains of the country during the latter half of the 18th century. One of them for the acceleration of the trading centres was the spread of Newar traders and small manufacturers eastwards and westwards from the Kathmandu valley[205] (Regmi 1988; Blaikie et al 1976). They concentrated on settlements developed particularly at the commercial strategic points of break of bulk along the traditional Trans-Himalayan trade routes in the Hills. Some of the traditional hill towns for instance were Chainpur and Dhankuta in the east, Bandipur, Pokhara and Tansen in the west, and Silgadi in the far west. They continued to act as a major long distance trading posts. Many of the towns were not only administrative centres and strategic garrisons, but also staging posts along the trails and crucial nodes in the transport network whose major function was to move arms and munitions, efficiently and as swiftly as possible in the rugged hill region to where they were needed (Blaikie et al *Ibid*). Thus, the towns in the hills acted as nodes which integrated communities, whereas long distance trade and external trading contacts played important role for the existence of towns at the favourable break of bulk points along the traditional main trails.

Inter-regional trade within the country was inhibited by the lack of markets for the products of one region in the other. The most conspicuous example provided by the Hill region and the Tarai region. Some of the important trade centres that were developed during the historic times in the northern Himalayan region for transit trade between Hill region and Tibet were Hatiya, Olangchung, Namchebazaar in the east, and Tukche (Jomsom) in the west (*Ibid*).

In the Tarai, trade between Nepal and India was conducted through a number of market towns, locally known as *Gola*, a grain, or salt store dealing with wholesale trade in the east and the same known as *Gallas* in the west and *Mandis* in the far west. Agriculture and forest products including food grains, pulses, oilseeds and timber of Tarai were exported to India. In turn, kerosene oil and manufactured goods from India were imported into Nepal. The extension of the Indian railways along the border of Nepal around the turn of the 19th century resulted in the growth of many trading centres for the export of local grain surpluses and timber using the rail heads at border towns of northern India (Blaikie, et al, *op.cit*). But because of inhospitable situation such as prevalence of malaria, most of the trading took place on a seasonal basis with maximum activity during the winter when dangers of infection were least. Most of the present day important towns like Bhadrapur, Biratnagar, Rangeli in the east; Jaleswar, Birganj in the centre; Butwal in the west and Nepalganj, Dhangadhi in the far west were developed during that time (Regmi 1988, *op.cit*).

existence of towns at the favourable break of bulk points along the traditional main trails.

Secondly, after the termination of Rana rule by the middle of the 20th century, there was a considerable increase in the number of government employees, and in the number of offices constructed in the district headquarters towns. The growth in the number of locally resident government employees, and the increasing importance of the towns as centres for the distribution of imported goods, led to an increase in the number of retail and wholesale business located in towns (Blaikie et al 1976; Caplan 1970). Messerschmidt's study (1980) concerns about understanding the process of growth and change of market centres and hinterland in the Marsyangdi river basin (western hill) and found that the historic and contemporary factors including the factor of change in mode of transportation and communication have brought about the change and development of gateway communities developing at break of bulk points and their reflections of change and modernisation on the hinterland communities.

2.7.7.5 Development of Roads and Growth and Decline of Towns

The pattern of evolution of towns in the recent years can be related in large part to the development of road transport system and to the demographic and economic responses. As noted above, since the late 1950s new roads have been constructed which made many areas accessible and the development of towns also took place along them. The development of a large number of market towns along the roads bears witness to their strong influence upon the location of small trading centres. Such towns experienced a very considerable expansion of the government offices and facilities. Others however, off the roads, tended to decline. For instance, towns like Bhaktapur (in

[205] The Newars were the indigenous inhabitants of the Kathmandu Valley. They were not only traders, but also rulers of three principalities, viz, Bhadgaon (Bhaktapur), Patan (Lalitpur) and Kathmandu of the Kathmandu Valley until the unification of Nepal during the second half of the 18th century (Regmi 1988).

Kathmandu valley), Bandipur and Putlikhet (west), Dhankuta (east), etc hold good example for the decline of their trading importance after the coming of the roads (Blaikie et al *op.cit*; Pradhan 1979).[206]

In most cases, the growth and development of towns in Nepal has occurred spontaneously. Besides, the growth and development of some of the towns is also due to public efforts such as roads initiated by the government development programmes. In the latter case, interventions of government efforts appear to have been crucial for the significant development of towns as well as to strengthen their role and functions for hinterland development (Dhankuta and Khandbari in east Nepal; Pokhara and Damauli in west Nepal).

Change is a continuous process that may vary in rate and direction over time and by location features and road is one of the major factors to cause differential impacts in and around the road in Nepal. The most obvious consequences of road construction have been a dramatic reduction in the cost of transport, creation of loading and off-loading works, replacing traditional transport such as mule, donkey and porter, saving of cost and time and change in mobility in the central-west hills and mountains (Blaikie, et al *op.cit*; Lalchan 2011). The expansion of commercial activities and their relocation emerged as a result of road provision. The major reason for the expansion of commercial activity in new centres is that with the building of roads, it has become economical to move commercial activity nearer to the points of consumption and production particularly in the hills, where accessibility is a problem and settlements are scattered due to rugged terrain. Another dramatic change which came up with the coming of roads together with the expansion of agricultural activity across the Tarai, as well as in the eastern hills and mountains is the transformation of many traditional periodic markets locally called as *hāt bazaar* or *Hatiya* into permanent market towns or led to expand the existing market towns, for instance, Dharan, Damak, Budhabare, Sanischare, Inaruwa are mentioned a few (Shrestha and Rijal 1979; Regmi 1988; Mandal 1995; Pradhan and Karna 2004; Raya 2007). The *hāt bazaars* have indeed long existed as a part of the traditional spatio-socioeconomic organization, particularly to fulfil the marketing needs of the local people through low volume of commercial activities. Most traders of such rural market centres subsist not only on their petty business pursuit but some of their family members derive livelihood from farm and farm related or nonfarm activities (Mishra and Satyal 1981). They have also been centres for dissemination of public programmes and mobile services such as health, extension, bank, etc (Pradhan and Karna, *op.cit*; Raya, *op.cit*). Such *hāt*s now occur at regular intervals such as bi-weekly, weekly and fortnightly at strategic locations such as rural centres, headquarters, market towns, or junctions of two or more foot trails and roads in those regions.

Roads have improved the general socioeconomic conditions of the people and areas in the hill regions, including the western, central, and mid-western regions (Schroeder and Sisler 1970; Goil 1971; Shrestha 1973-74; GIS 1994). Roads also have contributed significant role in the growth and development of market centres by attractive people from nearby places, employment generation particularly for marginal farmers, enabled to intensive use of land resources and made available of local produce and rising speculated land value in the markets, and reinforced the development of cash crops (Pradhan 1978; Pradhan 1982; GIC 1984; CDG 2001). The production of ghee and dried ginger called 'sutho' in the western hills and vegetables and fruits in other areas have been expanded because of the development of markets as collection centres along the roads that enabled to transport them to the large centres. The expansion of road networks has greatly influenced the internal as well as agricultural marketing systems and integrated markets in both Tarai and Hills, such as the Chitwan valley (Pradhan 1988) and the eastern Tarai (Misra and Satyal 1981; Upreti 1985; Pathak 1989). On the other hand, the imported manufacturing items such as fancy and quick or instant food items have in most cases penetrated into the local markets dominating over the domestic items and declining of the cottage and traditional industries operating in the areas since the past several years (Blakie et al. *op.cit*).

The magnitude of commercial activities of the highway market centres and the volume of vehicular traffic and passengers along the highways found to be determined by their size and nodal feature (Pradhan *op.cit*). There has also been significant effect of the road links of the regional centres such as Pokhara over its extensive hinterland in the western region (Gurung 1987), but no such effect was

[206] They belong to the highways of Arniko (Kodari), Prithvi and Siddartha, and Dharan-Dhankuta respectively.

found in case of regional centre like Birendranagar over its surrounding areas in the mid-western region (Manandhar 1982).

Road has also brought about different impacts from those mentioned above. The completion of Beni-Jomsom highway by the Nepal Army in 2008 has become a milestone for linking the western hills and mountains with Tibet, China. This has already brought about new opportunities for agricultural and trading activities in the areas along the road. For instance, the agriculture land use along the road sides particularly in and around the Marpha locality has been intensified and the production of local products like apple and its by-products (dried, juice, brandy), vegetables, beans, and potatoes and dried meat has been increased considerably due to their increased demands in the southern neighbours (Lalchan 2011). On the other hand, the newly built houses along the road particularly for trading purpose have given birth a new Marpha settlement, but in a haphazard manner. There has been changed in the visitors' portfolio, too. After the completion of the road, both pilgrims and trekkers now go directly to Muktinath, a sacred Hindu temple and other tourist spots by vehicles without staying or spending only little time at Marpha, resulting in decline of its long established catering business (hotel and lodge).[207] More importantly, the road has declined sharply the world famous trekking attraction and business of the Annapurna Conservation Area (Lalchan, *ibid*).

Currently, two types of towns exist across the country. The first refers to municipal towns with population size of 10,000 and above in the Hills and Mountains and over 20,000 in the Tarai, designated as incorporated urban areas by the government (CBS 2002). There are 58 designated municipalities in the country including Dhankuta and Khandbari of the Koshi Hills. Very recently, the government has declared additional 41 municipalities[208] including Bhojpur (Bhojpur district) and Myaglung (Terhathum district) of the Koshi Hills, as well as Urlabari (Morang district) and Diktel (Khotang district). Most of these designated urban areas are also district headquarters centres and therefore enjoy district level services and functions. Further, all these urban areas are linked among themselves by road network. The second type refers to the small towns with population size below 10,000 in the hills and mountains and below 20,000 in the Tarai, which are not formally recognised as urban areas. Such towns are widely spread across the country and have long been providing marketing function for both consumer goods and other services to the rural people and collection of marketable farm and craft products. Though they are vital in terms of number, location and functioning for rural development, most of them are not functionally integrated among themselves as well as with their surrounding areas due to lack of transport network connection, particularly in the Hills and Mountains. Their economic base is primarily supported by agriculture (Pradhan 1997). Hāt Bazaars also come under this category.

2.7.7.6 Road Transport and Traffic Accidents

Study is now available on traffic accidents along the roads. A study by Jha and Agrawal carried out in 2004, based on one year accident data recorded at two hospitals of Dharan in Eastern Nepal, including the Koshi Hills records a total of 870 victims of road traffic accidents (RTAs).[209] About 37% accident cases were registered in rainy months of July, August, and September, and about 34% in winter months. The possible reasons for these higher proportions of accidents in these months could be due to rains in July and fog in January. Falling down of the heavy vehicles such as buses and trucks was the more common mode of accident claiming about two-fifths victims. Interestingly, almost 17% drivers were found to have consumed alcohol, causing the accidents.

---

207 Similar observation is found in case of famous Manakamana temple in Gorkha. The long established catering business for the pilgrims who used to visit the temple for about 4 hour arduous trek over 18 km from Abu Khaireni has been lost due to the provision of cable car service from Kurintar at Prithvi highway to the temple site in 1998. This is the only cable car service in Nepal. It is 10 minutes cable car ride over 3 km. This cable car now carries hundreds of devotees and religious tourists each year (***www.himalhydro.com.np/mccp.html***).

208 On August 5, 2011, the Ministry of Local Development declared additional 41 municipalities. With these, the country now has 99 municipalities, 3,783 village development committees and 75 development committees.

209 As per the estimates of morbidity and mortality for 1999 in Nepal, injury was the third leading cause of total mortality and, with road accidents occupying the eighth position in the overall ranking.

Nepal has comprehensive safety plans for tackling traffic problems, but they are underfunded and poorly coordinated, particularly in the field of road traffic injury. Moreover, there are gaps in the proposed national traffic safety action plans, which lack clear priorities based on a strategic analysis of the situation. Consumption of alcohol by drivers during the vehicles driving for example appears to be a crucial problem throughout the country. Yet there are virtually no countermeasures such as public education, anti-drunken driving campaigns, nor is even the legal ability to deter drunk drivers. But the more pressing reality is that current allocations for road safety are inadequate and allocations for educational programmes are even more deficient. However, if the location features of the accident sites along the roads were also covered or analysed, the study would be even more useful for devising road traffic accident plan.

2.7.8 Trail-Bridges

The hills and mountains of Nepal have extremely limited roads. Walking along foot trails is the main and often the only mode of transport for majority of the people living in the settlements which are both tiny and widely scattered in the hills and mountains (CDG 2004). Safe crossings are an essential need of the people of the mountains and hills which are rugged and characterised by steep slopes, deep gorges and wide rivers banks, and swollen rivers during the main monsoon season (June-September). Here, the drainage pattern and terrain dictate the need for the trails and trail-bridges because most of the villages are geographically marginal areas and connected with trails, but are isolated without connection of roads (MLD 1997).

Swiss national Tony Hagen, after extensive travels in Nepal in the 1950s expressed the importance of safe and all time access to and from settlements in the following words:

"To have the use of suspension bridges is the overwhelming wish of the whole population… There is really no other development project which so directly affects so many people using so little money and in such a short time..."

Nepal has a long tradition of building pedestrian trail bridges, locally known as "*Sanghu*". Over time, different forms of trail bridges, ranging from single log crossings (*Phatke*), community built twine and reed (tough grass) crossings (*Targhats*), iron chain bridges sturdy crossings with single/double plank walkways hung on suspenders hooked to two pillars, and now single or double wire ropes spanning over the wider rivers.

Figure 23

The modern trail bridge building began in Nepal since Helvetas Nepal with support from the Swiss Agency for Development and Co-operation (SDC) took initiation as a principal agency to support to the development of trail bridges in the 1960s.[210] Three approaches in a row seem to have adopted by the

[210] Prior to this, Aberdeen, Scotland was the first to build some 29 Scottish modern trail suspension bridges at important trade and administrative routes in Nepal in the early 20th century. The Americans through United States Operation Mission (USOM) launched the first pedestrian trail bridge building plan in Nepal in 1958. From 1960 to 1964 Swiss engineers under Helvetas worked in collaboration with the Americans but outside the government programme. In 1964, the government established the Suspension Bridge Division (SBD) at the

Helvetas Nepal for the sustainable development of the trail bridge sector (Tuladhar 2007). In 1964, the Suspension Bridge Division (SBD) adopted the Central Approach for construction of the bridges and local trails throughout the country. This approach was replaced by the Community Approach, known as 'Bridge Building at the Local Level' (BBLL) that began as a pilot project in 1989. Since then building a BBLL bridge has become a prestige symbol portraying the ability for development work among the rural communities and VDCs (*ibid)*. The third and current approach is the Trail Bridge Sub-Sector Approach (TBSSP) which since 2003 has been supporting to construct both Long Span Trail Bridge (LSTB >120 m) and Short Span Trail Bridge (SSTB: ≤120 m) depending on the span of the crossing through established implementation modalities. The bridge span has also been based on two major types of trails such as Main Trails and Local Trails, defined in terms of relative importance of connecting central places. The main trails referred to linking places of trading routes and administrative centres, while the local trails to linking places of lesser importance centres.[211] Further, a local trail bridge on an average serves around 10 clusters of settlements, i.e. around 400 households in its immediate area of influence. Bridges on main trails located near settlements, besides serving the immediate vicinity, are also used by non-local traffic. Therefore, on average some 2,500 to 3,000 people can be regarded as beneficiaries of a single trail bridge.

In addition to support to build trail bridges, Helvetas Nepal has since 1970s also been engaged in technical standardisation for designing main trail bridges, developing technical manuals, strategic planning, management base and maintenance concept, conducting main trail and service centre maps, trail bridge education and training, preparing technical, administrative and managerial procedures for a decentralized transformation of this sub-sector, etc (*ibid*).

However, the main challenges ahead comprise of capacitating local bodies to bear their respective responsibilities as outlined in the Trail Bridge Strategy, addressing new technological challenges and fine tuning policies, facilitation and monitoring tools. Further, the "will" factor of the local bodies and communities are the primary energising and motivating factors that would ensure a bridge in the shortest possible time.

By 2007, there were altogether 3,380 trail bridges in 60 districts (Tuladhar *ibid*) and a total trail length of approximately 16,000km across the country (NPC/UNDP 2006). The four districts of the Koshi Hills had 231 trail bridges (Bhojpur: 74, Dhankuta: 21, Sankhuwasabha: 76 and Terhathum: 60), with an average of 58 per each district, which is slightly higher than the national average of 56 per each district. All 16 districts of eastern region had 737 trail bridges, with Khotang possessing 121, the largest in the eastern region and Ilam had 81 trail bridges. Morang had only 8 trail bridges, while there was not a single trail bridge in Sunsari, as well as in other four Tarai districts of eastern region.

2.7.8.1 Impacts of Trail-Bridges

Availability and accessibility are two important factors of basic responsive services such as health, dispensary shops, schools and other facilities (fire wood collection, animal grazing, grain-mills, markets, etc) in the hills and mountains of Nepal. Mobility to these service locations has been restricted due to drudgery of movement caused by mountain terrain, innumerable rivers, and streams and gorges, limited road and other transports networks, dispersed rural villages, and scattered services (CDG, 2002). Provision of trail bridges generally is to make ease of movement of the people to reach their desired places safely and with shorter time and thus increased use of available those facilities stated above.

---

centre. The nature of USAID support to Nepal began to shift (Tuladhar 2007). Since 2005, World Bank and ADB also began to support to build trail bridges across different districts of Nepal.

[211] The Main Trail Maps (MTMs) and Central Service Maps (CSMs) were the first of its kind in Nepal. It was an acclaimed achievement of Helvetas Nepal. The digitised and elaborated versions of MTMs/CSMs are called the Transport Infrastructure Maps (TIMs). TIMs are made with the Geographical Information System (GIS) compatible to be integrated into the District Transport Master Plans (DTMPs). Using TIMs, likely crossings along long local trails can be identified. This facilitates local governments to be more efficient on the allocation of available resources within a district and vigilant on the issues of balanced growth and equity. These database maps are the asset for planning and academic exercises.

TBSU's study (2008) has assessed the impacts of trail bridges, whether they improve access of the rural, especially women and marginalised groups to the existing health facility locations across the hills of Nepal, including Panchthar[212] of eastern hill district as a case study area, which resembles similar to the districts of the Koshi Hills in terms of ruggedness, indigenous communities, accessibility, and other resources. The study indicates that the provision of trail bridges has on average saved approximately 30 minutes for crossing the rivers; reduced costs for portering medicine by 33% and portering distance from 3 days to 1 day. The access found to have varied remarkably among those beneficiary communities and demographic groups as mentioned above and substantial improvement has been achieved by the provision of trail bridges in accessing to the desired facilities' locations.

Another study by No-Frills (1989) has assessed the provision of the type and nature of trail bridges (suspension) in the hills being made based on the hierarchy of central places, which are also depicted on the central service map by the Helvetas as stated above. The study indicates that the central service map has failed to indicate a high correlation between the availability of central services (i.e. criteria used to grade central places) and the population density of central places (defined to referring to the Village Panchayat rather than the individual settlement). Such a lack of correlation between population density and central services might be largely due to the fact that most of the major central places in the hills have historically been administrative centres rather than economic hubs based on the progressive exploitation of resources available in the surrounding hinterlands (Regmi 1988). Further, the traditional administrative centres, which exist still today, have generally been converted into district headquarters and most of which are situated at ridges of hills or slopes with limited physical space for the spatial expansion of population and commercial, industrial and administrative activities (e.g. Khandbari, Dhankuta, Bhojpur, Myaglung, etc). Yet as district headquarters, they tend to attract virtually all the district level government services and other services and thereby become grade 1 central places without generating much dynamic "spread effect" with regard to economic development. As a consequence, it is generally found high population density centres with only a very few central services and vice versa (No-Frills, *op.cit*).

Secondly, while many of the trails have been certainly used by porters, traders, and trekkers, few of them appear to be commercially vibrant. Undoubtedly, few attempts have been made to convert these trails into a commercial network, taking advantage of the productive potential of many hill and mountain localities (*Ibid*). In other words, instead of turning these trails into a commercially vibrant transport network through their qualitative improvements, thereby setting the local economies on the path of progressive development, they are still viewed as basically administrative linkage channels. As such, they have generally failed to become a dynamic mode of transport or become insignificant to sufficiently contribute to local economic growth and development. It is therefore, planners and policymakers need to improve trails and bridges as a potential inducer of economic development by enhancing transferability and market accessibility.

Despite these, however the service centre maps containing information such as location of service centres with types of services or functions, different size settlements, trade routes, traditional transportation routes, etc are of tremendous importance for planners and policymakers for further spatial planning for economic and social development in the hills and mountains of Nepal.

2.7.9 Summary

In short, the construction of roads has enormous positive impacts on the surrounding areas. The findings tell us that the expansion of road networks has greatly influenced in improving the internal marketing system and markets integration in areas, which are accessed by roads. There are also negative impacts of the roads as well. Major observations are as follows:

- As elsewhere in other parts of Nepal, road impacts have a very short history in the Koshi Hills, as the construction of first road took place in the early 1980s.
- Roads and trail-bridge seem to have made profound positive economic impacts in their corridor region. The first and foremost is the emergence of market towns along the roads and their

[212] Panchthar, a neighbour district to the east of Terhathum and Dhankuta, is a hill district with elevations ranging from 610 to 3,680 masl. The district is also drained by the Tamor that flows to the west to meet the Arun River, and inhabited by indigenous tribal groups such as Limbu, Rai, Tamang, Magar, etc.

backward (collection of local produce) and forward (exporting and transhipment of local produce and import of household goods) linkages. It has caused to increase in the production of agricultural crops through adopting more intensive and commercialised production systems, as well as introduction of new and high value crops and expansion of cultivated land and therefore increase in average income of the farmers. Further, there has been significant reduction in the price of basic consumer goods.

- Roads have also provided a novel spatial-economic linkage for the growth of the road-bound market towns to deliver marketing, administrative, and other services particularly in the region. They have also helped to improve the traditional pattern of flow of goods and people and to cover extensive areas that were previously mostly localised in the areas.
- Impacts appear to have been variable on the communities as well as in the corridor or buffer areas by the nature of road such as all weather and fair weather, in addition to other factors such as availability of infrastructure/facilities (irrigation, improved seeds and fertilizer), geographical conditions (terrain, soils and climate), distribution of arable lands (marginal, small and large), etc.
- There has been changed or shifted in the existing transport system. Dhākar or Bhariya (porter) that had served portering of goods between market towns and villages for long has been either disappeared or replaced by motors and coolies. The mules and donkeys as local and traditional transport means have been replaced and moved to areas where now there is no motorable road.
- While the commercial importance and role of the roadsides market towns such as Hile, Sidhuwa, Basantpur, Leguwa, etc has been enlarged, the role and importance of some of the traditional towns have declined sharply due to bypassing them by new roads or emergence of intervening centres, or link with larger towns, such as Taksar in the case of Bhojpur, Chainpur in Sankhuwasabha (due mainly to shifting of district headquarters services to Khandbari), etc. More importantly, the local handicraft and traditional artesian products have been disappeared due to penetration of cheaper manufactured goods in the local markets.
- On social front, different kinds of people of the surrounding areas have moved to the road side for building new settlements, or establishing business enterprises. Access to health and school and other facilities has increased. Awareness of the innovative ideas, technology, banking or politics has been raised.
- One of the negative effects of the construction of the roads is the morbidity and death of the people due to motor accidents along the roads. Though this is a human error, the occurrence and magnitude of the accidents can be minimised due to efficient and sincere road and vehicular traffic management, and awareness of the road users towards the traffic system. Landslides are a general cause of the construction of roads along the fragile hill slopes. Further, environmental degradation such as forest encroachment and loss of prime arable lands have also occurred due to the construction of roads, though the main objective of the RAP is with the environment friendly road provision.

2.7.9.1 Gaps

- Dearth of research on differential impacts of roads on different social groups and categories, employment and migration
- Magnitude of the changes in agricultural output and diversification that can be directly attributed to the road building as opposed to general changes, including growth of local economy and increase in remittances
- Loss of traditional handicrafts and other value added products in economic terms and employment due to import of cheaper manufactured goods
- Alternative means to provide economic opportunity rather than road building, e.g. develop small scale marketing opportunities within the local economy, or increase in investment in healthcare, education, given the vast amount of investment being put into transport infrastructure.

2.8 Social Services: Health

This section begins with an overview of the evolution of health policies in the country which in turn influenced the programmes that were implemented in the Koshi Hills districts as well as throughout the

country. It then goes on to describe health programme interventions that were implemented in the Koshi Hills districts from the 1970s onwards. Where data and documents were available, the review focuses on the impact of these health interventions on the lives of the people in the study area.

Health concerns in Nepal have been guided by trends in global health policies and strategies. Changes in the orientation and approaches of government programmes in health over the past decades are reflected in the national policy timeline for these sectors. A summary of the key policies and major events that influenced overall health programmes in the country is presented in **Annex 14**.

2.8.1 Current Health Conditions in Nepal

Health priorities and programmes in Nepal are currently guided by the Second Long Term Health Plan (SLTHP) for 1997-2017. This plan provides a long term vision and strategy to improve the organization and management of the public health sector and to increase the efficiency and effectiveness of the health care system. It also provides guidance for the private sector, NGOs and EDPs on directing resources and expertise to improve the health situation of the country. The goal for this period is that by 2017 the IMR will be brought down to 34.3 per thousand; under 5 mortality to 62.5 per thousand; the TFR to 3.05; life expectancy to 68.7 yrs; crude birth rate to 26.6; crude death rate to 6 per thousand; maternal mortality to 250 per 100,000 births; and that 95% of deliveries are done by trained attendant. According to the preliminary results of the 2011 Nepal Demographic Health Survey (NDHS) the under 5 mortality (54 per thousand), and the TFR (2.6) have exceeded the SLTHP targets while the IMR (at 46 per thousand) and the% of deliveries done by a trained attendant (36%) still has to be met (NDHS, 2011). Table 39 provides an overview of the changes in some basic health indicators from 1971.

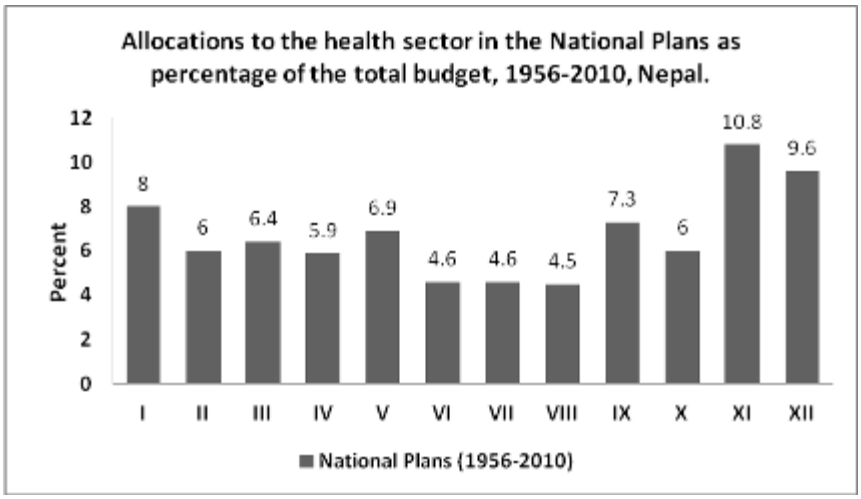
Table 39: Basic Demographic Indicators, Nepal (World Statistics Pocketbook, UN Statistics Division (2009); CBS 2010; CBS, 1974; New Era, 1986; Guvaju, 1974; NFS 1976; NFFS 1986; NFHS 1991; NDHS 2001; NDHS 2006; NFFS 1986; MMMS, 2008/09, MOPH; NDHS, 2001 and 2011; SLTHP (1997-2017); NFHS, 1996.)

	1971	1981	1991	2001	2011	Projections for 2017
Population size (millions)	11.6	15.0	18.5	23.2	26.6	
Intercensal growth rate (%)	2.1	2.6	2.1	2.25		
Density (pop./km^2)	79	102	126	157	199.3[a]	
Percent urban	4.0	6.4	9.2	13.9	18.6[a]	
Life expectancy (years)					-	68.7
- Female	40.0	48.1	53.5	60.7	64.5[b]	
- Male	42.0	50.9	55.0	60.1	63.6[b]	
Infant Mortality Rate	172[c]	117[d]	97	64	-	34.3
- Female	186[e]	111[d]	101	75.2	44.55	
- Male	200[e]	136[d]	94	79.2	44.54	
Maternal mortality rate	-	-	515	440	229+	
Under 5 mortality rate	156[f]	103[g]	80[h]	64[i]	61[j]	
Total fertility rate	-	5.1[k]	4.6[p]	4.1[m]	2.6[m]	3.05

2.8.2 Resource Allocation in the Health Sector

Overall there have been significant improvements in the health sector in Nepal. The first Five Year Plan (1956-1961) initiated the country's planned development of health services and eight percentage of the national budget was allocated to the health sector. This allocation has seen variations over the years eventually crossing the 10% mark as a share of the national budget in the Three Year Plan for 2007-2010 as can be seen in Figure 24 (MoHP, 2010). The allocation of the health budget also improved in relation to the share of essential health care services which increased from 65 to 75% of the health budget during the same timeframe.

Figure 24: Allocations to the health sector in the National Plan



There has also been an increase in the distribution of funds for the 75 districts with less going to the centre. The National Planning Commission (NPC) has directed the sectoral ministries to allocate resources on the basis of the Human Development Index (HDI) of the districts, but the Ministry of Health and Population (MOHP) has barely followed these guidelines (RTI, 2007:6). In most instances the practice has been to steadily increase allocations from year to year, regardless of the need of the districts.[213] A study on equity analysis of resources allocation for districts conducted in 2007 show that the Eastern Development Region (EDR) had a high per capita public expenditure on health (PPEH) at NRs. 135 (compared to the other regions) but within the region the results varied. For example, in the Koshi Hills among all the hill districts Terhathum had a high HDI (0.523) but also had a high PPEH of NRs. 234. Dhankuta and Illam had moderate levels of PPEH with moderate levels of HDI. Sankhuwasabha, on the other hand actually had a more equitable situation with a high HDI and low PPEH (RTI, 2007:8-11).

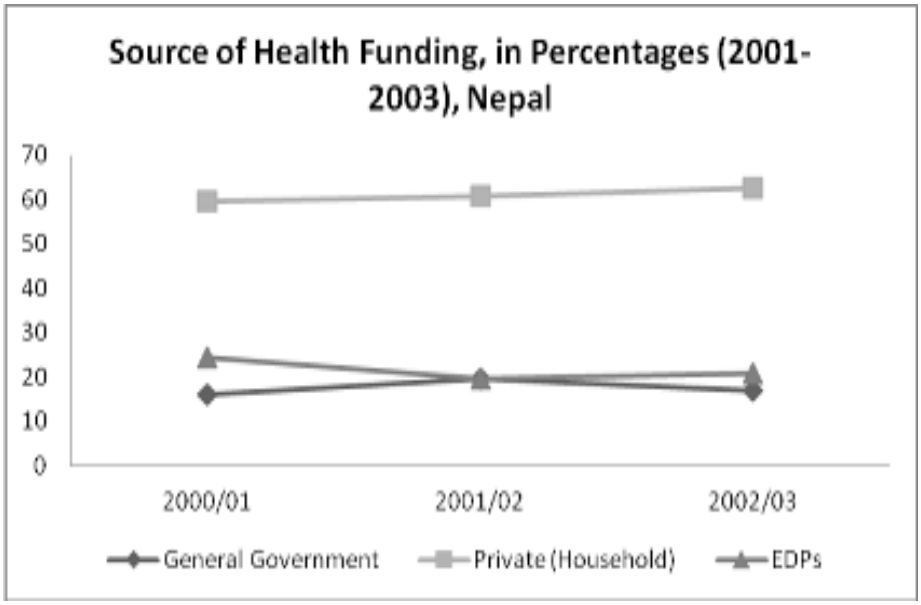
2.8.3 Expenditure in the Health Sector

A Community Health Survey conducted in Surkhet in 1978 showed that, although government health cost NRs. 12 per person per year (US$0.15), individuals were paying NRs. 23 (US$0.29) (Padfield, 1980)[214]. Household (out-of-pocket) expenditure is still the biggest source of funding in the country accounting for 59.7% in 2000/01, 60.8% in 2002/02 and 62.5% of the total health expenditure (MoHP, 2006)(Figure 25). Over the same years the share of government spending has been lower than 20% (ibid). The share of donor expenditure as a percentage of the total health expenditure was 13% in 1994/95 (Hotchkiss et al., 1998 in MOHP 2006). This rose to 24% in 2000/02 but decreased to 21% in 2002/03 (MOHP, 2006).

[213] The 2007 RTI study mentions that only in a very few cases, this kind of incremental approach has considered resource availability and project performance, and the sector had not developed any scientifically developed criteria for resource allocation.

[214] At February 2012 exchange rates of USD1= NRs. 78.75.

Figure 25: Source of Health Funding in Percentages



Expenditure in the health sector has remained low at 5.3% of GDP and per capita health expenditure at US$18.09 in 2006.

2.8.4 Evolution of Health Programming

Until the early 1950s, most health care in Nepal was provided by family members and several kinds of indigenous practitioners, including herbalists and spiritualists as well as those practicing homeopathy, acupuncture, Yunani and Tibetan medicine (WHO, 2007). India, USA and WHO were the first external agencies to give assistance to the country in health, soon followed by the Soviet Union and China.

National health programmes in the early 1950s began with malaria eradication. Leprosy and tuberculosis were vertical programmes. Since the vertical disease eradication programmes failed to address the root causes of poor health, the country adopted an integrated approach with multipurpose health programmes (WHO, 2007). Despite mixed results of an evaluation of this approach the ICHP continued as Nepal's dominant health strategy in the 1970s, with an added innovative emphasis on community participation.

By the late 1970s health services in Nepal included 70 hospitals, approximately 450 medical doctors (of whom only 25% were located in the rural areas), 350 nurses (14% in rural areas) and 550 health posts staffed by paramedics (ibid). Along with USAID, WHO pioneered the Integrated Community Health Programme (ICHP) which was the dominant rural health strategy during the 1970s. In the mid 1970s the country also initiated the First Long Term Health Plan (1975-1990) with the key objective of integrated community health development through primary health care.

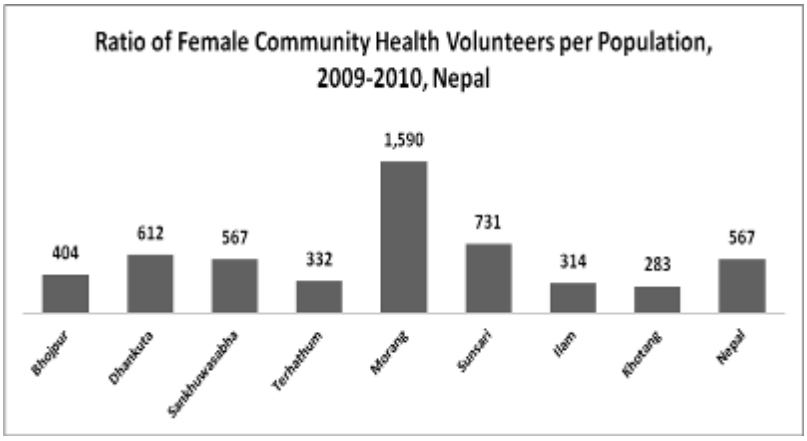
Based on the long term health plan, in 1975 the government established a Community Health and Integration Division within the Department of Health Services, with the aim of drawing together the existing individual projects concerned with the control of TB, leprosy and small pox, and the family planning and maternal and child health services into a unified service (ibid). In 1981 the Division became the Integrated Community Services Project reflecting the national priority on integrated rural development. The government continued its commitment to Integrated Community Health Programme (ICHP) despite accumulating evidence that integration had not so far been very successful as shown by HMGN's 1978 Mid Term Review (Padfield, 1980:1).

The government continued with its plan to place Village Health Worker (VHWs) in each Panchayat as part of the integrated programme. Concurrently, UNICEF and USAID were supporting the supply of drugs to all health posts nationwide, and through a multi-million dollar programme UNFPA was

supporting 23 “integrated” districts. This period was also marked by debates related to vertical versus integrated programmes in health[215].

In the later 1980s an innovative volunteer programme – the Female Community Health Volunteer (FCHV) - was started as a means to improve community participation and to enhance the government’s primary health care network through outreach of health services by volunteers. The programme started with the aim of having one FCHV per ward in rural areas and by the mid 1990s FCHVs were recruited on a ‘population based’ ratio. As of 2009/10 there were over 48,500 FCHVs throughout the country, assisting with primary health care activities and acting as a bridge between government health services and the community. As can be seen in Figure 26, among the Koshi Hills districts the most number of FCHVs are in Bhojpur but overall the number of such volunteers is much lower than those in the neighbouring hill districts of Ilam and Khotang as well as those in the Koshi Tarai districts.

Figure 26: Ratio of Female Community Health Volunteers per Population



With the promulgation of the 1999 Local Self Governance Act (LSGA), the VDCs became responsible for the operation and management of the local health centres (the village health centre, and the sub- and health posts). Power and authority was also transferred to local representative groups called the Health Facility Operation and Management Committees (HFOMCs) to manage local health facilities. The aim of the HFOMC was to serve as a bridge between government and local communities, communicate the concerns of community members to health facilities and VDCs, provide information to communities on new services or modifications to the health care system, help develop and monitor action plans, and help manage local health facilities (CARE, 2011).

2.8.5 External Assistance in the Health Sector

As early as in 1979 nearly 37 donors were contributing funds for health purposes in Nepal (WHO, 2007). In the 1980s close to 82% of the health budget came from external sources (Padfield, 1980). In 2003 a Health Sector Strategy was formulated and endorsed by the government which guided the government and its external development partners (EDPs) to focus primarily on how the health sector can contribute to poverty reduction, improving health outcomes for those living in remote areas as well as delivering the Millennium Development Goals (MDGs). Instituting and providing health care services and the achievements in the health sector so far have depended heavily on financial and technical support from the EDPs. In the following decades EDPs have collectively financed nearly half of government spending on health (MoHP, 2010). Since the 2003 strategy the government and EDPs introduced the sector-wide approach in funding health activities and thus sectoral plans were drawn.

The Nepal Health Sector Programme-I (NHSP-I) 2004-10 was the first sector wide programme in the country and was supported by eleven EDPs.[216] It aimed at improving health outcomes focusing on the

[215] Malaria Control was considered one of the most effective of the vertical programmes. Other programmes were Small Pox Eradication, Goitre Eradication, Leprosy Control Project, Netherlands Leprosy Relief Association in Terhathum focus on leprosy finding and treatment, Tuberculosis Control Project (carried out by BNMT) and FP/MCH Project.

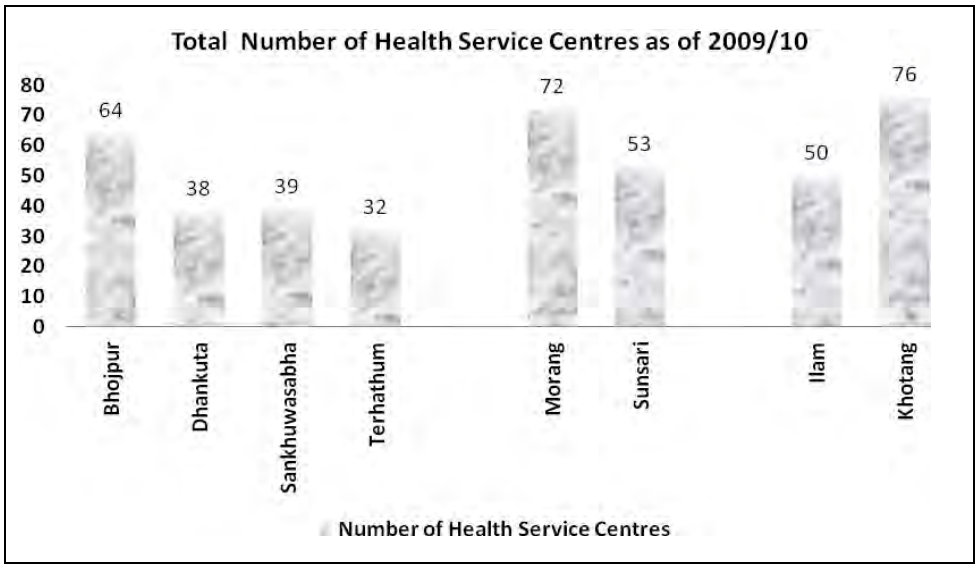
poor and those living in remote areas of the country. Additionally it sought to increase development assistance effectiveness through donor harmonization, alignment and coordination with GoN health policies and plans. During this period Nepal met or exceeded nearly all of the targets that were set, and was able to be on track to meet the child and maternal mortality Millennium Development Goals (MDGs) (MoHP, 2010: ii).

The second phase of the Nepal Health Sector Programme-II (NHSP-II) 2010-15 has been supported by eight EDPs namely, AusAID, DFID Nepal, German Development Cooperation, UNAIDS, UNFPA, UNICEF, World Bank, and the WHO. There are three objectives set out: (i) To increase access to and utilisation of quality essential health care services; (ii) To reduce cultural and economic barriers to accessing health care services and harmful cultural practices in partnership with non-state actors; and (iii) To improve the health system to achieve universal coverage of essential health services (MoHP, 2010).[217]

2.8.6 Health Infrastructure in the Koshi Hills

Figure 27 shows the total number of Health Service Centres (HSC) in the Koshi Hills districts as well as in neighbouring districts[218]. The second Figure 28 presents the ratio of the number of health centres to the population of those districts. The data shows that even though there are more HSC in Bhojpur, due to the population, each HSC has to cater to a much larger population compared to the other Koshi Hills districts.

Figure 27: Total Number of Health Service Centres as of 2009/10

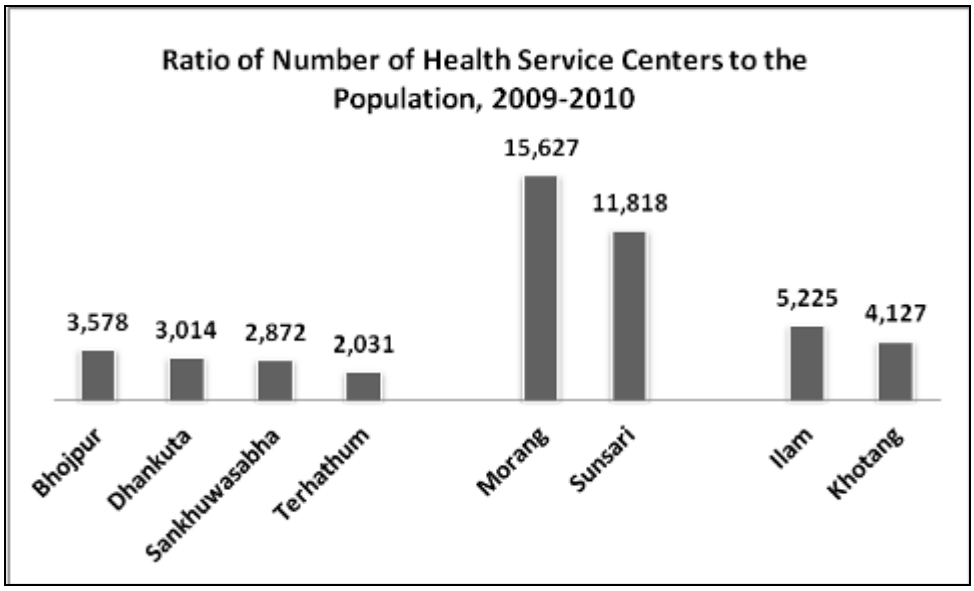


[216] Australian Agency for International Development (AusAID), Department for International Development (DFID), German Development Cooperation, International Labor Organization (ILO), Japanese International Cooperation Agency (JICA), Swiss Agency for Development and Cooperation (SDC), The World Bank, United Nations Children's Fund (UNICEF), United Nations Population Fund (UNFPA), United States Agency for International Development (USAID), and the World Health Organization (WHO).

[217] 'Essential Health Care Services' focus on family planning and population, safe motherhood, adolescent sexual and reproductive health, newborn care, child health, communicable disease control, non-communicable diseases, health education and communication, oral health care, environmental health and hygiene, and curative services (ibid).

[218] Health Service Centers comprise all hospitals, Primary Health Care Centers, Health Posts and Sub Health Posts).

Figure 28: Ratio of Number of Health Service Centres to the Population



2.8.7 Health Programmes in the Koshi Hills before the 1970s

Health programmes in the Koshi Hills have followed this trend in programme evolution. The following sections provide an overview of selected health initiatives in the Koshi hills districts.

2.8.8 Early UK Aid

The 70-bed British Military Hospital (BMH) within the Gurkha recruiting centre in the outskirts of Dharan was built in 1957, to serve the medical needs of Gurkha soldiers serving the British army and their families. Benefits to the local population was very limited, there were no 'outreach' programmes and no coordination with the 25 bed government hospital in the Dharan (Nickson, 1992). The British army pulled out of the hospital in 1990 and the hospital was upgraded to become the major referral hospital for the Eastern Region of Nepal. In the subsequent years an 80 bed extension was built and 36 overseas study scholarships were given over a three year period.

British government health aid to Nepal until the late 1980s concentrated on support for one hospital, and associated training awards were focused on 'high-tech' in contradiction of a 1980 ODA report on medical education in Nepal which strongly recommended that training awards should concentrate on subjects areas on more relevance to the conditions in the country and in particular on community health care (Bishop & Haigh, 1980 in Nickson, 1992).

2.8.9 Tuberculosis and Leprosy Control Programmes in the Koshi Hills

2.8.9.1 TB/Leprosy Control Programme (TLCP)

Tuberculosis (TB) continues to be one of the top three killer diseases worldwide. In Nepal, TB kills between 5,000 and 7,000 people a year. Nearly 80,000 people currently have the disease and more than 40,000 new cases arise each year (BNMT, 2009/10). The British-Nepal Medical Trust (BNMT) ran a vertical programme on prevention and control of TB/Leprosy in eight hill districts of Eastern Development Region of the country from 1968 until 1997[219]. Funds came from the UK BNMT.

In recent years emphasis has shifted to community health schemes and safe motherhood. More recently, funds have been obtained from the Global Fund against TB, HIV & Malaria (GF). More details about cost of intervention.

[219] The eight districts cover the four Koshi Hills districts (Sankhuwasabha, Bhojpur, Dhankuta and Terhathum) as well as Taplejung, Panchthar, Khotang and Illam.

Box 2 provides a brief look at the history of this programme. BNMT first approached the government of Nepal in 1966 to supply a team of British doctors and nurses, who arrived two years later overland in Kathmandu and started working in Biratnagar and Dharan Hospitals. They provided support to re-equip rooms, established pathology laboratory, introduced patient record systems, drugs and equipment were donated, and improvements on the operating theatre were initiated. The building of nurses' home and children's wards were also initiated. Team members assisted at mother and child health, family planning and ante-natal clinics in Biratnagar and Dharan and also trained Nepali nurses. Since then BNMT has expanded its coverage to all 16 districts in the Eastern Development Region of Nepal as well as in selected districts in the rest of the country.

Box 2: A Pioneering Role - The History of BNMT's TB Programme (BNMT, 2010)

BNMT has been working to address TB in Nepal since its inception in 1968. The Trust played a leading role in establishing the National Tuberculosis Programme, and for many years helped the National Tuberculosis Centre to implement TB prevention and control measures in eastern Nepal.

In the 1990s BNMT reconsidered its approach, and moved from delivering TB services in eastern Nepal to helping to develop an effective national TB control programme. The Trust's knowledge and experience were put to use building the capacity of the NTP and the Basic Health Service (BHS) to diagnose and treat TB.

The services previously run by BNMT in eastern Nepal – the case finding programme, TB clinics and TB hostels where patients from remote villages could stay while undergoing treatment – were handed over to the government and are now run by the district health authorities.

During the 1990s, BNMT pioneered new approaches to TB treatment in Nepal. The success of the Trust's DOTS pilot programme in Dhankuta laid the groundwork for a national scheme that extended DOTS throughout the country. BNMT also pioneered treatment for TB-HIV co-infection, starting with a pilot project in Sunsari District in 2001.

Source: BNMT, 2010

The TB/Leprosy Control Programme (TLCP) was gradually integrated with the regular district health structures of the government from 1999 onwards, with BNMT playing a technical support role. Since 2007 in particular BNMT carried out various activities under five major headings namely, quality assurance of TB sputum microscopy, expansion of Directly Observed Treatment Short course (DOTS) services, capacity building of basic health service staff and community people, public-private partnership and monitoring and supervision in the 16 districts of the Eastern Development Region (EDR).

An evaluation of the integrated phase of the TLCP in 2002 stated that though the integration approach had worked well overall, the technical and logistic support of BNMT was still necessary in the early years. Problems with supervision and quality of technical work were noted to be below standard, and managerial and staffing shortfalls in all the districts were hampering progress (BNMT, 2002). The evaluation report also noted that despite many years of TB education in those districts, many of the TB patients interviewed during the evaluation reported not knowing about the symptoms of the disease until they contracted it themselves, and that for the majority their first consultations were with the local healers than a health facility, which in turn delayed their treatment.

2.8.10 Nepal National Tuberculosis Programme

BNMT's current focus has been on working with the National Tuberculosis Centre (NTC) to fight against TB within the framework of the government's National Tuberculosis Programme (NTP). Since 2006, BNMT became a sub-recipient of the Global Fund through the NTC (NTC, 2007/08).

2.8.11 Drug Scheme Programmes

BNMT introduced a Hill Drug Scheme (HDS) in eastern Nepal in 1969 where trained drug retailers provided essential drugs to the community through their private shops at a cost lower than the changed locally, and were sold at an agreed price. The retailers received a 15% mark-up that also included a charge for transportation. By the end of 1997 the HDS was operating in eight districts.

An impact evaluation of the HDS in 1997 found that the programme lacked active community participation and elements of sustainability (BNMT, 2002b). Similarly another 1999 comparative study of the various drug schemes that looked at prescribing, quality of care, access, financial data,

community involvement and sustainability found that there was a trade-off between sustainability and quality of care (Holloway & Gautam, 1999). Based on the evaluation findings the HDS was transformed into the Community Hill Drug Scheme (CHDS) and was introduced at the sub-health post level. Additional management strategies such as the establishment of a revolving drug fund (RDF) were also introduced in the system. Another 2002 evaluation of the programme was carried out in which pointed out the continued popularity of the programme among the community and the health service providers due to the access of drugs at lower rates at the public health institutions.[220] The evaluation also pointed out the programme would be financially sustainable as long as the cost sharing approach adopted was continued and regular supervision and monitoring was maintained (BNMT, 2002b). A survey conducted as part of the evaluation pointed out that 61% of the respondents said that the scheme benefitted most people equally while 19% said that it benefitted the poor the most.

2.8.12 Community Health and Development Programme (CHDP)

2.8.12.1 Objectives

This programme was launched in Sankhuwasabha district in 1979 by BNMT with the objective of providing health and nutrition education to the community. It focused on increasing the capacity of government and non-governmental agencies to work in partnership in health programmes and health related service delivery, and on increasing the capacity of people to take action for improving their health (BNMT, 2002c).[221]

2.8.12.2 Key Interventions, Outputs and Impact

The CHDP supported the community health leaders training in Sankhuwasabha and also supported the piloting of the Female Community Health Volunteer (FCHV) programme in 1988. It gradually shifted its approach to working with community groups using non-formal literacy classes as an entry point to improve their standard of living.

A final evaluation of the programme implemented between 1998 and 2002 reported various elements of successes within the different programme components (BNMT, 2002c). The report noted that there was an increased level of knowledge and awareness among the population about health services and demand for it was growing. There also was in increasing trend in construction of toilets using local materials, as well as an increase in growing green vegetables and beans. Organizing women in community groups had begun facilitating savings and credit activities within the groups as well as providing a forum for monthly meetings where health issues were also discussed. Overall this programme was successful in initiating the process of bringing the service providers and groups of people from communities together to plan for the delivery of health services.

2.8.13 Koshi Hills area Rural Development Programme (KHARDEP- K2) (1980-1985): The Health Component

2.8.13.1 The National Context

KHARDEP, based on the integrated rural development approach, had 13 different sectoral projects including health. In his report Padfield (1980) records the extent of government health services in the KH as comprising one hospital each in Bhojpur, Dhankuta and Sankhuwasabha (Khandbari); Health Centres in Chainpur and Terhathum; and 22 health posts (only 11 in permanent buildings) offering limited curative services. Additionally the British-Nepal Medical Trust (BNMT) supported services related to TB and leprosy control, supply of essential drugs, and the provision of lab services, and staff also supervised some of the Health Posts. SCF (UK) was working in Dhankuta on child and maternal health, and family planning. In 1985 a regional training centre for Auxiliary Health Workers (AHW) was

[220] The evaluation was conducted in Khotang, Bhojpur, Panchthar, Sankhuwasabha and Taplejung districts.

[221] In Sankhuwasabha, the programme was implemented in the following VDCs: Savapokhari, Pathivara, Wana, Syabung, Diding, Dhupu, Machhyapokhari, Sidhapokhari, Bala, Sisuwa and Khandbari Municipality. In Bhojpur, it was implemented in Ratanchha and Dorpa VDCs.

established in Dhankuta with Canadian support in line with the government's focus on training middle grade health human resources.

2.8.13.2 Objectives

The objective of the health component of KHARDEP was to assist HMGN in the establishment of its integrated health services and improving Health Post based services in the KH, as well as the provision of health services at village level, complementing the work of other agencies.

2.8.13.3 Key Interventions, Outputs and Impact

KHARDEP supported the government instituted integrated services policy with both trained staff and premises because "it made good sense in terms of administration and use of manpower" (Padfield, 1980). Though the focus on the project was on supporting Health Posts to deliver services, there were some basic problems with the HPs. There were limited buildings and furniture, and a lack of medicines and other equipment. Additionally the lack of administration support, long delays in disbursement of budget[222], and lack of accommodation affected staff morale.

KHARDEP supported the building of seven health posts and/or staff quarters in line with the government policy to integrate different health initiatives at a cost of approximately NRs 1,586,000 (US$20,140)[223] in Sankhuwasabha, Bhojpur and Dhankuta (Dunsmore, 1987:96). Dunsmore (ibid) remarks that the construction programmes went ahead on the integration process rather than concurrently. Additionally KHARDEP provided support for improvements to district hospitals in Bhojpur, Dhankuta and Sankhuwasabha such as equipment support and construction of an operating theatre, maternity room, latrines and drinking water supply for patients in the district hospitals were constructed.

Another key activity was the construction of the Regional Village Health Workers Training Centre which was later turned into a Regional Training Centre for in-service training of health post staff of various levels. This training centre was completed and was formally handed over to the Department of Health in July 1985 at the cost of NRs. 3,936,975 (US$49,999).

KHARDEP also provided a number of scholarships to people in the KHs to qualify in paramedical categories. Support was also provided to health personnel from Khandbari Hospital, a senior medical officer and a training officer was also provided.

2.8.13.4 Overall Conclusions

The ODA Medical Officer recorded in 1985 that KHARDEP had not been successful in its health component due to, the fact that infrastructure was provided onto a health service that was not in a position to make them truly effective, the management of people, supplies and services was inadequate, and there was insufficient back up to support the services supplied (Ward, 1985 in Dunsmore, 1987:98).

2.8.14 Health Improvement Programme (HIP) Assessment 2003

2.8.14.1 The HIP Assessment

In 2003 BNMT and its key partners carried out a detailed assessment of health utilization and health services provisions in more than 8,061 households in 203 villages in 16 districts of the Eastern Development Region of Nepal (BNMT, 2004). The HIP aimed to improve the health services available to communities, in particular to the most marginalised groups: women, excluded castes, ethnic minorities and the poor. In order to better understand issues of access and equity, about 28% of the households interviewed for the HIP were Dalit. Comparisons were made between 'general' and 'disadvantaged' households based on access to health services, literacy poverty, caste/ethnic and occupation.

[222] Delays in disbursement of budgets from the centre to the district were a critical problem with most other projects as well.

[223] At February 2012 exchange rates of US$1= NRs. 78.75.

The findings suggested that knowledge, practice and coverage on health was poor in the communities and there were significant disparities based on class, caste, ethnicity and literacy levels. Box 3 presents the summary findings from the quantitative and qualitative data collected for the assessment.

Box 3: Summary Findings of the Health Improvement Programme Survey, in 16 Districts in East Nepal, 2003

At the community level:

- The proportion of children under five years of age was higher among the disadvantage households.
- There were low levels of awareness of diseases, their symptoms and treatment such as HIV.
- Only 42% of households (60% general and 24% disadvantaged) visited had a toilet.
- Health workers were not accessible, especially to disadvantaged groups.
- People felt the most urgent need was for trained manpower, medicines and equipment to be available in health institutions.
- Only about one fourth of sick household members visited health institutions.
- There was a large communication gaps between service providers and users.
- One third of disadvantaged households were aware about free drugs for treatment of TB.
- About nine out of ten deliveries take place at home, but only one mother out of three mothers who gave birth at home used a safe delivery kit.
- People expressed dissatisfaction with health institutions and health workers, saying that often health workers were not available when they visited.
- Women hesitate to visit health institutions because of a lack of female health workers.
- Caste discrimination and an inadequate supply of medicines were key reasons given for not going to health institutions.

Among service providers:

- Most health institutions had unfilled posts; staff shortage created extreme pressure on the service providers.
- Facilities and infrastructure in hospitals was satisfactory and almost all available facilities were in use.
- In health institutions without drug schemes 70% of key drugs were available (range 41 to 97%).
- Only 55% of pregnant women visiting hospitals received iron and folic acid tablets, although 79% of pregnant women were anaemic.
- Service providers noted an increase in people visiting health institutions for treatment, and gave credit to the female community health volunteers, traditional birth attendants and community health education.

Service providers agreed that short opening hours and the capacity and behaviour of health workers were also reasons why people did not visit health institutions.

2.8.14.2 Access to and satisfaction with health services

The study found that average time to reach the nearest health facility by walking was about 38 minutes; 12% of the respondents had to walk more than 60 minutes to reach the nearest health facility. 38% of the respondents showed ‘partial satisfaction’ with the health services (14% were ‘dissatisfied’) due to unavailability of medicines and service providers, and the poor quality of medical treatment.

2.8.14.3 Safe Motherhood

About 87% of the deliveries in the last three years of the survey had been carried out at home and 65% of those were assisted by family members/ relatives/neighbours. Additionally, less than one third (30%) of home delivery cases used ‘clean home delivery kits’ and one fifth of the deliveries were assisted by Traditional Birth Attendants (TBAs). Only 11% of the deliveries were carried out in hospitals.

2.8.14.4 Equity within Partner NGOs

Though 94% of the 84 NGOs covered by the HIP study reported that they were working for community empowerment and gender equity, representation of women and Dalits in their executive bodies were found to be less than 4% and 1%, respectively.

2.8.14.5 Other Agencies

Several small-scale programmes were implemented between the 1970s and early 1990s. These included the Terhathum Hospital (1983-84, Dutch Aid), Child & Maternal Health (1976-88, SCF), Drinking Water Supply Project (1972-79, UNICEF) and Health & Sanitation Programme (1987-91, DFID).

2.8.15 Safe Motherhood Innovation Project (SMIP), 2004-2007

This project was implemented by Adventist Development and Relief Agency (ADRA) Nepal and BNMT in partnership with the Ministry of Health/GON, local community based organizations (CBOs) in the implementing districts, ADRA Germany and ADRA New Zealand[224]. It was funded by European Commission (EC) through ADRA Germany. ADRA and BNMT covered three districts each in Eastern Development Region.

2.8.15.1 Objectives

The overall objective of the SMIP was "to reduce maternal mortality and morbidity due to pregnancy-related complications", and the specific objective was "To increase the proportion of births attended by skilled and equipped health staff in the project districts" (ADRA, 2007b).

2.8.15.2 Key Interventions, Outputs and Impact

The project focused on competency based training and technical assistance; institutional infrastructure support (supplies, instrument, equipment, etc.); community mobilization; and strengthening Safer Motherhood network. A baseline survey was conducted in July 2004 with a sample size of 2,800 women who had been pregnant in the last 12 months (regardless of the outcome of the pregnancy). An "Endline Survey" was then conducted in November 2006 to follow-up on the changes from the baseline situation (ADRA, 2007a) [225]. A final evaluation of the project stated that SMIP had been successful in increasing access to quality maternal health services, including increasing awareness and utilisation of those services, as well as in establishing a regional maternal health network (ADRA, 2007b). However the evaluation states that despite the specific successes, the project was not able to achieve the overall objective of reducing maternal morbidity and mortality (ibid: ix). Following is a brief summary of selected evaluation findings from all six project districts and Table 40 has the data disaggregated by the three KH districts and for Khotang and Ilam as well.

2.8.15.3 Technical Training

SMIP supported the training of 133 MCHW-VDC on First Aid Emergency Obstetric Care (EOC), one doctor and 14 staff nurses on Basic Essential Obstetric Care (BEOC), and 63 ANMs on Midwifery Refresher Training. The project also activated Health Facility Management Committees in all the VDCs.

2.8.15.4 Service Utilisation

Overall women receiving treatment went up to 85.4% in 2006 from 60.2% at the baseline. The utilization of safe motherhood services for the required number of antenatal check-ups increased from 22% to over 66% between 2004 and 2006. The increase in the utilisation of local health services for

[224] The Adventist Development and Relief Agency (ADRA) is a global network of independent humanitarian organisations established in 1984 by the Seventh-Day Adventist Church for the specific purpose of providing individual and community development and disaster relief. ADRA established an office and began programme activities in Nepal in 1987. (http://www.adranepal.org).

[225] The Annex to the Endline Survey (ADRA, 2007a) contains details of the VDCs selected for the survey as well as district disaggregated findings of some of the key indicators.

postnatal services was less dramatic (7%) though. Women going to a health facility (SHP, HP, PHCC) for seeking pregnancy related complication treatment found during antenatal period have increased to 48.6%. As Table 40 shows, the majority of people in all SIMP districts walked to the service centre during their last visit. Another interesting observation is the gap between knowledge about CHDK and the use of those kits especially in Dhankuta and Sankhuwasabha among the Koshi Hills districts. Similarly while knowledge about the need for post natal checkups (PNC) was relatively high in all districts (except in Terhathum), the proportion of women attending PNC was relatively low.

2.8.15.5 Skilled Deliveries

Though deliveries attended by a skilled health worker increased from 5.32 to 30%, a majority of women (84%) had delivered at home and among them only 24.8% had been visited by a health worker on private home call. Seventy-three per cent of the respondents claimed that they were supported by family members especially mothers-in-law during their last delivery.

Table 40: District Disaggregated Results from the Endline Survey of the SIMP, 2007

Selected indicators	Dhankuta	Tehrathum	S-Sabha	Khotang	Illam
Means of transport to visit treatment/ service centre? - walking	50.5	65.4	54.6	86.3	49.5
Place of delivery of last birth? - home	83	83.3	82.7	90.8	81.3
Clean home delivery kit (CHDK) - knowledge of CHDK	83.2	52.7	60.2	61.3	64.5
- use of CHDK in last child birth	46.6	66.4	36.8	55.5	71.3
Is it necessary to have PNC checkups?	84.5	52.7	84.3	72	78.5
Proportion of women attending PNC check ups	42.7	21.9	45.5	58	51.3

2.8.16 Rights Based Approaches to Health (2005-2007)

This programme was implemented by BNMT with a grant from the Inter-church Organization for Development Coordination (ICCO) of the Netherlands in four districts in the Koshi region—Morang, Dhankuta, Khotang and Sankhuwasabha.

2.8.16.1 Key Objectives

The key purpose of the programme was to empower disadvantaged communities to demand quality health services from capable and responsive service providers in a supportive policy environment. The project worked with frontline government health workers such as Female Community Health Volunteers (FCHVs), Maternal and Child Health Workers (MCHW), Health Committee members, community members (particularly disadvantaged women, youth and children) of the programme clusters and local NGOs and CBOs. As the name suggests, the project attempted to pilot a rights-based approach to the demand and supply of health services focusing particularly on women, Dalits and ethnic minorities who have traditionally had problems with access to services and have also faced discrimination in the past during accessing services.

2.8.16.2 Key Interventions, Outputs and Impact

A 2007 evaluation found that the programme had been successful in initiating a rights-based approach within the health sector in the programme area but needed more attention on instituting advocacy practices and networks for the universal realization of health rights (BNMT, 2007). The programme focused on local Health Committees (HC) since they provided a pivotal link between government health service providers (the “duty bearers”) and the general public (the “right holders”) for the utilization of health services. Activities were related to the revitalizing the HC to prepare and implement action plans to ensure targeting of health programmes and services to disadvantaged groups within communities, as well as demanding more quality health services.

HC were also reformulated to become more socially representative with the addition of women, Dalits and ethnic minorities. By 2007 the numbers of Dalit and Janajati men being represented in HCs had been raised significantly, though the balance between men and women represented on the HC was still not balanced.

Compared to the 2003 Health Improvement Programme (HIP) assessment, the availability of essential drugs in the health institutions had risen from 67 to 89%. Project monitoring data also showed that knowledge of health problems such as HIV/AIDS, Tuberculosis, Malaria, and Kala-azar had been increased among the communities in the project cluster though there was still a gap between those from disadvantaged groups and those who were not.

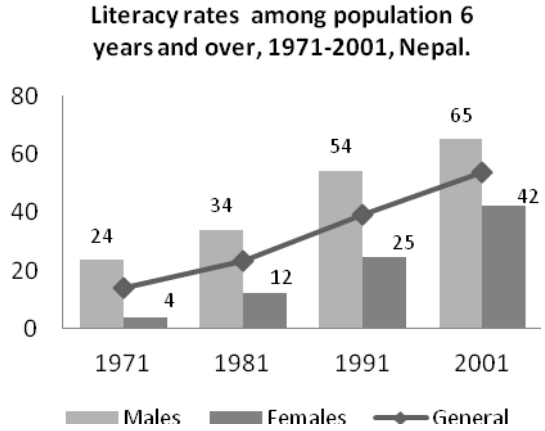
2.9 Social Services: Education

Education is one major sector in which Nepal has made substantial progress over the past 60 years. The formal education system as we know today in the country has a relatively new history beginning only in the early 1950s with the end of the Rana oligarchy. From 1846 to 1951 the Rana rulers purposely ignored public education in order to continue their tight reign over the public. But religious teachings in the Vedic and Buddhist traditions had been in existence in the country since the second century, albeit with limited access.

The Western styled public education that was propagated in the 1950s has not only been linked inextricably to improvement in life conditions and opportunities, but also to efforts at consolidating a national identity and nation-building in the early years. The education system and context in Nepal is heavily influenced by that of India, where western educational traditions and curricula were established by the British during the colonial period. The introduction of new ideas through such an educational curriculum has, in Nepal, also been linked to the creation of the ideology of a dichotomy between the 'modern' urban life and *bikas* (development), as opposed to the 'traditions' of village lives which has not experienced *bikas* (Pigg, 1992).

Due to the high rates of adult illiteracy in the country around the 1950s, the government focused not only on increasing access to basic public education but also on non-formal education for adults and children who were not in school.[226] Changes in the orientation and approaches of government programmes in education over the past decades has been summarised and presented in Annex 1.

Figure 29: Literacy Rates Among Population 6 Years and Over, 1971-2001, Nepal (CBS 1972, 1982, 1992, 2002, and 2003



2.9.1 Changing Educational Status in Nepal

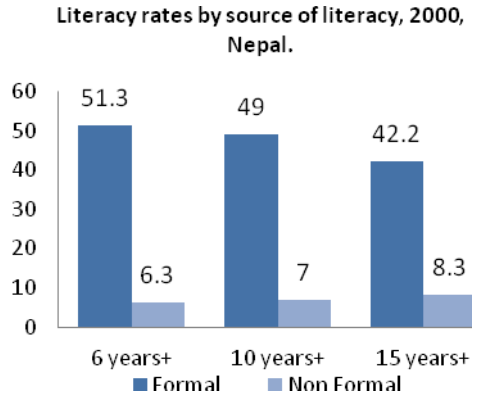
Data from 1952-54 shows that the overall adult literacy rate for individuals aged six and above, was extremely low at only 5.1% in the country. While 10% of the adult Nepali men were able to read and write, less than 1% of women were able to do so at that point of time. These statistics have improved considerably over the years as can be seen in Figure 1. The overall literacy rates have increased from 14% in 1971 to 54% in 2001. For males the rates have increased from 24% in 1971 to 65% in 2001,

[226] Non-formal and informal education provides numerous opportunities for learning in ways to meet the needs of individuals or diverse groups of learners. They also promote literacy in addition to imparting knowledge and skills for intellectual growth and improving livelihoods.

and for women from a mere 4% to 42% within the same timeframe. Yet one of the most distinct issues depicted in Figure 29 is the persistent gap in the literacy rates of males and females over this 40 year period. This gap exists in the literacy rates of youth aged 15-24 years as well. A 2010 assessment by UNESCO pointed out that the literacy rates for male youth were much higher at 87% compared to only 77% for women of the same age group. Thus while this indicates the growing trend of younger people getting an education and being able to read and write, the gap between males and females continue to exists. This gap will have repercussions in most other social and economic indicators of life conditions. While there has been a rapid expansion of the education system in the country, studies have pointed out that better access has not led to commensurate improvements in quality, efficiency and institution development (ADB, 2012).

Given the very high rates of overall illiteracy in the country, as early as from 1951 the government attempted to expand non formal education (NFE) in addition to formal public school education. Data from CBS (2000) presents an age disaggregated picture of literacy rates in the country based on formal and non-formal education (Figure 30). The figure shows that though the literacy gained through formal education has increased, non formal education continues to be an important source among the population.

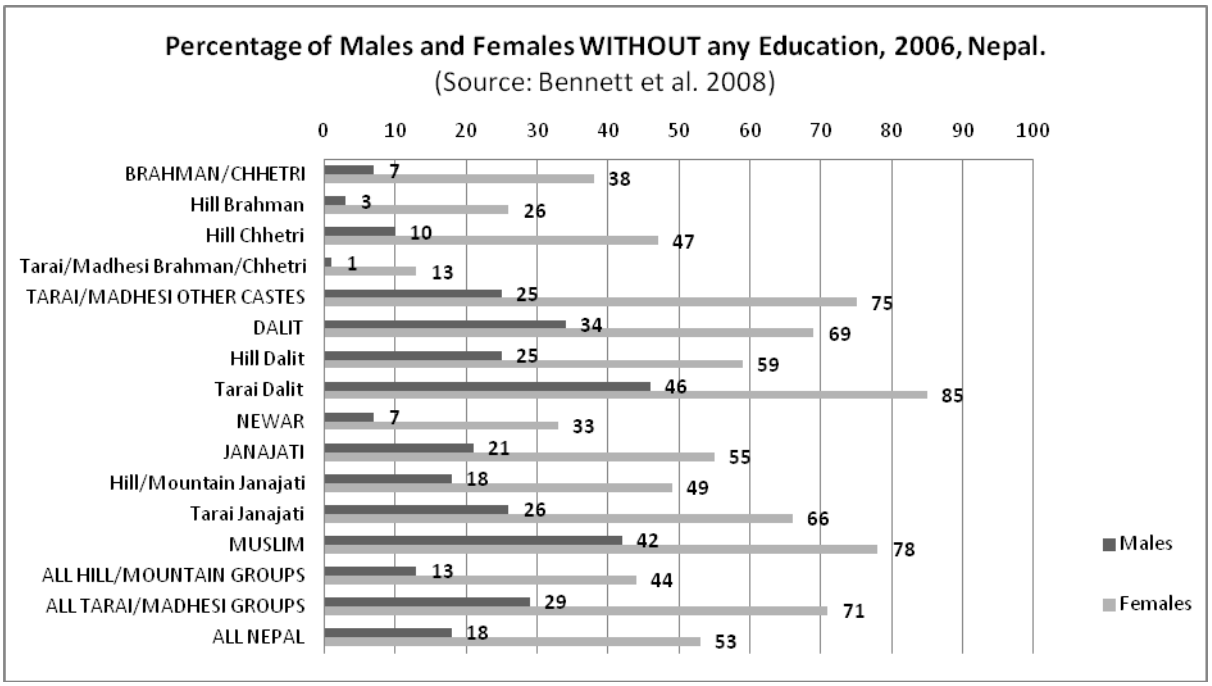
Figure 30: Literacy Rates by Source of Literacy, 2000, Nepal (CBS, 2000)



Apart from the gap in literacy rates between males and females, there are wide variations in the literacy rates by region caste and ethnic groups in the country (Stash & Hannum, 2003; Bennett et al., 2008). Based on an analysis of the 2006 Nepal Demographic Health Survey (NDHS), Figure 3 shows that among those groups without any education, Muslims, Tarai and Hill Dalits groups have the highest percentages. Yet wide differences between males and females exist across all the caste and ethnic groups in all geographic regions. For example, females from the Tarai/Madhesi (at 85%) followed by Muslim women (at 78%) formed the largest illiterate groups in 2006. Even among the Brahman/Chhetri, while there were only 7% of males who did not have any education, for women the rates were as high as 38%.

Similarly educational development and literacy rates are much lower among people with disabilities than the general population. In 2001 only about 31.8% of people with disabilities had received any form of education compared to the national literacy rate of 52% (UNICEF, 2003).

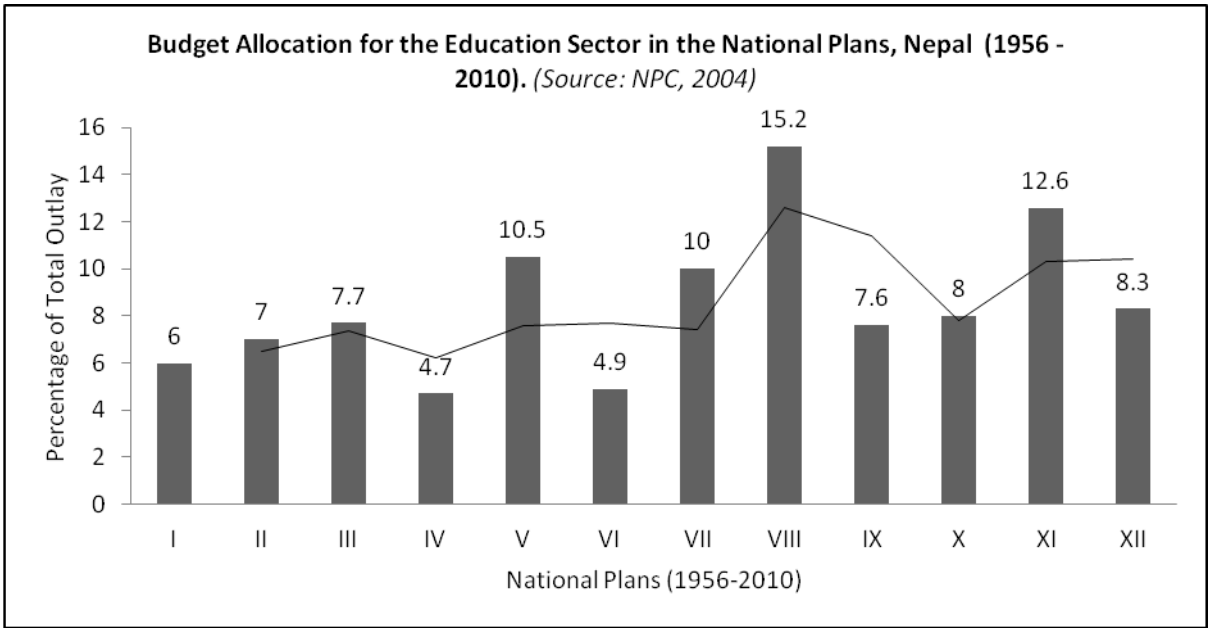
Figure 31: Percentage of Males and Females Without any Education, 2006, Nepal



2.9.2 Resource Allocation in the Education Sector

Overall in the social sector (such as education and health) government initiatives have been mainly responsible for creating and sustaining the basic institutional structures and human resources. The first Five Year Plan (1956-1961) initiated the country's planned development of public education and proposed that by 1995 primary education would be made free and mandatory for all. But only 6% of the national budget was allocated to this sector. Figure 32 below show that the allocation has seen variations over the years reaching a high of over 15% during the Eighth Five Year Plan (1992-1997) (NPC, 2004). During the current plan the sector has been allocated only 8.3% of the total planned outlay and 90% of this budget goes for salaries of the teachers at the primary school levels (Acharya & Koirala, 2011).

Figure 32: Budget Allocation for the Education Sector in the National Plans, Nepal (1956-2010) (NPC, 2004)



Primary education (Grades 1-5) has been free in the country with free tuition, textbooks' support and limited scholarships for disadvantaged groups including minorities, Dalits, girls, and Janajatis. The Interim Constitution of Nepal (2007) has proposed free education up to secondary level as a fundamental right. The School Sector Reform Plan (2009-2015) aims at initiating the process to make basic education (Grades 1-8) free and mandatory. The Local Self Governance Act of 1999 mandates that the management of all public schools—re-named as 'community schools' be handed over to a School Management Committee (SMC)—a committee comprising representation from parents, teachers and local government body. In July 2002, the GoN announced the policy of transferring management of schools to the SMCs, and set the target for transferring 100 governments funded schools to community to begin with. Between 2003 and 2008 over 3,600 schools (out of 23,000 public schools) transferred to community management with support from the Community Schools Support Programme.[227]

2.9.3 National Programmes and Foreign Aid in the Education Sector

Communities in Nepal have long been involved in and have supported the delivery of education. Due to the high value placed by communities on education, there are many examples of communities getting together to establish a school in their own village, donating land, supporting the building of basic infrastructure and even paying teachers in kind or cash contributions particularly prior to the National Education System Plan (NESP) in 1971. But this sector has been the recipient of considerable foreign aid (loans and grants) which has assisted in remarkable improvements in access and enrolments.

The education sector was one of the first sectors to adopt a 'sector wide approach' along with the 'project approach' to support the expansion of formal and non formal education throughout the country. Maslak provides a succinct summary of the history of project and sector wide approaches to educational funding in Nepal between 1950 and 1999 (2001: 90-92). Since the 1990s the development of primary and basic education has been a priority for the GoN and successive governments implemented a series of reforms in the school sector. Much of the foreign aid was initially focused on primary and basic education, including pre-primary and non-formal components since the 1990s. The education sector received Rs. 205 million from external sources in 1991 which accounted for 7.1% of the total education expenditure.[228] This proportion increased to 25% in 1994/95 and 21.9% in 1995/96. The key donors in the education sector were the World Bank, the International Development Association (IDA), ADB, DANIDA, SDC, Norway, the EU, UNICEF, WFP and JICA (Lohani, 1998). The different phases of some of the donor supported programmes for the expansion of public education in the country is presented in Table 1 followed by a summary of the achievements of some of the key programmes.

Table 41: Foreign Aid in the Education Sector, Nepal (ADB et al.)

Programme	Dates	Donor(s)	Amount
Primary Education Project (PEP)	1984	World Bank	
Basic Primary Education Project I	1992–1998	Denmark, Norway, Finland, the European Commission (EC), and the World Bank	
Primary Education Development Project (PEDP)	1993	ADB (loan)	US$20m
Basic Primary Education Project II	1999-2004	Denmark, Finland, European Commission, GoN, IDA & Norway	US$55.7
Community School Support	2003–2008	IDA, Learning and innovation	US$5 million

[227] Refer to World Bank (2010) for a review of the performance of the CSSP, the outcome of which was rated as "*unsatisfactory*".

[228] $2.5m at current exchange rates of US$1=NRs. 81.42 (22 March, 2012).

Programme	Dates	Donor(s)	Amount
Programme (CSSP)		Credit	
Secondary Education Support Programme	2003–2009	Denmark (DANIDA) and ADB	US$23.7 m
Education For All (EFA) Programme	2004–2009	IDA[229], Denmark, Finland, Norway, UK, ADB, Japan, UNICEF, UNESCO	US$814.5 million (in 2003 prices)
School Sector Reform Programme	2010-2016	EU, UNICEF	

The BPEP I was designed to identify efficient management structures, to expand and enhance access and learning conditions, and to improve the quality of primary and basic education (UNESCO, 2009). It covered 40 of the 75 districts in the country and made significant contributions in programme development of different components, including: development of the new primary education curriculum and revision of textbooks; development of teachers' guides, supplementary materials, and training packages; construction of schools and Resource Centres; development of non-formal education packages including women's education programme. BPEP also institutionalised several measures to strengthen the management of basic and primary education at different levels (MoE, 2009).

The Primary Education Development Project (PEDP) was implemented in 1993 with the aid of an ADB loan of US$20 million. The aim of the PEDP was to complement the BPEP and its focus was the development and consolidation of the teacher training system. The most significant contribution of the PEDP was the establishment of a network of nine primary teacher-training centres.

The BPEP II aimed at expanding access and improving retention rate; improving learning achievement; and strengthening the capacity of the national, district and sub-district levels partly through decentralization. The Project Performance Assessment Report (PPAR) of the World Bank (2009) rated the outcome of the 'moderately satisfactory". "The project decentralized decision-making; it facilitated systemic expansion and resulted in a substantial increase of education access for girls and disadvantaged groups. However, activities aimed at improving quality of education had modest results and a limited effect on learning outcomes" (MoE, 2009).

Community School Support Project (CSSP) with the financial and technical assistance from the World Bank to lend support for GoN's policy of transferring management of schools to communities on voluntary basis. During the project period over 3,600 schools (out of 23,000 public schools) were transferred to community management. Yet the WB's own Project Performance Assessment Report (PPAR) in 2010 rated the outcome of the project '*unsatisfactory',* since it 'did not generate the knowledge base needed to determine what makes for successful transfer of school management responsibility to local communities and to determine what the effects of transfers are on quality of learning and efficiency of resource use' (WB, 2010).

The EFA Programme (2004–2009) was a five-year strategic plan within the framework of the EFA 2015 National Plan of Action (NPA). The main objectives of EFA were: (i) to ensure access and equity in primary education, (ii) to enhance quality and relevance of primary education, and (iii) to improve efficiency and institutional capacity. A Joint Evaluation (Cambridge Education & Metcon, 2009) stated that regarding 'access and equity', considerable progress had been made on a number of indicators and substantial growth in the system as a whole. It also noted that the country had managed to achieve overall enrolment increases that are accompanied by a reduction of gender and caste/ethnic disparity. Regarding 'quality', the evaluation noted that there was weak evidence from somewhat reduced dropout rates that quality was improving, but the overall progress was somewhat disappointing. There apparently remain huge inequalities in provision, with schools serving the poorest and most marginalised communities being the least well staffed, resourced or supported. Finally in relation to 'improving efficiency and institutional capacity', the most significant progress noted by the evaluation was the revitalising of School Management Committees and the handing over, schools to become community-managed.

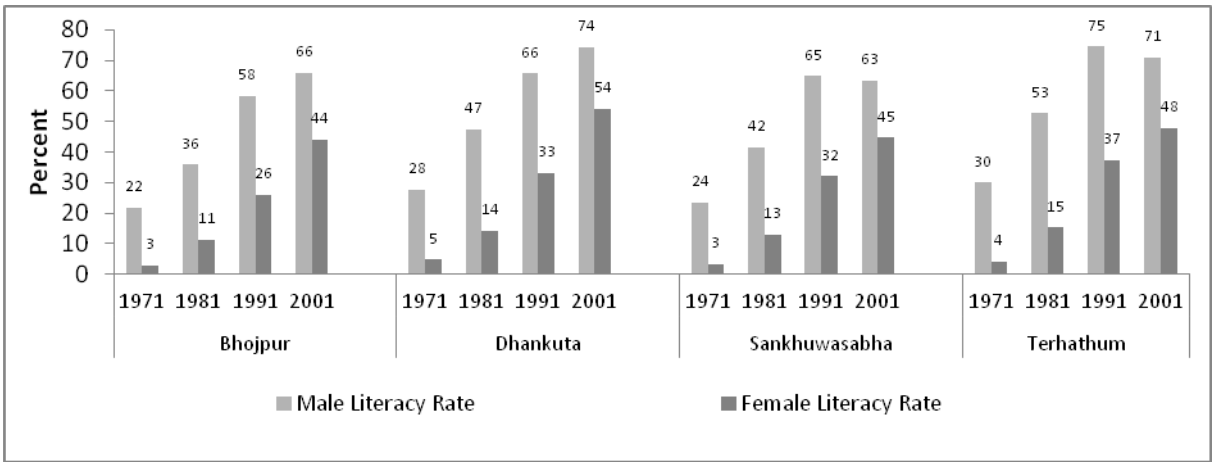
[229] IDA assistance was of US$50m in 2004 (a loan component) and US$60 m in 2007 (a grant).

The School Sector Reform Programme (SSRP) (2010-2016) builds on the achievements of the previous programmes and aims to: (i) expand access and equity, (ii) improve quality and relevance, and (iii) strengthen the institutional capacity of the entire school education system. It has evolved into a more consolidated and comprehensive sector-wide approach, with strengthened partnership between the government and development partners in the spirit of the Paris Declaration (ADB).

2.9.4 Changes in Educational Status and Infrastructure in the Koshi Hills

Literacy rates in the Koshi Hills districts between 1971 and 2001 show a similar overall pattern as with the changes in the national level statistics. The overall literacy rates in the KHs have increased from a 14% in 1971 to 58% in 2001 of which for males was 68% and for females was 47%. Yet while literacy rates have increased for both male and females over the years the gender gap has been narrowing very slowly over all the decades and in all the districts (Figure 33). The 2001 census also showed that the Rai and Limbu (who form the major ethnic groups in the Koshi Hills) had a literacy rate of 58% which was higher than the national average of 54% for the same time (CBS, 2003). The literacy rates for males and females in all four districts in 2001 are higher than the national averages of 65% for males and 42% for women (except for males in Sankhuwasabha), showing that this region has fared relatively better compared to other regions in the country.

Figure 33: Growth in Literacy Rates, Koshi Hills Districts, 1971-2001



The number of schools at different levels in the four districts has increased over the years (Figure 6) and the number of students enrolled in schools from the 1970s to the mid 2000s has also increased (Figure 34).[230]

[230] What happened in Dhankuta in the early 2000s.

Figure 34: Growth in Number of Schools by Level of Education, Koshi Hills, 1976-2006

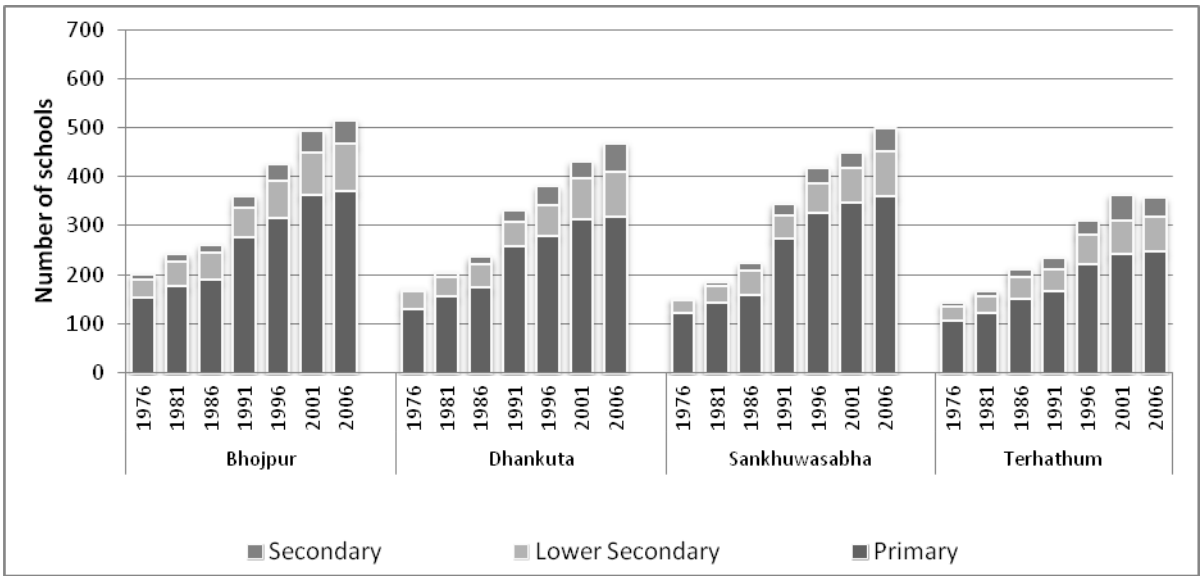


Figure 35: Changes in the Number of Students Enrolled in Schools, Koshi Hills, 1976-2006

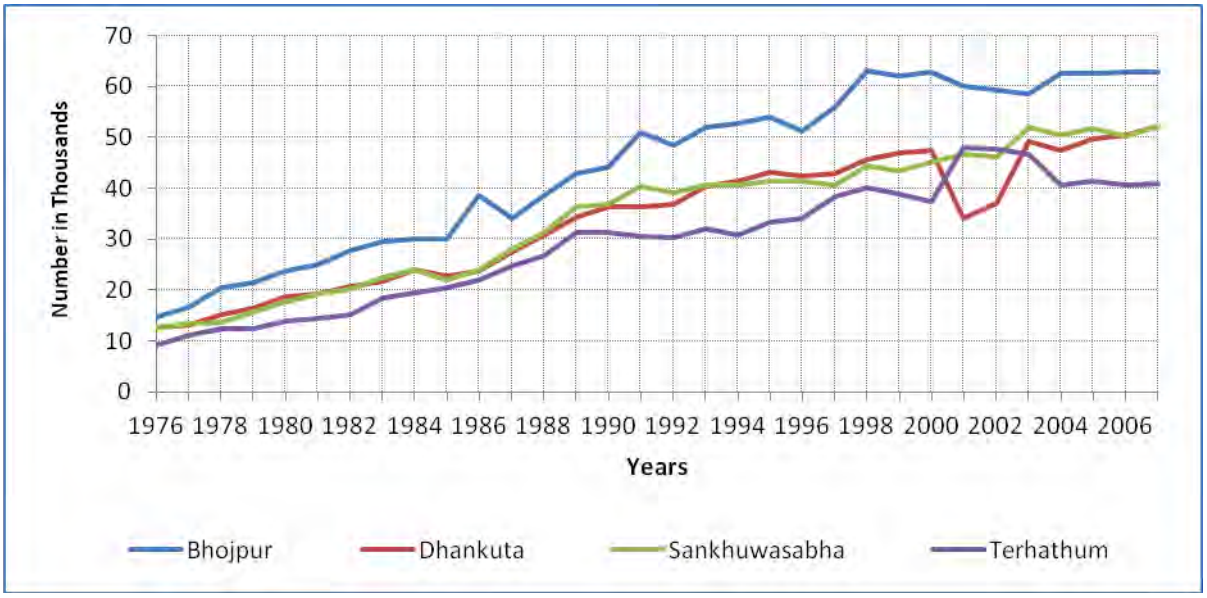


Figure 36 and Figure 37 show changes in the ratio of the number enrolled students to the number of primary and secondary schools. At both primary (grades 1-5) and secondary (9-10), in all four KH districts, the ratio has decreased in 2001 compared to the earlier years. Though the ratio of students to number of schools seem high at both primary and secondary levels, these ratios are relatively better than those in the Tarai districts where there is much more overcrowding in schools at all levels.

Figure 36: Ratio of Primary Schools and Enrolled Students in KHs

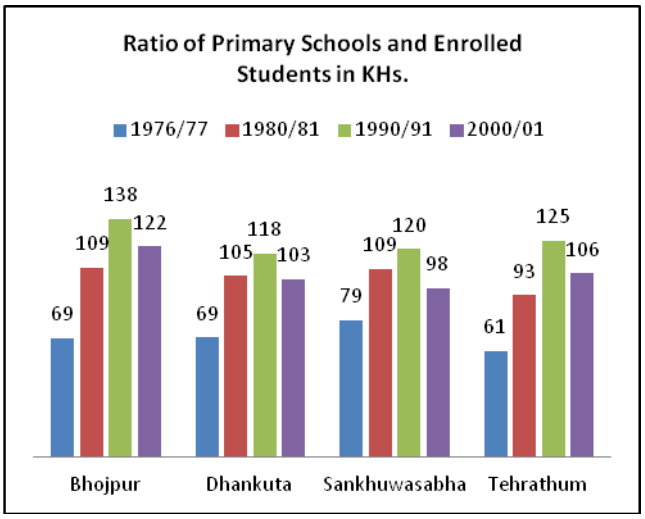


Figure 37: Ratio of Secondary Schools and Enrolled Students in KHs

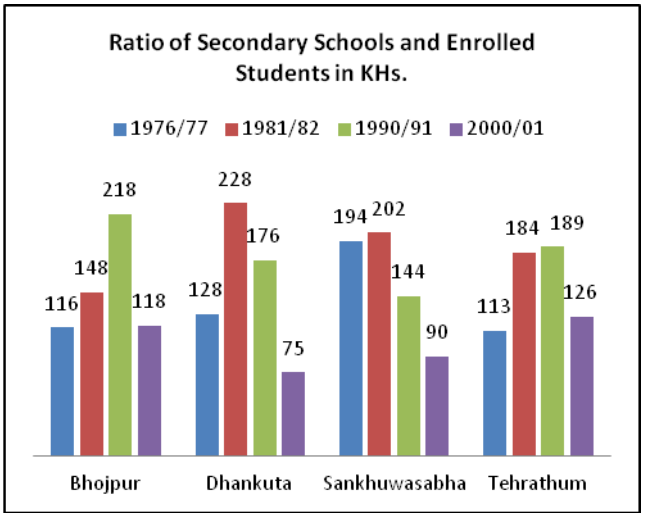


Figure 38 and Figure 39 show changes in the ratio of the number of students to teachers at the primary and secondary levels.

Figure 38: Ratio of Enrolled Students and Number of Teachers in Primary Schools in KHs

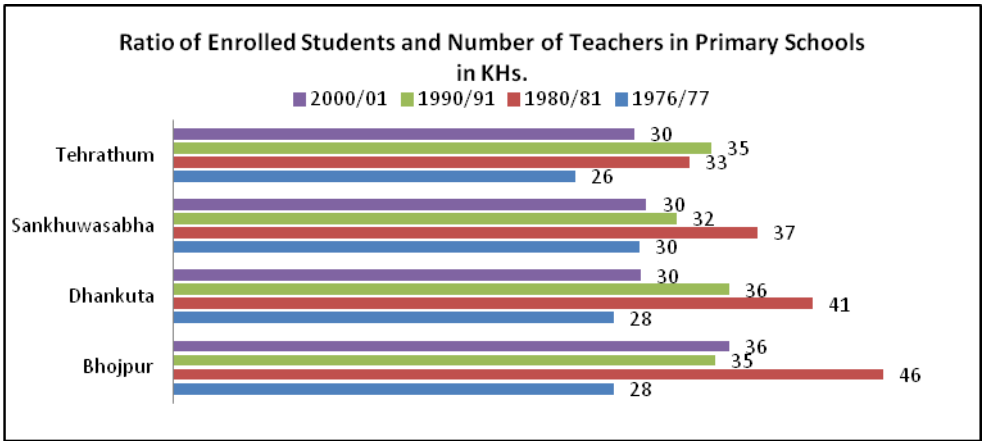
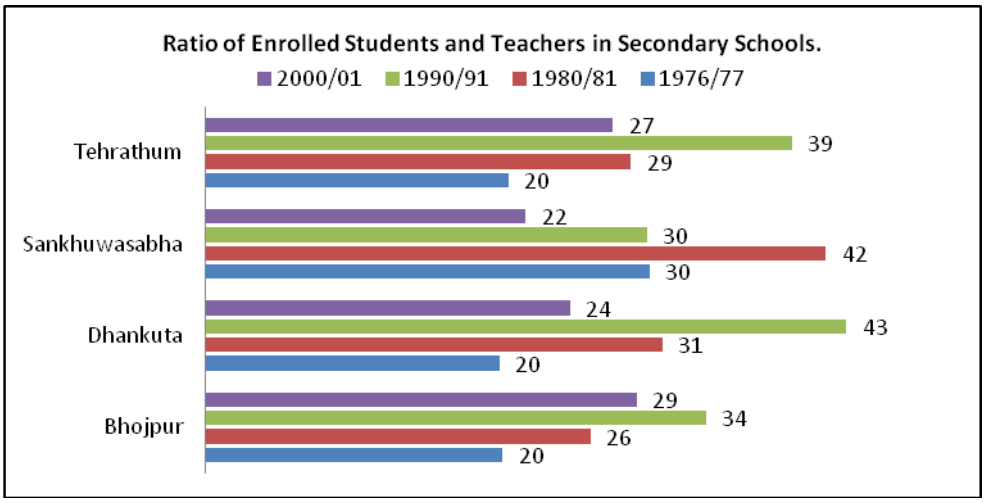


Figure 39: Ratio of Enrolled Students and Teachers in Secondary Schools



2.9.5 Religious Schools in the Koshi Hills

Apart from public and private (or 'institutional') schools, there are three types of religious schools – Madarsa (for Muslims), Gumba/Vihar (for Buddhists), and Ashram/Gurukul (for Hindus). In most cases such religious schools are recognised by the government but they are operated under religious norms and offer no recognised formal examinations or degrees. The DoE initiated the mainstreaming of education in religious schools in the country since 2006-07. In 2010-11, out of the total 33,160 schools, 766 (2.3%) were religious schools in the whole of the country.[231] Among the KH districts, only Sankhuwasabha district reported data from three religious schools—two Gumbas and one Ashram (DOE, 2010).

2.9.6 Non Formal Education in the Koshi Hills

With the increase in non-governmental organizations and with foreign aid support in the educational sector the NFE programme also expanded rapidly throughout the country. There were a number of NFE programmes that were implemented throughout the country including the KH districts.

(a) Adult Literacy Programme (ALC)

This programme focused on basic literacy and numeracy as well as functional literacy for individuals aged 15-45 years for six months followed by an Adult Post-Literacy Programme for three months.

(b) Women's Empowerment Programme (WEP)

WEP was initiated in 1988 as a supplementary programme to the Primary Education Programme (PEP) to help improve the quality of education and equitable access to primary education. The programme focused on providing literacy and income generation skills to women ages 18-35 years and to encourage girls to attend primary schools. The programme was initially launched in 6 districts and 12 centres in its first year, one of which was in Dhankuta.[232] By 1996/97 the programme had been expanded to all of the 40 BPEP I districts (Tuladhar, 2004).

(c) Out-of-School Programme (OSP)

The focus of OSP has been to provide children ages 8-14 years who are out of school for various reasons with opportunities and to address their educational needs through non formal education. Dhankuta district had one of the first centres in Dandatol, Chukhepatol, Tallo Tunkha

[231] This was up from the 630 religious schools that had been reported in FY 2008-09 (DOE, 2009).

[232] The other districts were Jhapa, Tanahu, Kaski, Dang and Surkhet.

and Aarubote VDCs. The *Chelibeti Programme*, component of the OSP, aimed specifically at girls aged 7-13 years.

Box 4: NFE in Limbu Language

The area east of the Arun and Koshi Rivers and west of Kanchenjunga Mountain and the Mechi River has historically been known as 'Limbuwan', the "abode of the Limbus", an ethnic group of eastern Nepal. Taplejung, Panchthar, Ilam, Jhapa, Terhathum, Sankhuwasabha, Dhankuta, Sunsari and Morang are the districts where a majority of the Limbus live. Kirat Yakthung Chumlung (KYC), a Limbu indigenous peoples' NGO (established in 1989) has conducted around 100 non formal education classes in the Limbu language since 1990. KYC was involved in producing text books for classes one to five, and NFE materials, in the Limbu language. They have received technical and financial support from World Education and the National Committee for the Development of Nationalities.

Source: Subba & Subba, 2003.

Apart from the District Education Offices, NGOs and community based organizations have played an important role in implementing NFE programmes. In the KH districts NGOs such as Rural Reconstruction Nepal, Prisoners Assistance Mission, Educate the Children-Nepal, Federation of Women Entrepreneurs Association of Nepal, Solve Nepal, Nepal National Dalit Society Welfare Organization are some of the organizations that have been involved in NFE (UNESCO & MoE/GoN, 2009). PACT and World Education were some of the international agencies that lent support to the NFE programmes. There is also evidence of some organizations trying to implement NFE classes in local languages across the country and as presented in Box 5 in the eastern region, efforts at promoting basic literacy in local languages have had some degree of support and success.

2.9.7 Technical Education in the Koshi Hills

The technical school system in Nepal was initiated in 1980 with the objective of producing skilled and middle level human resources. These schools were rural and urban based and came under the Directorate of Technical and Vocational Education and Training (TVET) within the Ministry of Education and Culture.[233] The Karnali Technical School in the far western district of Jumla was the first school to be established with support from the United Mission to Nepal in 1980 followed by three other rural technical schools and the Uttarpani Agricultural Technical School (UATS) in Dhankuta was one of those.[234]

During the initiation of the Koshi Hills Agriculture and Rural Development Programme (KHARDEP) one of the key constraints to successful agricultural development in the hills was the lack of trained extension workers who were willing to work in different hill areas and were familiar with the social context of the area. Therefore an agreement was made to establish an agricultural technical school to train junior technical assistants drawn from the four KH districts (KHDP, 1992). Thus the UATS was established in 1980 in Dhankuta district and the first batch of trainees was admitted in May 1984. Unlike the other technical schools the UATS, focused on agriculture only leading to an award of the Technical School Leaving Certificate in agriculture, the equivalent of a high school degree.

[233] The Council for Technical Education and Vocational Training (CTEVT) was constituted in 1989 as a national autonomous apex body of the TVET sub-sector in the country and took over the functions of the Directorate. Through its constituted technical schools and training centres, colleges and institutes, it provides Technical School Leaving Certificates and short-term vocation and skill training in agriculture, health, medical sciences and engineering (CTEVT, 2011).

[234] The Jiri Technical School was supported by the SDC and the Lahan Technical School in the eastern Tarai was built with an ADB loan, both in 1984. The Seti Technical School in Dipayal was established in 1990.

Box 5: UATS Graduates

Years	Total	% Females
1985-1991	202	24.8
2006-2007	83	38.6
2007-2008	77	32.5
2008-2009	69	39.1

In the initial years entrants were chosen from among students who were residents of the seven districts of the Koshi and Mechi Hills, who had completed grade seven; they trained at UATS for three years and participated in a 10-month period on-the-job training in the field to become 'Junior Technical Assistants' (JTAs) (KHDP, 1992). This was later changed in line with the national policies where entrants had to have passed grade 10 and would then receive a two years technical training. The UATS actively sought to train women JTAs using positive discrimination during the selection processes. This helped to recruit women and in 1991, 52% (16 out of 51) of the trainees were women. The higher enrolment of women in UATS compared to the other technical schools in the country seemed to reflect the number of girls in secondary schools in the catchment area. For example, in 1988, 36% of pupils in secondary education in the UATS catchment (particularly in the Mechi Hills) were girls compared to only 7% in the Karnali zone (ibid). Thus in contrast to UATS as shown in Box 4, during 1984-1991 the percentage of women trainees in Jiri TS was 7.6, at the Karnali TS was 5.6, at Lahan TS was 9.9 and at Seti TS was 7.7 only. Box 4 presents data on the graduates from UATS in different years and the percentage of those who were women.[235]

The UATS and SDC also lent support to a comprehensive and participatory process in development of the curriculum for the course in agriculture. This process became a model for the other rural trades in course development. In 1988 UATS also developed the curriculum for a further year's training which made it possible for the JTAs to become elevated to Junior Technicians (JT).

An evaluation of the KHDP conducted for the Evaluation Department of ODA concluded that the UATS Project was successful; most graduates demonstrated high motivation and performance and enjoyed a high rate of subsequent employment, which in turn produced positive motivation of the UATS staff who improved their knowledge and teaching skills. Between 1984 and 1991, 25% of graduates were women (ODA, 1992).

2.10 Development Interventions Implemented by NGOs

Civic organizations, based on cultural, religious and economic cooperation with different forms have existed in Nepal for many decades. Social, religious, and economic organizations such as *Guthi* (of Newars), *Rodi* (Gurungs), *Parma* system (exchange of free labour for agricultural works), *Dhikuri* (system of deposition of money by the entrepreneur community members and borrowing it by one or more of them), and the indigenous groups managed local forest resources and irrigation systems are some of the examples of traditional informal civic organizations of Nepal (Bhattachan, 2002). These traditional organizations appear to have served the objectives of mutual support, but have been restricted to members of their own wider family, ethnicity, religion, and location as well.

Unlike these organizations based on social and cultural norms, non-governmental organizations (NGOs) that focus on implementing development interventions (community-based social and economic activities) are a more recent phenomenon in the country. The first NGO was established in Nepal in 1926 and there were only four NGOs at the advent of democracy in 1951. NGOs in Nepal got legal status only after the restoration of democracy in 1990 that acknowledged the role of civil society organizations. Subsequently, in line with the liberalization policies of the government and with formulation of favourable policies enabling the non-government sector to participate in service delivery and other development activities, there was a great surge in the registration of new NGOs. The

[235] The figures for 2006-2009 include graduates from both long and short courses. Source: CTEVT, 2011.

number of NGOs proliferated from 220 in 1990 to over 37,000 in 2010 (SWC, 2010). By 2011, nationwide figures indicate that the majority of NGOs are involved in community and rural development, followed by those working in youth services and gender equity (ibid).

The need of efficient and goal-oriented organizations espoused with favourable policies of government appeared in Nepal particularly after 1990s. The NGOs appear so as to complement to work to support the local government. The government of Nepal has also acknowledged the role and responsibility of NGOs particularly in local development activities through mentioning in its national plans, programs and policies. For instance, the Eighth Five Year Plan (1992-97) mentioned for the first time the meaningful role of NGOs for mobilising resources and implementing programmes at grass-roots level. The Ninth Five Year Plan (1997-2002) recognised NGOs as 'partners' in local development and mentioned the government's commitment to mobilise NGOs towards socio-economic development in the country. The Tenth Five Year Plan (2002-07) considered NGOs as civil society organizations with huge potential in contributing to the development of Nepal ranging from girls education to poverty alleviation. The Three Year Interim Plan (2008-2010) intended to direct the investment and activities of NGOs in areas of national priority through means of effective facilitation, coordination, monitoring and evaluation to make the sector of social service dignified, organized and accountable.

The Social Welfare Council (SWC) is the key governing body of NGOs – national and international – in the country, while at the district level the responsibility lies with the District Administration Office. Besides, there are different federations of NGOs, namely NGO Federation of Nepal, Child NGO Federation of Nepal, Dalit NGO Federation, Nepal NGO Coalition for the UPR (NNC-UPR)[236]. These federations are established to support networking, mutual co-operation among NGOs and formulate NGO ethic (Dhakal, 2007). The Association of International NGOs (AIN) is another network with more than 100 International NGOs working in Nepal associated with it.

Particularly since the early 1990s, NGOs have been playing an important role in employment generation, human capital formation, infrastructure development, mobilisation of resources, reaching out to the grass roots, etc (NGO Federation, 2006). On the other hand, they are reeling under various constraints such as lack of effective coordination, weak financial base, lack of professionalism, lack of monitoring and evaluation, lack of transparency, lack of commitment among the NGO activists, absence of public surveillance, etc (Dhakal, 2007). These constraints coupled with scarcity of impact studies on the role and function of NGOs in development sector pull NGOs into controversy. The performance, scope and impact of NGOs in development sector remains highly debated and though many organizations have played an effective role, ample examples of mismanagement and misuse of funds with low quality of work have also created mistrust among the general population.

2.10.1 NGOs in the Koshi Hills

As other parts of Nepal, the Koshi Hills also comprise different types of traditional organizations as well as development programming focused NGOs. The ethnic groups in the region such as the Rais, Limbus, Tamangs, Magars, Gurungs, and Newars have their own rich history of social and cultural cooperation through their ethnicity based organizations. Apart from these, there are many national and local level NGOs working actively in the Koshi Hills districts in different sectors delivering basic services as well as conducting capacity building programmes. It is crucial to look at the outcomes of their programmes and activities in the given area in order to get a comprehensive picture of socio-economic impacts of governmental and non-governmental development efforts.

Sources indicate that prior to 1990 there was only one NGO in Dhankuta and two in Sankhuwasabha. Since then the number of NGOs registered in the Koshi Hills districts have increased gradually as shown in Table 42.

The growth of NGOs in the post 2005/06 period appears to have been even more rapid in the Koshi Hills. The number probably increased after the Maoist insurgents came to the main political stream giving up violent revolutions, which during the insurgent period constricted NGOs to reach out to people. A study on the service delivery capacity of NGOs in Nepal during time of conflict has documented how I/NGOs used a variety of techniques to continue field activities, safeguard their field

[236] A coalition representing 235 human rights and civil society organisations in Nepal.

staff and maintain workable relationships with the conflicting parties even during the height of the conflict (TMI, 2006).

Table 42: Growth of NGOs in Koshi Hills Districts (NGO Federation Nepal (2005). District Profiles of NGOs.)

Year	Koshi Hills Districts			
	Bhojpur	Dhankuta	Sankhuwasabha	Tehrathum
Before 1990	0	1	2	0
1991 - 1995	0	5	2	5
1996 - 2000	9	6	6	14
2000 - 2005	3	17	24	26

By July 2009, there were 52 NGOs in Bhojpur, 72 in Dhankuta, 50 in Sankhuwasabha, and 92 in Tehrathum (SWC, 2012). However, it is difficult to ascertain the exact number of NGOs that are actually working actively in the area because all NGOs registered with the District Administration Office (DAO) are not necessarily working actively and many have not conducted their annual registration. Furthermore, the increase in number of NGOs does not guarantee the increment of quality of work in the areas of socio-economic development. For instance, out of 229 NGOs registered with the DAO Tehrathum district during the fiscal year of 2005/06, only 53 continued to secure their existence, and only 12 of them were active (NFN Tehrathum District, 2006). A list of NGOs working in the Koshi Hills districts has been compiled in Annex 16.

2.10.2 Working Areas/Sectors of NGOs

NGOs are working in a number of different sectors in the Koshi Hills. An overview of the work that the NGOs are involved in show that over 50% of the NGOs in Bhojpur and Dhankuta are working in the forestry sector, whereas in Sankhuwasabha and Terhathum 26 and 18%, respectively, are involved in this sector (refer to Table 43). The level of involvement of NGOs in the different sectors varies from district to district and in many cases there is an overlap in the work of NGOs since they are usually involved in more than one area or work. Though the relative importance of other sectors in terms of involvement of NGOs differs remarkably among the districts of the Koshi Hills, it is interesting to note that agriculture and livestock sector has received less importance.

The NGOs working the sectors mentioned in Table 43 have received support from different national and international agencies such as GTZ, BNMT, RAP, IDRC, LFP, DFID, Pact Nepal, USAID, CIDA, ADB, ICIMOD, Danida, SNV, etc. A few of the NGOs draw in from their own internal sources as well.

Table 43: Overview of Key Areas of Work in which NGOs are Involved (in percentages), Koshi Hills (NGO Federation Nepal (2006). District Profiles of NGO.)

Sectors/areas of work	Bhojpur	Dhankuta	Sankhuwasabha	Terhathum
Physical infrastructure	11	6	9	20
Savings, credit, group mobilisation	15	6	26	20
Forestry	54	55	26	18
Education	31	6	9	16
Health and sanitation	31	21	11	2
Dalit empowerment	11	21	3	4
Women's empowerment	38	23	9	7
Agriculture and livestock	-	21	6	11

2.10.3 Overview of Development Interventions of Selected NGOs in Koshi Hills

This section provides a brief introduction to selected NGOs working in the four Koshi Hills districts. They represent different sectors such as infrastructure, saving and credit, health, trafficking of women

and children, gender equity and women empowerment. A snapshot of these NGOs is also provided in Annex 17.

Rural Reconstruction Nepal (RRN) is a national level NGO implements integrated programme that comprises infrastructure development (micro hydro schemes, drinking water projects) informal literacy classes, farmers field school, sanitation and so on. It has been carrying out number of projects in Sankhuwasabha and Bhojpur districts.

The Sustainable Rural Livelihood programme was one of the programmes implemented by RRN between January 2007 and March 2010. It was an integrated, participatory, and group based development programme implemented in nine VDCs of Sankhuwasabha district at the dawn of the peace process after the Maoists gave up the armed insurgency. It was the time when most of the existing infrastructure was demolished and human capital was fragmented. The local economy was crippled and local people were reeling under the pressure of poverty. The project was funded by Horizon 3000T, the European Commission, Australian Catholic Women's Movement and the Austrian government. The key objective of the project was poverty reduction and improving the quality of life of socially excluded and marginalized groups of people.

This project was integrated in the sense that it intertwined self-help groups with literacy, micro enterprises, sanitation, health, infrastructure development, agriculture and awareness. Besides the direct beneficiaries of the project, the spill over effect of the project was realised in other neighbouring VDCs where the project was not implemented. In other words, the people of the neighbouring villages were keen to solve local problems and to expand income-earning opportunities through self help groups (for saving and credit activities) and became more aware about sanitation issues (FDM 2010).The project provided non-formal education to over 3,700 men and women and facilitated scholarships to more than 400 conflict affected children. Over 3,000 families benefitted directly from the infrastructure development component of the project and more than 900 farmers were also provided training.

Solve Nepal, a nongovernmental, non-profit and non-political organization is working in all five development regions across Nepal. It has a wide range of programmes including local governance, microfinance, environment and natural resource management, peace building, rural sanitation, education in the Koshi Hills districts.

Samuhik Abhiyan (SA) is a non-profit, non-governmental, social development organization established in 1992. Broadly, it has two kinds of programmes: core programmes and professional services. SA sells professional services and expertise to national and international development agencies through which it generates funding for its core programmes. According to its official website, "SA is a unique example of self financed social development organization in Nepal". Basically, it works through 'self-help groups' and encourages group members towards micro saving, micro credit and micro enterprises.

Namsaling Community Development Centre (NCDC) was established in 1984 in Ilam district. It is nongovernmental, non-profit and apolitical organization that works in partnership with community members, organizations, local and central governments and other national and international development organizations. It began working from small Namsaling VDC of Ilam district and expanded its activities to other districts. Now, it is recognized as one of the leading NGOs in eastern hills of Nepal. It is also working as a Regional Renewable Energy Service Centre for (AEPC/ESAP) since January 2001. It has done lots of work in improved cooking stoves and micro hydro schemes in the Koshi hills.

East Foundation is a community based organization established with an objective to work for community forestry, natural resource management and aims to contribute to socio-economic development.

Gramin Samudayik Bikas Samiti is a community based organization and works for four wards of Sitalpati VDC in Sankhuwasabha district. It aims to identify social problems and devise their solutions. It is mainly concentrated in generating awareness through street dramas, social mobilisation programs and runs non-formal literacy classes.

Maiti Nepal Samparka Karyalaya located in Bhojpur is a district office of 'Maiti Nepal', which is a national level NGO. Maiti Nepal is widely recognised all over Nepal and abroad for its extensive roles in combating human trafficking, creating awareness in the society about trafficking of girls and women, conducting various programmes against trafficking of children and women, helping out the victims of trafficking, HIV AIDs, and rescuing those girls and women trafficked and sold in brothels in India. The

objectives of Maiti Nepal Samparka Karyalaya Bhojpur coincide with objectives of the mother organization, Maiti Nepal.

Gramin Bikas Mahila Samuha was established in BS 2050 (1993) and is located in Dhankuta district. Since establishment, it is managing and run by local women. It is an organization of women for the women with an objective to hone efforts on women empowerment, leadership development, and increase participation of local women in the local development activities along with organizing various social awareness programmes. Skill building trainings like sewing, micro credit and savings are its key activities.

33 Esibu Maiti Club located in Esibu VDC-6 of Tehrathum was established in BS 2049 (1992). It is community based organization. It is involved in micro-scale infrastructure development projects at the community level like repairing road, constructing playgrounds for schools. It also organizes various cultural programs.

To sum up, the international, national, regional and local level NGOs as mentioned above have been conducting various programmes on a range of sectors based on availability of financial resources and capacity to implement them. Most of these NGOs are involved in conducting non-formal adult literacy classes, group formation and micro credit programmes. Interestingly, none of these NGOs works for health and agricultural development (keeping aside RRN that conducted integrated pest management and farmers field school for the farmers of Sankhuwasabha).

2.11 Migration and Remittances

This section provides a historical analysis of how migration within the Koshi Hills has occurred over the past 40 years. It seeks to untangle and highlight the reasons why populations have migrated out and its associated repercussions on the socio-economic lives of those left behind. Furthermore efforts have been made to discuss the impact of remittances on GDP and poverty reduction of migrant households.

2.11.1 Migration from the Koshi Hills

Migration in Nepal has a long history dating back to the 18th century, when agrarian changes and state policies[237] and programmes[238] on land and labour have forced or encouraged people to seek land (mostly in the Terai) and/or their livelihoods elsewhere (Olyphant, 1852; Caplan, 1990; Regmi, 1978; Ojha, 1983).

Many authors note that eroding of the fragile resource base within the mid-hills, have further accelerated this phenomenon over the past decades (CEDA, 1975; Hitchcock, 1961; MacFarlane, 2001; Whelpton, 2005; Dixit et al, 2009; Bhole & Adhikari, 1998). A few have also identified cultural factors[239] that have shaped their mobility (Sharma, 2008; Pfaff-Czarnecka, 1995) along with the creation of a 'culture of remittance' which has socialized generations to be familiar with migration as an economic option and the access to networks to provide avenues for its achievement (WB, 2009).

Census figures show that over the past 30 years, the absentee population[240] steadily increased till 2001, after which there was a dramatic acceleration; nationally as well as within the Koshi Hills (Table

[237] According to Olyphant (1852), the development of the Terai region was stressed in the 18th century for state expansion. Primarily, to acquire land revenues, royalty on timber exports as the Hills were already extensively cultivated and offered less possibilities for increasing revenue (Stiller, 1976).

[238] Some significant programmes to encourage settlement in the Terai included the Malaria Eradication Programme (initiated in 1958), The Rapti Valley Development Project (in 1955) and the Resettlement Programme initiated in 1962 (Ojha, 1983).

[239] Jeevan (2008) notes that amongst young male migrants in India, the experience of 'bhãgne' was a cultural motivation; whereby leaving ones village to travel and experience freedoms was through to transform minors into adults.

[240] People who have been abroad for at least 6 months prior to the survey, or who are likely to be away for 6 months (CBS, 2002).

44). Many authors however argue that though these figures are significant, the real magnitude is even higher; due to the large volume of undocumented migrants to India (Seddon et al, 2001[241]; Dixit, 1997; Dahal, 2000).

Table 44: National and Koshi Hills Absent Population (CBS 1981, 1991, 2001 & 2011)

	1981	1991	2001	2011
National figures				
Absent population	591,000	660,000	762,181	1,917,903
% of national population	2.7	3.6	3.3	7.2
Koshi Hills				
Absent population	20,091	22,049	19,820	51,318
% of population of KH	3.7	3.7	3.1	8.4
% of national absent population	3.3	3.3	2.6	2.6

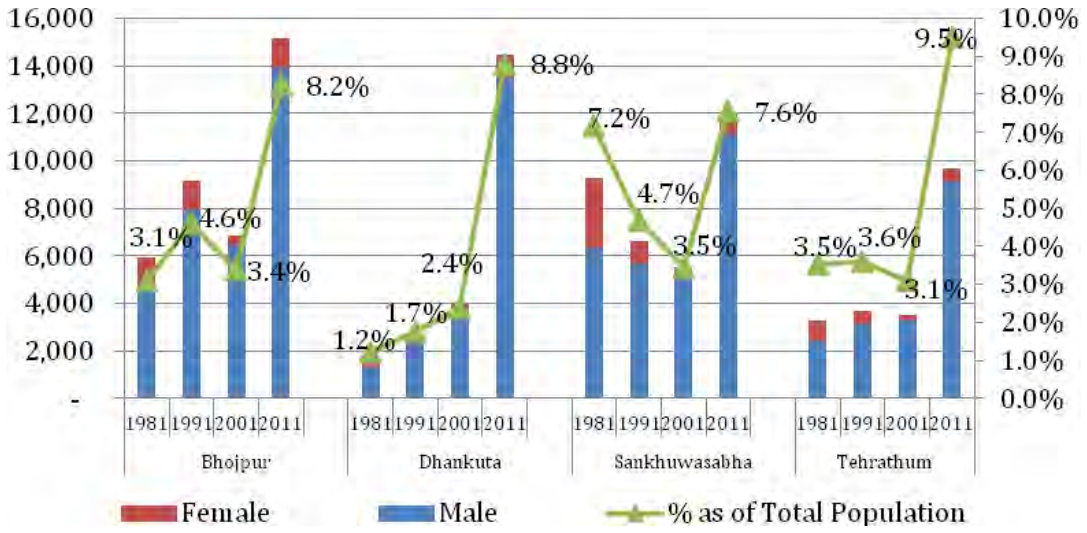
Within the Eastern Hills, there has always been a steady movement of people. Kansakar (1985) notes that in the 1950s and 60s, up to 25% of the total migrants were from this region; which in terms of magnitude was the second highest after the Western Hills (at 46%).

In the Koshi Hills, a CEDA regional assessment in 1970 notes that, as much as 5% of the population were seasonal migrants (CEDA, 1970). Census figures further show that the four hill districts constitute 2.6% of the total migrating population (in 2011) (Table 44).

Meanwhile the CBS records show that while the number of people migrating from the four study districts has fluctuated over the years; in 2011 there was a drastic jump for all districts (Figure 40); with the highest number recorded in Bhojpur (15,151) followed by Dhankuta (14,455), Sankhuwasabha (12,056) and Terhathum (9,656) (CBS, 2011).

[241] Estimations carried out by Seddon et al (2001) suggest that there were approximately 1.3m emigrants working in India, much larger than that total official figure of 0.7m for the total number of people abroad in 2001.

Figure 40: Trend Migration in Koshi Hills Districts (CBS 1982, 1992, 2002 & 2012)



2.11.2 Changing Trends in Destination

Historically, the plains in the Terai and the northern Indian states have been the preferred destination for people from the eastren Hills; for both seasonal[242] and permanent migration (NPC, 1970; CEDA, 1975; Conlin & Falk, 1979; Cassels et al, 1987:31). For example in 1981, the Census recorded that as much as 67% of the in-migrants in the eastern Terai were born in the eastern Hills (CBS, 1987).[243] While other studies, have documented the large flows of seasonal labourers to tea plantations[244], coal mines and as porters to the Indian states of Darjeeling[245], Assam and Sikkim (Caplan, 1970; Cassels et al, 1987; Jha, 1995).

Table 45: National Figures for Destination of Migrants (in%) (Kansakar, 1985; CBS, 1991 & 2001)

Countries	1953/54	1991	2001
India	79.4	89.2	77.3
South Asia	0.1	0.8	0.4
Other Asian Countries	5.4	3.0	4.5
European Countries	20.2	1.0	1.5
Arab Countries		1.0	14.5
Others		5.1	1.8

[242] The oldest form of seasonal migration within the country is transhumance, a process which involves the farmers of the high hills and mountains migrating to the lower altitudes during winter season and to the higher altitudes beyond the Himalayan ranges during summer season with their herds and flocks in search of pastures. Such migration takes place for trade purposes including exchange of goods such as herbs, fruits, for pasturing cattle and collecting land rent (Sainju & KC, 1981).

[243] Central Bureau of Statistics: *Population Monograph of Nepal*, 1987.

[244] Nepal Migrants Survey 2009 suggests that Nepalese were actively encouraged to by the East India Company during the British Raj to work in the plantations (WB, 2009).

[245] By the end of the 19th Century, it has been noted that half of the population of Darjeeling was of Nepalese origin (Caplan, 1970).

Though the factors that trigger migration from the Koshi Hills are complex, and have undergone changes across time, many authors are in agreement that one of the most significant 'push factors' has been the failure of the agricultural sector to experience progressive growth. Low productivity couple with massive underemployment and rising food shortages have been documented by many studies as being integral for forcing people from the Koshi Hills to migrate in search of work[246] (Conlin & Falk, 1979; Cassells et al, 1987; CEDA, 1970 & 1975).

As between 1970-1980, the average agricultural production growth was 0.2%; which grew to be 2.7% per annum in the 1990s but has remained low at 2.8% in the early 2000s (2000-2006) (Sharma, 1986; Karkee, 2008). A study by Conlin & Falk (1979) further showed that small and marginal farmers in the Koshi Hills were increasingly under stress for food. Households that cultivated 0.5 – 1 ha produced 70% of their household requirements, while those with less than 0.5 ha produced merely 38% of their needs.

Meanwhile the attraction of Terai has been attributed to the success of the malaria eradication programme in the late 1950s and the subsequent expansion of farm-lands and employment opportunities (Ojha, 1983). It has been recorded that internal migration increased from 178,000 in 1961 to 506,921 in 1971 of which Hills and the Mountains were the origins of the migrants (ibid). A study by Conlin & Falk (1979) further notes that the pensions received by ex-Gurkha soldiers were also being used to finance land acquisition, leading to permanent migration, into the Tarai in the 1970s.

Similarly, greater employment opportunities, potential for earning higher salaries, the open boarder and the freedom of not needing legal documents have 'pulled' young men, and more recently women, across the border into India for decades (Caplan, 1970; Sharma, 2011; Kollmair, 2006; Davis, 1951). The Census figures for 1991 show that the destination of over 82% of the migrants (17,751) from the Kosh Hills was India (Census, 1992). By 2001, the figure remained high at 81%, but interestingly it has been noted that the Gulf States have increasingly emerged as the preferred destinations for a growing number of migrants. In 1991, 5.6% were travelling to the Gulf, whereas by 2001 the number more than doubled to 12.9%. One of the most significant reasons for this rise after 1990 has been the government's liberal policy with regards to foreign travel and the construction and manufacturing growth in the Gulf States (WB, 2009). The potential of earning higher wages is also greater, with a household with a migrant in the Gulf countries receiving up to US$2,120 compared to US $800 for those with members in India (ibid).

Labour migration to work in foreign armies, the British and India Gurkha regiments, is also a specific characteristic of Rai and Limbu ethnic groups within the Koshi Hills; which along with the Gurungs, Magars and Tamangs in the Western districts have been the source of recruits since 1816 (Caplan, 1970). A NPC study in 1970 notes that 3-7% of the males in three Koshi Hills districts (Dhankuta, Bhojpur and Sankhuwasabha) were employed in Indian and British Gurkha regiments (NPC, 1970:22). Out of the 10 regiments that were established through the *Tripartite Agreement*[247] between the United Kingdom, India and Nepal in 1947; 2 recruited from the Koshi Hills[248]. More recently, the Nepal Migration Survey 2009 estimates that presently there are 50,000 soldiers in the India Gurkha regiments (WB, 2009); while the figures for those in the British regiments[249] is at 3,800[250].

Corollary to the recruitment of Gurkha soldiers, it is worthwhile mentioning that one of the key factors, which led to the flow development assistance, primarily British aid equivalent to a total of GBP 247

---

[246] This has been in spite of many development programmes, both government and donor supported such as PAC, KHARDEP, KHDP, KOSEVEG, SSSP, NUKCF, LFP, HVC, which have focused on rural development and increasing agricultural production within the Koshi Hills. The total cost of the donor funded programmes is estimated to cost (at 2008 prices) GBP 129m (Coffey, 2010).

[247] This agreement between the three countries is chiefly concerned with the rights of Gurkhas in military service.

[248] Efforts are being sought to find out the number or percentage of recruitment from the Koshi Hills.

[249] In March 2012, the Government of Nepal announced that it would seek to end Gurkha recruitment; albeit as soon as the country is able to provide employment opportunities at similar wages.

[250] Al-Mahmood (2011). Gurkhas: the beginning of the end? The Guardian.
www.guardian.co.uk/world/2011/nov/10/gurkhas-mod-cuts-end-role accessed on 25th March 2012.

million[251] (70% of total aid flows to date), and the initiation of a number of development programmes (such as Dharan-Dhankuta road, Pakhribas Agriculture Centre[252], KHARDEP, and NUKCEF) in the Koshi Hills has been the ties to Gurkha soldiers (Nickson, 1992).

2.11.3 Nature of the Migrants

Studies have shown that out-migration, for both domestic and international employment, is also skewed towards the wealthy (Conlin & Falk, 1979; Seddon et al, 2001; ILO, 2004; WB, 2009). This is primarily due to the initial investments that must be incurred by the individual, either through official or informal channels. It has been estimated that the cost of working in a foreign country (except India) ranges between NRs 70,000 – 1,90,000 (WB, 2009; ILO, 2004); with the costs increasing for developed countries such as USA, Japan, South Korea. Compared to India, which on average costs NRs 6,500 (WB, 2009).

The benefits of employment in the Gurkha regiments have consequently also been spatially and socially concentrated. There is high degree of continuity in recruitment, leading in effect to a concentration on certain regions, certain villages and even certain families. Employment in British Army, for is strongly affected by ethnicity and family and village connections. As earlier discussed historically, Rais and Limbus of the eastern hills have been the preferred and accept candidates. Access to employment in the Indian army, by contrast, is far less narrowly determined, although the formal recruitment procedures there are also affected in practice by certain ethnic and caste preferences. Caplan (1995) notes that the recruitment of specific ethnic groups coupled with the significantly higher salaries and pensions have created 'new elites' amongst ex-service men and their wives.

Past historical connections, were also found to be important. For example, it has been noted that wealthier households with connections to the British Gurkhas, who have been socialized about the potential of foreign employment and have the necessary connections, have been migrating to Japan[253], Hong Kong, Singapore and Europe; while others such as Dalits have gone to India, Gulf States and Malaysia (WB, 2009).

Overwhelmingly, the majority of funding has been been through local moneylenders; at an average interest rate of 17.7% (WB, 2009). But, payments of 40-50% are also not unheard (WB, 2009; Ferrari et al, 2007). The Nepal Migrant in 2009, calculated that up to 46.7% of was being borrowed nationally, while a survey in Dhankuta municipality had a higher figure of 75% (Table 3). What is noticeable is that loans through banks remains low; though in 2005 the government had designed a migration loan scheme[254] to encourage banks to lend to migrants to make costs more affordable. More interestingly, an impact study carried out by the Livelihoods and Forestry Programme (LFP) in 2008 to study the economic activity of community forestry on poverty recorded that while only 2% of the revolving funds were being used to finance migration, the amounts that were being loaned were allowing the borrowers to go to more lucrative destinations.

[251] Based on the calculations by Coffey, 2010.

[252] Pakhribas was initial focused on only providing technical assistance to ex-Gurkha farmers (see section XXX).

[253] A study by Yamanaka (2000) found out that the majority of the sampled migrants were from the ethnic groups that had traditionally served in the British Armies.

[254] According to Ferrari et al (2007), the loan scheme the banks would have to fund the loans from their own funds, but it would be guaranteed (in the case of default) up to 75% by the Credit Guarantee Coorporation. The authors note that initially four banks had participated in 2005 but that payment was not done and as such no other banks joined the scheme.

Table 46: Sources of Funding for Foreign Labour Employment (in%) (WB, 2009; Dhankuta Statistics Office, 2008)

Source of loans	Nepal Migrant Survey 2009		Dhankuta Municipal Survey 2008
	AMA	RMA	
Money lenders	46.7	45.6	75
Bank	5.5	2.9	8.5
Own income	21.7	19.8	11
Selling land	4.4	-	5.5
Friends/relatives	21.7	24.8	-
Others	-	6.9	-

Note: AMA – Absentee Migrant Abroad; RMA – Returnee Migrant Abroad

2.11.4 Feminisation of Migration

In recent years, an increasing number of women migrating in search of working opportunities has also become evident (Bhadra, 2003; UNIFEM, 2006; Adhikari, 2005). This has been generally been caused by the demand of "care givers" in developed countries; where there is a great demand for labour as domestic servants and nurses Bhandra, 2007).

According to the Census figures, there has been a slow rise in the number of female migrants, albeit with slight fluctuations (Table 47). In 2011, as much as 254,666 women were recorded as working abroad. While in the Koshi Hills this figure was 3,727 (Census 1991, 2011). This represents a slight rise between 2001 and 2011.

Table 47: Percentage of Men and Women Migrants (CBS 1952/54, 1961, 1971, 1981, 1991, 2001 & 2011)

Year	Nepal		Koshi Hills	
	Male	Female	Male	Female
1952/54	87.6	12.4	NA	NA
1961	NA	NA	NA	NA
1971	NA	NA	NA	NA
1981	81.5	18.5	81.3	18.7
1991	83.2	16.8	86.2	13.8
2001	89.2	10.8	94.4	5.6
2011	86.7	13.2	92.8	7.2

According to research in 2002 by the Nepal Institute for Development Studies for the women's fund at the United Nations (UNIFEM), the majority (approx. 170,000) work in East and Southeast Asia; while 36,000 work in Europe and over 10,000 in North America. The majority of women migrant workers besides India were primarily working in Hong Kong (44%) and Japan (9%) — with 56.5% in East and Southeast Asia. The remainder were in the UK (12%), the US (9%), Australia (6%), Bahrain (4%), and other countries.

2.11.5 Impact of Migration

This section briefly discusses the impact of migration on the national economy and within the Koshi Hills. Attention is focused on remittances and its contribution towards the GDP, comparisons against development assistance and the impact on poverty and living standards.

2.11.6 Remittances: Contribution Towards the GDP

Table 48: Remittance Flows in Nepal 1974/75- 2011 (CBS, 2006; Economic Survey 2007/08 & 2010/11; NLSS I, II & III; Seddon et al, 2001; Elvira & Seddon, 2005; Nepal Migrant Survey 2009 ; and ILO, 2004)

	1974 /75	1980 /81	1989 /90	1995 /96	2001 /02	2003 /04	2006 /07	2007 /08	2010 /11
Remittance: - Gov figures (NRs)		216.8m		12.9b		46.3 b	161.5b		310b
- Calculations by diff authors (NRs)	90.7m"		678.8m "		35-69b°	77-110b^		185b'	
Remittance as % of GDP		0.1	0.2	4.0	7.6-15.0	10.9	13.8	17.4	19.3
Grants and loans as % of GDP				5.7	3.4	3.8	3.6	3.6	4.8
% of households receiving remittances				23.4		31.9			55.8

Despite the discrepancies, what is noticeable from Table 5 is that the contribution of remittance to the nationally economy is significant and is on the rise; with the most recent figures presented by the NLSS III estimating up to NRs 310 billion of in-flows in 2010/11.[255]

Its recent contribution to the GDP is also notable, as it has steadily increased to 19.3% in 2010/11 (Table 48). As such, over the past years it is now widely accepted that the remittance has been vital to propping up the economy; especially during the political unrest in the early 2000s, when it remained the only sector unaffected by the instability (Seddon et al, 2000; Shakya, 2002).

The overall impact of this inflow has been to balance the current account deficient, increasing foreign reserves[256] and improving the balance of payments (WB, 2009). Particularly, during a time (after 2006) when other sectors such as Services[257] had declined and the number of students seeking higher education in foreign countries grew rapidly leading to an out-flow of foreign reserves. According to the Nepal Rastra Bank, till the mid 1980s Nepal usually had a deficit in foreign exchange earnings[258], but this has in recent years been over turned with the inflow of remittances. In 2007-08, a surplus of NRs 21.6 billion was recorded, mostly due to its increase (WB, 2009).

The proportion of remittances entering the country when compared to development assistance also provides an interesting picture; especially, when one considers that remittances go directly to individual households. Available figures show that since 2000, the proportion of remittance to GDP has been significantly higher than aid flows; with the former contributing nearly five times more than that of the latter in 2010/11 (Table 48).

---

[255] Historically, it has also been noted that remittances and pensions from Gurkha soldiers were the largest sources of foreign currency until the development of tourism and other sources of migration. Shrestha (2009) notes that this is especially relevant for Tibeto-Mongol communities.

[256] According to Caplan (1995) remittances from Gurkha soldiers and pensions were the country's largest earner of foreign currency until the rise of the tourism sector and other migration flows. Official figures show that in 1974/75, over NRs 90 million was from Gurkha services, which by 2009/10 had increased to NRs 3.3 billion.

[257] The decline in services is generally attributed towards the fall in tourism during the political conflict in the mid 2000s. Since the restoration of peace and the influx of tourists, this sector is slowly on the rise.

[258] Pant (2011) points out that in recent years, the change of residence in UK to ex-Gurkha soldiers and their families may lead to decreasing flows into Nepal, which is directed instead to mortgage economy.

2.11.7 Remittances: Poverty Reduction

It has been also widely accepted that foreign employment has become an important source of livelihoods in Nepal (Thieme, 2004; Seddon et al 2000, Sirdhar, 2008; Sharma, 2008); especially as the percentage of households becoming dependent on remittances increases from 23.4% (in 1995/96) to 55.8% (in 2010/11) (NLSS I & III). It has been calculated that on average one household receives NRs 80,436 per year (US$995) (NLSS III).

Furthermore, the figures from NLSS I, II and III show that poverty decreased from 41.76% (in 1995/96) to 30.85% (in 2003/04) and finally to 25.16% in 2010/11,[259] with remittance contributing significantly to its decline. Equally significant, nominal average household incomes and nominal average per capita incomes increased by 153% and 175% respectively in 2010.

Table 49: Poverty Levels According to Development Regions (in%) (NLSS I, II and III)

Development regions	1995/96	2003/04	2010/11
Eastern	38.9	29.3	21.4
Central	32.5	27.1	21.6
Western	38.6	27.1	22.2
Mid-Western	59.9	44.8	31.6
Far-Western	63.9	41.0	45.1
Nepal	41.76	30.85	25.16

Other studies have also shown that the impact of remittances on livelihoods has been large. Firstly, the number of families dependent on in flows has increased from 23.4% in 1995/96 to over half of the country's population at 55.8% in 2010 (Table 48).

A study conducted by the Nepal Rastra Bank in 2005/06 further noted that for an average household earning of NRs 27,391 per month[260], 16.1% (21% in rural areas and 13% in urban areas) was from remittance[261]. Meanwhile, a LFP study in 2008, identified that increased remittances accounted for 54% of the changes within a households income, from the base year of 2003. This was followed by 25% for contribution of community forestry, 12% due to general economic growth and 9% due to developmental efforts.

The table below (Table 50) based on the findings of the Nepal Migrant Survey 2009, provides an indication of the contribution of remittances to different social and geographical groups. It shows that rural households are more dependent. In terms of caste and ethnicity, the study identified that Hill Dalits were found to receive more remittances, compared to other social groups; followed by Tarai and Hill Janajaties (Table 50). This is significant as the NLSS II had identified that the incidence of poverty was the greatest for these groups (i.e. Hill and Tarai Dalits along with Hill Janajaties[262]) (DFID/World Bank 2006), while others have identified that labour migration and/or employment in foreign armies present the only reliable alternative to farming for these groups (Caplan, 1995; Ellingsen, 2001).

---

[259] Thapa (2011). Third Nepal Living Standard Survey: 25.16% of Nepalis below poverty line. *The Kathmandu Post.* www.ekantipur.com/the-kathmandu-post/2011/10/20/money/third-nepal-living-standards-survey-25.16-percent-nepalis-below-poverty-line/227426.html accessed on 25th March 2012.

[260] For Gurkha soldiers average pensions equal NRs 15,000 per month (for a soldier retiring as honorary captain). According to Shrestha (2011), the present value of lifetime income from serving in the British Gurkha army is estimated to be US$1,522,750 , which includes US$21,000 as a starting salary and lifelong pension of about US$15,000 after retirement.

[261] Regional variation of this contribution to household income is as: 21% in Tarai, 13% in the hills and 9% in the mountains.

[262] The NLSS II reported that in 2003/04 the poverty incidence was 31%, but amongst the Hill and Tarai Dalits it was 48% and 46% respectively, while for Hill Janajaties it was 44%.

Table 50: Contribution of Remittances to Different Social and Geographic Groups (WB, 2009)

Categories of households	Contribution of Remittances to Different Social and Geographic Groups		
	Contribution of foreign remittance (%)	Contribution of internal remittance (%)	Contribution of total remittance (%)
All households	24.31	3.30	27.61
Location			
Rural	26.26	3.59	29.85
Urban	16.96	0.93	17.89
Ecological region			
Mountains	33.83	3.07	37.90
Hills	19.76	3.21	22.97
Tarai	26.89	2.88	29.77
Caste/ethnic groups			
Hill Brahmin	22.32	3.84	26.16
Hill Chettri	23.55	4.66	28.21
Hill Janajatis	24.85	2.21	27.06
Hill Dalit	32.72	3.27	35.99
Tarai Brahmin	4.71	4.03	8.74
Tarai Janajatis	27.38	5.46	32.84
Tarai Dalit	22.13	0.96	23.09
Tarai others	20.53	1.74	22.27
Religious minorities	33.95	0.52	34.47

Remittances also have an indirect effect on poverty through its effect on inflation, exchange rates and access to capital. Furthermore, in contrast to the direct impact it has on decreasing poverty, its impact on inequality is not as straight forward. As, it has been noted that large shares of remittances disproportionately go to the wealthier segments, thereby leading to worsening inequality (Lipton, 1980; Oberai & Singh, 1980). The NLSS III data however showed that there was a decline in income inequality, measured by Gini Coefficient from 0.41 (in 2003/04) to 0.35 (in 2010/11). It also noted that the average household income of the poorest and richest 20% had increased by 297% and 133% respectively.

But, as already identified in section 1.4, migration can also be skewed in favour of the wealthy who can not only afford to invest in the process, but also go to more lucrative destinations, as was the case in the Koshi Hills. For example, as far back as the late 1970s, a study by Conlin & Falk (1979) had already identified that land acquisition within the Tarai and the Koshi Hills was being financed by remittance and pension in-flows. They noted that ex-Gurkhas were increasingly buying up large tracts of land in the Tarai through their pensions, which in turn led to further earning opportunities. Mean while middle-income farmers were financing their acquisitions in the Koshi Hills through remittances from migrant work (Conlin & Falk, 1979:47). But, small farmers (having land less than 0.5 ha) were utilizing all their earnings to cope with food securities and paying off debt (ibid).

More recently, studies have shown that returned migrants with savings are more likely to move to urban areas and market centres, where they invest in infrastructure (e. houses) and start businesses (WB, 2009). This in return has in some cases led to further increases in capital, education of children, social capital and migration-specific knowledge that as facilitated subsequent migrations (Thieme & Wyss, 2005; WB, 2009). But primarily they have been used for consumption purposes (Table 51). Paying loans and interests also constitute an important usage.

Table 51: Usage of Remittances (in%) (NLSS III, WB, 2009)

Purpose	NLSS III	Nepal Migrant Study 2009		
		1st purpose	2nd purpose	3rd purpose
Food and clothing	79.0	54.19	11.57	13.49
Payment of loan/interest	7.1	23.16	27.89	44.47
Household property	4.5	13.5	16.9	10.5
Children's education	3.5	3.27	28.56	15.05
Capital formation	2.4	3.11	4.07	3.45
Marriage	-	0.66	1.16	0.79
Medical treatment	-	0.61	2.44	8.73
Business	-	0.59	0.18	-
Re-investment migration	-	0.39	0.14	-

2.12 Irrigation Sector

This section seeks to discuss the development of irrigation systems within the Koshi Hills. It begins by detailing various government and donor supported schemes (Annex 77), highlighting relevant aspects and issues. This is then followed by an analysis of agriculture production and impact on the lives of farmers within the Koshi Hills.

2.12.1 Development of the Irrigation System

Within the Koshi Hills, the irrigation schemes cover a command area of 19,020 ha (DOI, 2007). This accounts for 73% of the total irrigable land within the hills (Table 52) and represents a significant rise compared to the situation in 1975, when a CEDA assessment identified "… no irrigation programmes, departments or personal (engineer or technician) within the Koshi Hills" (1975:483).

Table 52: Total Irrigable and Irrigated Land in Koshi Hills in 2007 (in ha) (Adapted from DOI, 2007. Note: FMIS: Farmer Managed Irrigation Systems)

District	Total irrigable land	Irrigated area			% of irrigable land
		FMIS	Others	Total	
Bhojpur	6,820	2,507	210	2,297	37.0
Dhankuta	7,495	5,244	205	5,039	70.0
Terhathum	6,282	4,932	215	4,717	78.5
Sankhuwasabha	5,170	6,337	176	6,161	122.0

Most of the systems are Farmer Managed Irrigation Systems (FMIS), which rely on the main rivers, namely the Arun, Sunkoshi and Tamor, and their tributaries along with ponds as their sources for irrigation (ISET-N, 2010; Howarth et al, 2004).The remaining irrigated land is served by Agency

Managed Irrigation Systems (AMIS), many of which have been constructed by the state through the assistance of external donors such as the Asian Development Bank, as in the case for the Koshi Hills.

As the name suggests, the FMISs are built, operated and maintained by the farmers themselves, with little or no help from the government or external agencies (Bhandari & Pokharel, 1998; Ostrom& Gardner, 1993, Howarth et al, 2004). Usually, they consist of simple infrastructures of canals, which are operated based on collective traditional self-help relationships (Bhandari &Pokharel, 1998; ADB, 1996).Authors point out that these systems are more effective than the AMIS for ensuring adequate distribution of water, especially to the 'tail-enders' of the irrigation schemes (Ostrom& Gardner, 1993; Lam, 1994); though Pradhan (2000) observes that these traditional systems should not always be regarded as being democratic.[263] Ostrom& Gardner (1993:101) further calculate that FMISs also have higher productivity (average of 6 MT per hectare compared to 5 MT of AMIS) and higher crop intensity.

Since 1992, with the enactment of the Irrigation Policy and Water Resources Act, Water Users Associations [264](WUAs) have been widely promoted by the state and donors in FMISs (which have received state/donor support[265]), AMISs and Joint-Managed (JM) systems as the main body for water resource management. This development has largely come as a consequence of the government's limited success[266] with management of the systems vis-a-vis the smaller traditional autonomous bodies (Howarth et al, 2004; Johnson & Vermillion, 1995). The WUAs are to constitute of "…people willing to make use of water resources for collective benefits on an institutional basis" (Magar, 2009). They have the authority to manage the irrigation systems, including fee collection for operation and maintenance. Not surprising, the control over these groups are keenly contested; as the influence of WUAs extends beyond the irrigation systems (Howarth et al, 2004). In addition, as per the Irrigation Policy 1992, these WUAs must be financial sustainable and operate as a "business house" (Johnson & Vermillion, 1995).

2.12.2 Government Support

The table below shows that 2,975 ha of land has been covered by irrigation systems constructed and rehabilitated by the state, while 6,363 ha has been also those supported by donors within the Koshi Hills (Table 53)

Table 53: Total Command Area of Irrigation Systems by AMIS (in ha) (DOI, 2007)

Districts	Type	DOI	ADB/N	FIWUD	ISP	KHILL[267]	MIP	Ppl	SIP	SISP	Total
CP		1989-1991	1991-1995	NA	1989-1996	1980-1985	2006	NA	1989-1990	1998-2003	
Bhojpur	New	0	0	200	260	0	0	0	0	810	810
	Rehab	385	0	0	200	280	0	25	20	216	910

[263] Some of the main weaknesses of the FMISs are the rudimentary distribution systems, which need to be rehabilitated frequently; high water losses; and small command areas.

[264] The promotion of community managed systems, gained recognition in 1980s, after the state's failed experience with the management of the traditionally FMISs (Howarth et al, 2004; Magar, 2009).

[265] Traditional systems get replaced or incorporated into government promoted WUAs, when they seek and receive financial and technical assistance from the state (Howarth et al, 2004).

[266] Criticisms have been directed towards the under management, utilization of inappropriate technology, lack of beneficiary involvement (Howarth et al, 2004; Joshnson et al, 1995).

[267] These figures (total of 1,405 ha) are slightly lower than those provided by the KHARDEP impact assessments of 2,000 ha. See section XXXX.

Districts	Type	DOI	ADB/N	FIWUD	ISP	KHILL[267]	MIP	Ppl	SIP	SISP	Total
Dhankuta	New	0	0	70	256	94	0	0	0	405	825
	Rehab	689	175	0	340	229	115	0	40	389	1,986
Terhathum	New	0	0	225	320	40	0	0	0	387	972
	Rehab	171	0	430	336	360	0	0	0	195	1,492
S'sabha	New	0	30	0	91	60	0	0	0	285	466
	Rehab	537	63	0	588	340	0	0	0	349	1,877

Note: CP: Construction Period. DOI: Department of Irrigation, ADB/N: Agriculture Development Bank of Nepal, FIWUD: Farm Irrigation and Water Utilization Division, ISP: Irrigation Sector Programme, KHILL: Koshi Hills Area Development Programme, SIP: Small Irrigation Programme; MIP: Minor Irrigation Project, SISP: Second Irrigation Sector Programme.

Historically, the government, until between 1955 and 1987, had undertaken the construction and operation of mostly medium- and large-scale schemes, ignoring the smaller farmer managed schemes (ADB, 1996). In many instances local participation in planning, design and construction was often not sought and neither was their potential to be involved in operation and maintenance (O&M). Since then, it was been well established that the lack of farmers' participation has contributed to the poor O&M of the completed systems (ADB, 1996; Howarth et al, 2004). As such, since the introduction of a working policy on irrigation development in 1988, and later with the Irrigation Policy and Water Resources Act in 1992, the importance of farmers' participation has been recognized as being essential for the proper and sustainable functioning of the systems. Furthermore, the importance of irrigation development was highlighted in the Agriculture Perspective Plan 1995, which sought to develop the agriculture sector as the "engine" for economic growth (APP, 1995).

Within the Koshi Hills, the DOI has primarily focused on rehabilitation of small schemes (total command area of 1,782 ha, average size being 44 ha) in all four districts. Data shows that all these systems were completed between 1989-1993, with 25% (10 schemes) providing year round water supply and the remaining 75% (30 schemes) only having water during the monsoon season (DOI, 2007). Meanwhile, all the schemes supported by ADB/N (total command area of 238 ha) were built from 1991-1995.[268] Similarly, Farm Irrigation and Water Utilization Division (FIWUD) of the agriculture department has been involved in three of the districts for both new construction and rehabilitation[269] (825 ha).

Unfortunately, information on the current operation and functioning of the schemes was not available.[270] However, as will be discussed in subsequent sections on donor-assisted programmes (eg. KHARDEP), one can reasonable infer that even though the command area of irrigated schemes have drastically risen to over nine thousand hectares (e.g. Table 1), not all are fully functioning. As a result, significant expanses of land continue to be reliant on rainfall, which in turn has affected agriculture production.[271]

[268] The irrigation database does not show the irrigation capabilities of these systems.

[269] The irrigation capabilities of these systems were also not available.

[270] Information was not provided in the district database.

[271] The most recent record of crop production being negatively affected by irregular rainfall was in 2009/2010 summer crop. Nationally, paddy production decreased by 11%, while maize was reduced by 4% (www./www.wfp.org/content/nepal-crop-and-food-security-update-summer-crop-20092010-february-2010, accessed on 20/03/2012).

2.12.3 External Donor Support[272]

There have been three main donor supported irrigation programmes within the in the Koshi Hills (Table 54). These mainly include:

Table 54: Donor Supported Interventions for Cottage Industries in the Koshi Hills (Howell (1984), ADB 1996 & 2007)

SN	Programmes/projects	Dates	Costs
1	Irrigation programme of KHARDEP	1980-1985	GB£328,000
2	Irrigation sector project	1989-1996	US$36.3m
3	Second irrigation sector project	1998-2003	US$29.6m

2.12.4 Irrigation Programme of KHARDEP

The irrigation programme of KHARDEP was designed to ensure "… a single good monsoon crop, regardless of rainfall … (with) the immediate aim to assist the small farmer with the construction of simple traditional schemes" (Nabarro& McConnell, 1990). The total cost of this component was GB£328,000 (at 1985 prices), which represented just 8% of the total programme costs.

The initial objective of the programme was to construct a total of 30 small-schemes[273], irrigating a command area of 1,100 ha, with 800 ha of 'new schemes' (Nabarro & McConnell, 1990). Later, this was extended to 44 schemes to cover 2,000 ha (Howell, 1984: 42). The modality was for the ODA to provide technical support and capital grants to the village Panchayats to construct and or rehabilitate existing systems through the District Technical Offices (DTO) (Nabarro & McConnell, 1990).

By the end of the programme assessments showed that out of the 44 schemes assiste, only two were regarded as being fully functionally[274] (Howell, 1984:43). According to Upadhaya (1984), 30% had either been cancelled or been left incomplete and amongst those that were completed 90% were not in operation(1984:64-66).

Most significantly, the Koshi Impact Studies (KIS)[275] showed that the original objective of lessening the dependence of small farmers on rains, was a distant reality and that with only 38% of cultivable land irrigated that "… production (was) still highly dependent on the vagaries of the climate" (Nabbaro, 1987:24). Furthermore, the assessments of KHARDEP programmes came to the conclusion that an increase in production (see Agriculture section 1.5) was due to the greater usage of fertilizers and improved seeds rather than the expansion of irrigation systems (Nabarro& McConnell, 1990; Howell, 1984).

Assessments conducted by various authors point to a combination of technical and socio-political factors as the reasons for its extremely limited impact and general failure (Howell, 1984; KHDP, 1992). Technically, the programme suffered from having to build in difficult terrain, with poor standards of design and construction[276] (ibid). But equally significant, the assessments also point towards Village Panchayat's misappropriation of funds through patronage of certain support bases, through the selection of sites as well as the awarding of lucrative contracts, even though they may not have been technically or economically appropriate (Howell, 1984). In the process, also neglecting other low-cost schemes.

Equally significant, the assessments concluded that though small farmers (having land less than 0.5 ha) were the targeted beneficiaries, they were not the actual beneficiaries, with larger farmers having

[272] Nationally the sector has been assisted primarily by the World Bank (e.g. Irrigation Line Credit programme), the Asian Development Bank (e.g. ISP, SISP), USAID and the UNDP.

[273] Small-schemes are classified as those that have a command area less than 50 ha.

[274] Even though the irrigation schemes had been completed just two years previously (Howell, 1984).

[275] These were longitudinal studies that were conducted from 1980-1985 by KHARDEP.

[276] Howell (1984) notes that in most cases, DTOs did not have the necessary competencies for providing support.

stronger linkages to the Village Panchayats enjoying the majority of the benefits (Nabarro& McConnell, 1990; Nabarro et al, 1987). Howell (1984) goes on to note that in many cases, 'trade-offs' needed to be made between relatively high cost systems, which are targeted to poorer food deficit areas; compared to existing high-potential areas.

Later when Koshi Hills Development Programme (KHDP), the successor of KHARDEP, came into effect, it was noticeable that an irrigation component was not included (WS Atkins, 1993). According to a SEAD report the main reasons was due to the need of the programme to focus its activities on a limited number of areas[277] and assumption that the then proposed Eastern Hills Development Project, supported by the European Commission, would be implemented (SEAD, 1989:6). This project did not however come into effect.

2.12.5 Irrigation Sector Project (1989-1996)

The Irrigation Sector Project (ISP) was supported by the Asian Development Bank in 22 districts in the Central and Eastern Development Region from 1989-1996 (ADB, 1996; ADB, 2007). According to the programme proposal document, the reason for the selection of two development regions were due to the high concentration of FMISs which needed to be rehabilitated (ADB, 1996). Within the Koshi Hills, this project was implemented in all four of the study districts (Table 53).

The objective of the project was to raise agriculture production by targeting:(i) the improvement and rehabilitation of 50 FMISs with a command area of 18,000 ha; later extended to 48,000 ha by the end of the project; (ii) construction of 20 new small- and medium-schemes covering 7,000 ha; and (iii) the strengthening of 22 DOI offices in the project area, through the construction of buildings and trainings (ADB, 1996).

By the end of the project, 391 schemes (small- and medium-scaled) were constructed and rehabilitated, covering a command area of 45,000 ha in the two development regions (ADB, 1996). Within the Koshi Hills, a total of 21 schemes were constructed (57%) and rehabilitated (33%); having a command area of 2131 ha (DOI, 2007). Figures show that 57% were constructed to provide year round access to water (ibid). All were later handed over to WUAs for O&M. On average, the schemes had command areas of 101 ha, which was lower than the overall project average of 170 ha.[278]

New offices for the DOI were also built. Trainings were also conducted for developing the competencies of the staff and WUAs to institutionalize participatory management of the irrigation systems.

An internal assessment conducted by the ADB (1996), sampling 10 projects[279], recorded that after two years of operation, the average cropping intensity at the system level increased from 118 to 202% (ibid). It noted that paddy production increased from 2.0 MT per hectare to 2.8 MT, with many of the famers converting towards improved variety of seeds due to the availability of water. The yield of Maize and Wheat however remained low.

The report further went to point out that incomes of the farmers had also increased as result of the improved water supply, with the average net income doubling from NRs 9,807 to NRs 18,793 (ADB, 1996). Disaggregation of incomes earned by head, middle and tail –ended farmers at NRs 19,100 (US$380), NRs 18,600 (US$370) and NRs 17,100 (US4 320), also showed that the distribution of the water was also generally satisfactory.

2.12.6 Second Irrigation Sector Project (1998-2003)

The Second Irrigation Sector Project (SISP) was the successor of the ISP. It was funded by ADB at the cost of US$29.6m in 35 districts, including the Koshi Hills, within the Central and Eastern Development Regions.

[277] Seven areas were identified from KHARDEP's thirteen.

[278] This figure represents the averages for both Terai and Hills districts. Separate figures were not available.

[279] None of the 10 sampled schemes (Ilam, Morang, Makwanpur, Udaypur, Jhapa, Rautahat and Parsa (four sites)) were from the Koshi Hills.

Its objective was to raise the socio-economic status of small rural farmers and generate employment opportunities in rural areas (ADB, 2007). Similar to the previous ISP, the project focused on the (i) new construction /rehab of existing FMISs; (ii) strengthening of WUAs to participate during planning, designing, implementation and later in the operation of the systems; and (iii) strengthen the DOI district offices. One component – provision of agriculture extension services was however new (ibid).

The outputs within the Kosh Hills included the construction new (61%) and rehabilitation (39%) of 31 schemes. In total the schemes had a command area of 3,036 ha; with the average area covering 98 ha (DOI, 2007). All were constructed to provide year round access to water (ibid).

In addition, WUAs were also established and strengthened through trainings on construction and O&M. DOI staff were also trained[280] or provided refresher courses on management and monitoring (ADB, 2007). With respect to the support to the agriculture extension services, the project evaluation report notes that it consisted of material support (e.g. vehicles) as well as trainings. But, it goes on to point out that while it was initially envisioned that the DOI would coordinate its activities with the DOA for supporting the agriculture extension activities, it was realised mid-way that coordination was lacking[281] and the component was 'ineffective'; as a result, the project began to support the DOA directly, in contrast to the previous arrangement of receiving budgetary support through the DOI. It was later reported that this slightly improved the delivery of services.

After the completion of the project, an internal evaluation conducted by the ADB assessed that the improved irrigation systems had enabled the farmers to have two to three season cropping cycles. It notes that the economic internal rates of return (EIRRs) for the hill schemes for new and rehabilitated was calculated to be 7% and 9%, respectively (ADB, 2007). This was lower than the 12% that is taken as the standard for efficiency. However, since the Terai schemes, also constructed as a part of the project, had EIRRs at 21% (new) and 22% (rehabilitated) schemes, the overall project EIRR was calculated to be 14%, and was therefore regarded to be "efficient".

2.12.7 Irrigation and Agriculture Production

Review of existing literature coupled with the DOI's irrigation database shows an increase in irrigation schemes, both FMISs and AMISs, to covera command area of 19,020 ha (73% of total irrigable land) over the past 30 years. As already discussed in the Agriculture and Livelihoods section, during this same period, the production for cereal and cash crops steadily increased (see section XXXXXX); yields were also higher, but, overall they still remained lower than national and international standards (Table 55).

Table 55: Comparison of Cereal Yields (kg/ha) in 2008 (MOAC, World Bank 2008, FAO Statistics)

	Paddy	Maize	Wheat
Bhojpur	2,400	1,850	2,000
Dhankuta	2,734	2,550	1,950
Terhathum	2,000	1,337	1,694
Sankhuwasabha	1,800	1,923	1,950
Koshi Hills	2,186	1,981	1,893
Ilam	2,750	2,450	2,244
Khotang	2,254	2,378	1,745
Nepal	2,907	2,205	2,225
India	3,700	2,060	2,840
China	6,000	5,350	4,750

[280] 175 staff was provided training in total (ADB, 2007).

[281] Mostly due to the lack of commitments from officials in both departments (ADB, 2007).

One can reasonable assume that the expansion of irrigation schemes across the hills, has undoubtedly led to increased supply of water to farmers, and in the process supported agricultural growth. However, assessing the contribution of irrigation to agricultural production is altogether a different task. As, increased production is not only dependant on supply of water, as essential as it is, but also on the expansion of agricultural land, utilization of fertilizers[282] and higher yielding seeds, amongst others.

Furthermore, with respect to the irrigation systems within the Koshi Hills, it needs to be kept in mind that not all provide year round access to water (Table 56) and that as shown by the experiences of KHARDEP supported schemes, not all are functional.

Table 56: Selected Details about the Main Irrigation Schemes in Koshi Hills (DOI, 2007)

	DOI	ADB/N	ISP	KHILL*	SISP
Construction period	1989-1991	1991-1995	1989-1996	1980-1985	1998-2003
New construction	0	1	12	6	19
Rehabilitation	40	4	9	27	16
Total	40	5	21	33	31
YR	10	NA	12	NA	31
MS	30	NA	9	NA	0

Note: YR: Year round water capability, MS: Monsoon seasonal water capability

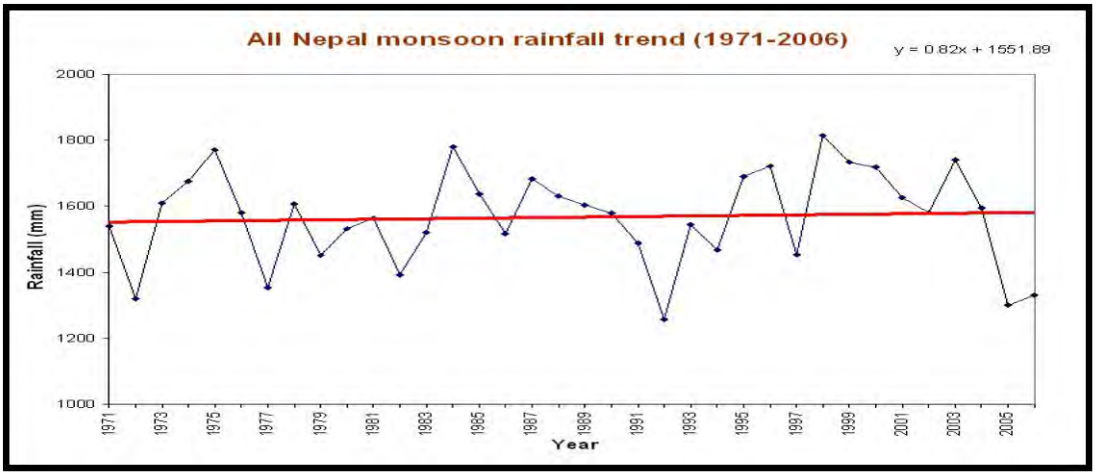
There still remain significant expanses of land that continue to be reliant on rainfall, which, in turn, have affected agriculture production.[283] Furthermore, literature on droughts and associated food shortages show that the eastern region has suffered periodically, in 1961, 1977, 2006 and 2009 (WFP[284], 2011; Dhankuta DDC, 2005; ISET-N, 2010). When compared with monsoonal rainfall trends (Figure 41), it is seen that over the past 35 years, these drought periods have more or less coincided with the erratic and lower precipitation in the country. Thereby strongly indicating that, in spite of irrigation development, most farmers continue to be dependent on rainfall.

[282] For example, in KHARDEP the increase in production was attributed towards the increase in fertilizer usage (88% increase) (Nabarro et al, 1987; Cassels et al, 1987). See Agriculture section 2.6.

[283] The most recent record of crop production being negatively affected by irregular rainfall was in 2009/2010 summer crop. Nationally, paddy production decreased by 11%, while maize was reduced by 4% (www./www.wfp.org/content/nepal-crop-and-food-security-update-summer-crop-20092010-february-2010, accessed on 20/03/2012).

[284] www.wfp.org/content/nepal-crop-and-food-security-update-summer-crop-20092010-february-2010, accessed on 20/03/2012).

Figure 41: National Monsoon Rainfall Trends (1971-2006) (Adapted from Malla, 2008)



2.12.8 Impacts: Benefits and Coping Strategies

The expansion of irrigation systems has nevertheless led to a number of benefits for farmers. As shown by the programme/project assessments, farmers were able to cultivate more than one season with the improved systems (ADB, 1996 &2007). Thereby being able to increase their production and incomes, according to the ADB (1996) assessments net incomes rose from NRS 13,500 to NRs 26,000.

Greater and consistent supply of water has also contributed towards increased vegetable seed and fresh vegetable production, which had increased from 32,112 MT in 1993/94 to 69,464 MT in 2003/04 (MOAC, 2005). Wheat cultivation, which is primarily grown during the winter, also increased significantly from 3,554 MT in 1976/77 to 10,971 MT in 2008/09 (MOAC).

The assessment conducted by SISP further reported that for households with 1.5 ha of land, the increased access was able to "…surpass the poverty threshold" (ADB, 2007). It however needs to be noted that the majority of farmers in the Koshi Hills have less than 1 ha of land (see Agriculture section XXXX). Furthermore, the experiences of KHARDEP also indicates that in many cases, the selection of the sites along with the access to water from the schemes disproportionately benefitted largely and more wealthier farmers (Howell, 1984; Nickson, 1992; Nabarro& McConnell, 1990). As such, prioritisation of schemes targeting poorer areas that are food deficit but have relatively higher survey and technical support costs compared to high-potential areas is also an issue that needs addressed (Howell, 1984).Review of the literature, primarily with KHARDEP supported systems and also the larger farmer beneficiaries of SISP, shows that pro-poor this has rarely been the case with site selection being more dependent on technical feasibility and influential leaders within the communities and districts. Promotion of labour intensive schemes, which provide employment opportunities for rural communities, especially the landless is also another means of ensuring a pro-poor focus.

Generally when crops fail, farmers have been noted to take out loans or migrate out in search of work as means of coping through failed harvests (Cassells et al, 1987, ISET-N, 2010). A recent study in the western Terai suggests that nearly half of all male migrants from the hills came as a result of the decline in agriculture (NWCF, 2008). More recently a study in the Koshi Basin noted that while previously while framers used to take out loans to support them through crop-disasters, lately loans have been taken to help them migrate to more lucrative destinations (ISET-N, 2010).

2.12.9 Institutional Strengthening

The establishment and reinforcing of government and WUAs, by the various programmes/projects including those of the government has also been a significant development within the sector. The review shows that KHARDEP and the ADB supported projects were equally focused on strengthening government partners through the provision of material support, trainings to enhance their technical capabilities, but also institutionalizing the need for local farmers to be incorporated into the management of schemes via the WUAs and FMISs.

Efforts to integrate and coordinate different departments and line agencies, such as the DOI and DOA, has however proved to be more difficult as shown by the failure of the agriculture extension service component of SISP (ADB, 2007). Even though, development and continued management of the irrigation systems and agricultural growth as a whole however requires support and coordination amongst different line agencies.

2.13 Manufacturing and Traditional Cottage Enterprises

The first half of the section begins by discussing large and medium manufacturing enterprises within the Koshi Hills. It is then followed by details on small/cottage enterprises implemented within the study districts. The opportunities and challenges are then examined at the end.

2.13.1 Large and Medium Enterprises

Figures from the Census of Manufacturing Establishments show that there has been a slow rise in the number of large industries established within the Koshi Hills (Table 57); where according to the *Industrial Enterprise Act of 1992*, large industries include those that have an investment of over NRs 100 million (approx. GBP 790,000) in fixed assets, while Medium industries are those, which have an investment between NRs 100 million and NRs 30 million.

Table 57: Large Manufacturing Establishments in the Koshi Hills (1991-2007) (CBS, 1992, 1997, 2002 & 2008)

District	Year	No.	No. of persons engaged	Wages, salaries and other benefits in (NRs '000)	Gross fixed assets at the end of the year (NRs '000)	Value of output (NRs '000)	Value of input (NRs '000)	Total value added (NRs '000)
Bhojpur	2007/08	3	63	1,632	852	3,753	1,813	1,940
	2001/02	2	NA	NA	NA	NA	NA	NA
	1996/97	4	107	402	81	789	2,170	1,381
	1991/92	NA	NA	NA	NA	NA	NA	NA
Dhankuta	2007/08	12	377	8,292	128,918	41,271	20,972	20,299
	2001/02	6	245	5,292	385	7,103	14,346	7,243
	1996/97	1	NA	NA	NA	NA	NA	NA
	1991/92	6	108	471	233	330	1,548	1,218
Terhathum	2007/08	8	216	5,440	6,877	14,129	6,090	8,039
	2001/02	13	220	2,653	NA	6,062	10,928	4,866
	1996/97	6	100	1,090	590	899	2,582	1,683
	1991/92	5	116	NA	802	1,989	4,782	2,793
S_sabha	2007/08	7	108	35,10	2,845	10,373	5,908	4,465
	2001/02	2	NA	NA	NA	NA	NA	NA
	1996/97	5	47	369	192	634	1,240	600
	1991/92	5	69	NA	34,337	1,057	2,992	1,935

A total of 30 large and medium industries were recorded in 2007, which represents a modest increase, compared to 1975 when there were "… virtually no modern (mechanised) industries" (CEDA, 1975:

568). Compared to the Terai districts of Morang (295) and Sunsari (216) this number is, however, very small, although not surprising as, based on the topography, infrastructure development and closure proximity with the borders of India, industries have historically always been established in the Terai districts.

The majority of the industries within the Koshi Hills are concentrated primarily on textiles (47%), paper products (27%), and food and beverage (20%) (Table 2). With most specializing in products that are chiefly based on local materials[285] and crops that are indigenous to the districts. For example, tea estates are concentrated in Dhankuta district, namely the *Guranse Tea Estate, the Kuwapani Tea Plantation and the Narayani Tea Plantation*. While the industries in Terhathum are focused on producing *Dhaka*, a traditionally handloom woven fabric that is distinctive in its pattern and design. In Sankhuwasabha, the industries are based on *Allo*, fabric woven out of nettle, and handmade paper, while those in Bhojpur are concentrated on paper production (CBS, 2007).

Table 58: Types of Manufacturing Establishments in Koshi Hills in 2007 (CBS, 2007)

Type of manufacturing establishment		No.	No. of persons engaged	Wages, salaries (NRS '000)	Gross fixed assets at end of year (NRs '000)	Value of output (NRs '000)	Value of input (NRs '000)	Total value added (NRs '000)
Dhankuta								
1	Food products and beverage	5	228	5,735	119,898	29,789	14,288	15,501
2	Textiles	5	95	1,001	3,143	2,962	1,082	1,880
3	Structural metal products	1	NA	NA	NA	NA	NA	NA
4	Furniture manufacture	1	NA	NA	NA	NA	NA	NA
Total		12	377	8,292	128,918	4,1271	20,972	20,299
Terhathum								
1	Textiles	7	NA	NA	NA	NA	NA	NA
2	Paper and paper products	1	NA	NA	NA	NA	NA	NA
Total		8	216	5,440	6,877	14,129	6,090	8,039
Sankhuwasabha								
1	Food products and beverage	1	NA	NA	NA	NA	NA	NA
2	Textiles	2	NA	NA	NA	NA	NA	NA
3	Paper and paper products	4	60	2,117	1,164	3,646	1,423	2,223
Total		7	108	3,510	2,845	10,373	5,908	4,465
Bhojpur								
1	Paper and paper Products	3	63	1,632	852	3,753	1,813	1,940
Total		3	63	1,632	852	3,753	1,813	1,940

Overall, these industries employ a small labour force of 450 personnel directly (in 2007) and as such have not been able to absorb any appreciable proportion of the economically active population of the Koshi Hills.

[285] In the case of Allo and Dhaka, wool is imported to mix with the traditional yarns.

With the exception of the tea estates, most are also underdeveloped. Facing constraints in insufficient access to capital; small markets, in size and the purchasing power of consumers; high transportation costs; and growing competitions from imports from India and China (Karki, 2006). Political instability, through frequent strikes and disputes[286] between management and workers, has also contributed towards an unstable environment for growth; which has harmed investment (ibid).

2.13.2 Small[287] Enterprises and Cottage[288]Industries

Small enterprise and cottage industries are widely found within the four study districts; with most acting as a secondary source of income for those who are involved in the sector (CEDA, 1975; Shrestha, 2005).

During the CEDA study in 1975, it was recorded that families were only selling or bartering surplus products during Hāt Bazaars, as the majority were being used for domestic use. Only a few were being produced solely for markets. This scenario has however changed significantly since then with the proliferation of cottage and small enterprises (Table 2) and the commercialization of production (Joshi et al, 1989; Shrestha, 2005). The utilization of family labour has however remained dominant.

By 2011, a total of 1,774 cottage and small industries had been registered with the respective district authorities (Table 59).

Table 59: Number of Small and Cottage Industries Registered with the Department of Cottage and Small Industries (Udyoyik Pravandhan Tathanka 2068 (Industrial Statistics, 2011); Terhathum and Dhankuta KHST Field Visits 2011)

District	2011	2010	2005	2000	1995	1990	1985	1980	1975
Dhankuta	576	424	291	178	91	42	18	9	1
Terhathum	423	329	166	113	70	30	15	8	1
Bhojpur*	309	NA	NA	NA	NA	NA	NA	NA	NA
S_sabha*	466	NA	NA	NA	NA	NA	NA	NA	NA

*Note: *Data for Bhojpur and Sankhuwasabha will be collected from the respective district offices through field visits/district consultations*

Most of the enterprises being based on local traditional skills and culture (Dunsmore, 1987; Joshi et al, 1989; Shrestha, 2005); with the products (handicrafts, etc.) made from locally available materials. For example, the production of *Allo* is primarily carried out by Rai[289] Women of Sankhuwasabha, who are known for weaving it into cloth; while the Limbu women of Terhathum are recognized for their *Dhaka*.

Production is also, especially in the case of handicrafts, textiles and alcohol production, undertaken by women, the majority from Janajati communities (Dunsmore, 1998; Shrestha, 2005).

Table 60 provides the different types of small and cottage enterprises that are carried out within the Koshi Hills.

[286] The most recent being in April 2011, when 40 tea estates throughout the east were closed for 11 days over the need to ensure social security for the workers. According to an article in the Himalayan Times, this led to losses of NRs 200m (Himalayan Times: Tea workers end strike, return to work, www.thehimalayantimes.com/fullNews.php?headline=Tea+workers+end+strike accessed on 23 March 2012).

[287] Small Industries are those that have less than NRs 30 million and employ less than 10 individuals.

[288] The Industrial Enterprise Act of 1992 defines cottage as traditional industries that utilize specific skills or raw materials and resources that are labour intensive and are related to national tradition, art and culture.

[289] According to Barakoti & Sharma (2008:19), *Allo* has traditionally been used by Rai's for household use, religious functions and cultural events (such as marriages).

Table 60: List of Traditional and Cottage Enterprise Activities in the Koshi Hills (Modified from CEDA, 1975)

SN	Description	Domestic consumption	For Market	Producers (caste/ethnicity)
1	Dairy products	✓	✓	All
2	Grain milling	✓		All
3	Beer and spirits	✓	✓	Janajati
4	Spinning and weaving	✓	✓	Janajati
5	Carpets and rugs	✓	✓	Janjati
6	Clothing	✓	✓	Janajati
7	Leather in footwear	✓	✓	Dalit
8	Paper	✓	✓	All
9	Cane/bamboo products	✓	✓	All
10	Drugs and medicine	✓	✓	All
11	Hand tools	✓		Dalit
12	Brass utensils	✓	✓	Janajati

Amongst the activities listed above, handicraft (cane/bamboo products, embroidery) and textiles (*Allo, Dhaka*) have gained in importance in recent years. These activities have been promoted by various programmes/projects (discussed in section 1.2.1) as well as through the private sector. Through these processes, skills have been rejuvenated (Biggs & Lewis, 2009) which along with the increased transportation linkages along with the demand from local, national and international markets has led to the expansion of the sector.

2.13.3 Government Support

Government support to the development of cottage and small industries is undertaken by the Cottage and Small Industry Department. While the issues to be addressed for the development of the sector was included, for the first time, in the Industrial Policy 2002.

Incentives such as exemption from taxes for enterprises that have annual revenues under NRs 2,000,000 (GB£15,500) have been provisioned to encourage the sector. Similarly, cooperatives that tend to comprise of micro-enterprises are subject to tax reduction of up to 15% (ibid). Various exhibitions, regionally and nationally are also organized (particularly in Kathmandu) to promote textiles and handicrafts.

Many however note that micro-enterprises and industries, with small capital, are not well protected by the state against larger enterprises and international competitors, especially since liberalization of trade in the 1980s.

2.13.4 External Donor Supported Programmes

Since the 1980s, there have been two main programmes/projects, which have actively sought to develop cottage industries within the Koshi Hills.

Table 61: Donor Supported Interventions for Cottage Industries in the Koshi Hills (Howell, 1984, AUSAID, 2010)

SN	Programmes/projects	Dates	Costs
1	Cottage industry support, KHARDEP	1980-1985	GB£676,400
2	Micro-enterprise development project	Phase I: 1998-2003 Phase II: 2004-2008 Phase III: 2008-2012	US$5.1m US$6.2m US$14.1m

2.13.4.1 Cottage Industry Development Component of Koshi Hills Area Rural Development Programme (1980-1985)

KHARDEP had a small Cottage Industry Programme, budgeted at GBP 676,400 (7% of total budget), which was focused on increasing off-farm employment and income generating activities (Howell, 1984; Upadhaya, 1984).

The programme had three main areas of focus: (i) provision of raw materials through the establishment of a revolving fund for purchasing of thread; (ii) trainings through the Department of Cottage and Village Industries; and (iii) marketing of the products (Upadhaya, 1984). These activities were carried out through the Department of Village and Cottage Industry in association with the Agriculture Development Bank and the Cottage Industry Emporium (Navarro& McConnell, 1990).

A *Women's Training Centre* was built in Dhankuta and mobile trainings[290]were provided within the KHARDEP working districts[291]in order to enhance the quality and diversify the products. Trainings on fly shuttle weaving, embroidery, pine needle products were conducted. Upadhaya (1984) notes that by 1983, the programme had trained 168 trainees (ibid). A Cottage Industry Emporium in Terhathum was also constructed, as a branch office to the Kathmandu Emporium, in order to market Dhaka products. A project was also initiated to investigate and develop Allo Fibres in Sankhuwasabha and the *Santang Embroidery Club* was set up to promote needle work (Upadhaya, 1984; Nabarro & McConnell, 1990, Dunsmore, 1998).

Assessments conducted in the mid-1980s by various authors point to mixed challenges and successes. Focusing on the production side, Upadhaya (1984) points out that initially the lack of access to formal credit, barred many of the trainees in utilizing the skills that they had acquired. He chiefly criticises the lack of coordination amongst the programme and the financial institutions (Agricultural Bank, Small Farmers Development Programme). He also questioned the motivation behind the trainees; who he argues were chosen by the village Panchayats and were not always participating for the skills, but rather the per diems[292] offered during the trainings. The shortage of skilled trainers was also highlighted as being a hindrance (Dunsmore, 1998).

Howell (1984) meanwhile points out that the marketing of the products represented the "most formidable difficulty". Taking the example of the emporium at Terhathum, he recounts that nor were they only not operating on a commercial basis, as KHARDEP had been providing the funds to the emporium to purchase the products from the producers as well as the salary of the staff; but, that the staff also did not show any interest in the development of the sector. Upadhaya (1984) also supports this view. He notes that one of the main reasons for the low sales were due to the poor quality of the products and the high prices. Providing sales and in-stock figures for the emporium at Kathmandu in 1982/83 he states that only 20% of the value of items purchased by the emporium had been

[290] There were two types of training that were provided: a three month and a one month course on cotton textile weaving (Upadhaya, 1984).

[291] The four hill districts: Bhojpur, Dhankuta, Terhathum and Sankhuwasabha.

[292] For a month training the amounts came up to be NRs 360 at NRs 12 per day. A sizable sum for rural women. This figure would be much more for the 3 months training courses.

recovered[293]; with the majority of the products piling up in storage. Exports were also very low at only NRs 1,466.88 in 1982/83 (ibid).

The literature shows that marketing efforts had been made during the early years through participation in exhibitions and trade fairs in Kathmandu and at the districts (Howell, 1984; Upadhaya, 1984; Dunsmore, 1998). But, in 1980s, the whole handicraft sector was itself underdeveloped, for both local and international markets; with exports dependent on a few expatriates who were making the items known to potential outlets in the UK (Dunsmore, 1998; Biggs & Lewis, 2009).

Dunsmore (1998) also notes that the lack of 'product development' is-a-vis the markets, during the early years of KHARDEP also hampered sales. He points out that initially, the Dhaka cloth produced had designs and colour schemes that did not appeal to the tastes of local demand and were largely failures. But, as soon as more appropriate colour schemes and patterns were introduced, they were popular and sales increased (ibid). This was also in the case of *Allo*, where, in the case of *Allo-tweed* (a new type of cloth developed by mixing *Allo* with wool[294]) there was an immediate positive reaction and sales increased. Dunsmore (1984) further notes that it went on to replace the imported, and more expensive, Harris-Tweeds that were used to make coats.

By the end of KHARDEP, Howell (1984) while acknowledging the success of the *Santang Embroidery Club* in promoting women's development and access to a secondary source of income was sceptical of future support. He pointed out that, from a donor perspective, support to small group activities represented a problem of replication, on a larger scale, as well as the potential of creating over-dependence on the programmes from the groups. As such, when KHDP (the successor of KHARDEP) was launched, it did not have a cottage industry component.

Dunsmore (1998) meanwhile was more optimistic. According to his view, the crafts (textiles, basketry, embroidery) being produced were "… much higher order than simply artisans producing items to meet local needs. Many, particularly the Dhaka weavers are fully capable of competing on the international markets" (1998:27).

He states, "… the cottage industries component (of KHARDEP) probably brought greater benefit to the rural people relative to its cost than any other UK-financed project in Nepal" (1998:22). He identifies three key benefits - the generation of livelihoods, primarily women; the implications for poverty reduction; and the reduced pressure on local resources through the encouragement of soil conservation. The benefits are also realized to be much more nuanced than the directly earned cash incomes from the products. For example, it has been noted that as *Allo* and bamboo can be processed by the collectors[295] (who are often also the weavers), maximum value added takes place at their level and as such they are able to receive better prices (Dunsmore, 1998; Barakoti & Shrestha, 2008).

More significantly, he points out that the programme activities acted as a 'catalyst' for the expansion of the sub-sectors, even after the closure of the programme (in 1985). Recent figures corroborate this assessment. For example, Dhaka production in Terhathum has increased significantly since 1982 when there were approximately only 80 weavers (Upadhaya, 1984). In 2006, the figure had increased considerably to 351 weavers, employed in 27 cottage and small-scale industries (CBS Terhathum Branch Office, 2006). Similarly, the *Allo* initiative that was started by setting up of an *Allo Weavers Cloth Production Club* in Sankhuwasabha (see case study) during KHARDEP in 1986, with the help of the *British Ambassador's Special* Fund, has grown on to have 12,000-15,000[296] members and an income of NRs 14,00,000 (GBP 11,000) by 2011. Pant (2012) points out that this represents a three-fold increase in income over 17 years.

---

[293] At the Cottage Industry Emporium in Kathmandu, the figures for 1982/83: Purchased amount (by emporium): NRs 452,340.29; Sold: NRs 90,586.67 and In-stock: NRs 361,753.62 (Upadhaya, 1984).

[294] This new type of cloth was first initiated by a single weaver, during a KHARDEP workshop in 1984, where she experimented with traditional *Allo* and wool. Later it led to the adoption by others (Dunsmore, 1998).

[295] This is not the case for Dhaka, whereby the thread/yarns need to be imported into the district.

[296] Figures based on personal communications with Allo Weavers Club Staff 2012.

What is noticeable is that the expansion has been driven by the overall development of the handicraft industry in the country, including exports, and the interest and rejuvenation of skills and crafts. As a consequence, over the past years, retail outlets[297]have been successful in marketing the products in both local markets and aboard. One indication is provided by the steady rise in sales figures of the Association of Craft Producers (ACP), one of the larger outlets which purchase handicraft items from the Koshi Hills[298],had sales of NRs 75.8 million (GBP 0.6 m) in 2007/08, with the overseas market making up 68% of the total sales (Biggs & Lewis, 2009).

Allo Cloth Production Club

Allo Cloth Production Club was founded in 1986 in SiSwati, Sankhuwasabha, to train and provide employment opportunities to weavers of *Allo*, the Himalayan giant nettle (*Girardinia diversifolia*) in four neighbouring VDCs of Bala, Sisuwa, Tamku and Mangtewa.

The genesis of this venture began with the involvement of KHARDEP, and in particularly at the initiation of SuziDunsmore and her husband John Dunsmore, an advisor to KHARDEP, in the mid 1980s. A relationship that has continued- though largely on an individual basis- through trainings and marketing initiatives by the couple and later with the support of a Trust established in the memory of John Dunsmore.

Before, generations of Rai women of the region had been harvesting the plant, but with very low returns. It was calculated that on average it required 20 working days to harvest the Allo to make just 3 sacks, which would sell for a total of NRs 60 (a gross return of NRs 3 per day or GBP0.4). The first break through came when a local cotton weaver, began to weave Allo on her four-shaft loom, which had previously only been used for weaving cotton. Later, through workshops supported by KHARDEP, traditional looms were adapted and the skill to weave Allo was spread to other interested weavers.

By the end of 2011, over 12,000 – 15,000 weavers, located within the original VDCs and other expanded areas, were involved in the enterprise; earning up to NRs 15,000 – 20,000 annually (GBP 93- 117).

The efforts of Suzi and John Dunsmore were also further concentrated on marketing of the products. Trainings and workshops were organized between the weavers of Sankhuwasabha and UK to bring about innovations (such as mixing the Allo yarn with other fibres (wool, silk) to create new fibres). Equally important, linkages with outlets in Kathmandu such as ACP (Association of Craft Producers) and abroad, primarily in UK were sought. As such, the club presently has been earning NRs 14, 00,000 (GBP 11,000) from domestic and international consumers in Europe and Japan. Some of the products have even been included in the Museum of Mankind, UK, and an Allo jacket woven in Sankhuwasabha has also been on display in the British Museum.

Equally significant, is the gendered dimension of cottage industries; as production was and continues to be generally undertaken by women, the majority of which are from Janajati communities (Dunsmore, 1998; Shrestha, 2005). According to a study by Siwakoti (2010), women have managed to earn incomes ranging from NRs 1,000-1,200 per week during good seasons to NRs 400 during slag periods. Similarly, members of the Allo Club are reported to earn between NRS 15,000 -20,000[299].

Dunsmore (1998) further points out that by becoming involved in the market economy, many have begun to play active roles in the public sphere and are now in a better position and understanding to take advantage of new opportunities (ibid).

Considering the direct impact on women's incomes and the potential for poverty reduction within the Koshi Hills, Dunsmore (1998) questions why later programmes overlooked the sector. He argues that while the lack of support to the Dhaka industry may not have had affected the expansion of the cloth production, in the case of *Allo* production and embroidery cloth, it has limited its development (ibid); as

[297] KHST communication with the prominent outlets in Kathmandu, primarily Dhukuti, Mahaguthi and Sana Hastakala, it was learnt that all have linkages with producers and cooperatives for products such as Dhaka, embroidery items and Allo products within the Koshi Hills.

[298] KHST communication with ACP director in 2012.

[299] KHST communication with Programme Development Officer of Allo Club.

not all entrepreneurs can invest in product development, provision of labour saving equipment and market identification and entry. This has in turn constrained the growth of the sector. For example, there have been instances when orders have been cancelled and relationships terminate by the retail outlets, when producers were unable to diversify their products[300].

2.13.4.2 Micro-Enterprise Development Programme (1998-2012)

Micro-Enterprise Development Programme (MEDEP) was started in 1998 by the Government of Nepal through the technical and financial support of the United Nations Development Programme (UNDP) and other donors such as DFID, AUSAID and NZAID. Initially, the first phase of the programme was till 2003. But, later it was extended for another two more phases till 2012. Within the Koshi Hills, this programme has been implemented only in Terhathum, during phase I (UNDP & GON, 2006).

Table 62: Salient Features of MEDEP I, II and III (UNDP & GON, 2000, 2006 & 2010)

	Phase I	Phase II	Phase III
Date	1998-2003	2004-2008	2008-2012
Districts	10	25	38
Cost (in US$)	5.1m	6.2m	14.1m

The overall goal of MEDEP was to reduce poverty through the creation and development of micro-enterprises (UNDP & GON, 2000, 2006 &2010). According to programme documents, the activities were to be based on the needs and demand of the markets, coupled with the ability of the micro-entrepreneurs to meet those demands (ibid). The Table 63 below provides a glimpse of the programme and the types of enterprises that have been supported till 2010. Primarily it is seen that that majority of the entrepreneurs were engaged in agriculture and forest products.

Table 63: MEDEP's Cumulative Coverage at the end of Phase II (UNDP & GON, 2010)

Phase	Enterprise category						Total
	Agriculture	Forest	Service	Artisan	Tourism	Others	
Phase I	2,947	818	734	1,064	178	141	5,882
Phase II	10,190	2,878	1,095	2,255	237	340	16,995
Phase III	9,275	4,193	1,020	2,730	373	2,026	19,617
Total	2,2412	7,889	2,849	6,049	788	2,507	42,494

Unlike the KHARDEP component, which focused on the development of certain textiles and handicrafts indigenous to the Koshi Hills, MEDEP's support has been directed towards individual entrepreneurs. The programme has been based on a market led approach; whereby market demands were first identified along with potential entrepreneurs, who were then provided with technical support, trainings (entrepreneurial skills and business management) and services(UNDP & GON 2010). Micro-loans were also provided to start up their businesses.

Assessments conducted in 2010[301], showed that over 32,000 micro-entrepreneurs had been trained; of which 68% were women and 67% were Dalits (UNDP & GON, 2010). One of the main strategies of the programme was to specifically target the 'ultra poor', families having incomes less than NRs 4,000/year, and disadvantaged castes or indigenous nationalities. Within Terhathum, during Phase I, the total number of entrepreneurs was 1,050 (UNDP & GON, 2006).

It was noted that after the programme, the majority of the entrepreneurs achieved a profit or broke even; with the average per capita incomes doubling from NRs 4,495 (US$70) to NRs 18,240 (US$285).

[300] Personal communication with Mahaguthi staff. The retail outlet had stopped orders from the Embroidery Club in Terhathum because they were unable to diversify their products.

[301] The study samples nine districts (Parbat, Nawalparasi, Dhanusa, Pyuthan, Dang, Sindhupalchok, Udaypur, Kavrepalanchok and Kailali).

Within Terhathum, a study highlighted that the majority of the entrepreneurs had been able to increase their per capita incomes by 76-100% (UNDP & GON, 2006). With agriculture providing the highest returns (232%) followed by non-farm activities (140%), forest products (105%) and services (71%) (UNDP & GON, 2010).

Table 64: Average Income and Profit Status of Individual Enterprises (UNDP & GON, 2010)

Respondent categories	Income (NRs)	Expenditure (NRs)	Profit (NRs)	Profit as % of expenditure
Female	74,439	33,524	45,421	135
Male	130,983	67,197	70,569	105
Overall	91,671	44,123	53,029	120
Dalit	92,408	40,647	54,167	133
Janajati	71,085	29,148	45,699	157
Brahmin/Chhetri	90,013	52,106	47,977	92

The evaluation reports for Phase I and II further note that the majority of the income was used for household expenses (41%). While re-investment in the enterprise was 16.5%, followed by purchasing of land (12.2%) and other children education (12%). Savings, on an average of NRs 260 per month was also found to be taking place amongst the MEDEP supported entrepreneurs as compared with those who were non-participants, who had NRS 151 of savings per month.

Interestingly, the reports go onto note that while migration had increased within the project area for both participating and non-participating households, the rate for non-participating households was higher (30.1%) compared to MEDEP supported participants (12.5%). The report goes on to argue that the programme activities may have contributed towards lowering or reducing the probability of migration (UNDP & GON, 2010).

2.13.5 Opportunities and Challenges

Biggs &Messerschmidt (2005) point out that the successes and contribution of 'unintended consequences' often get obscured and ignored by development agencies and professionals who want to attribute 'successes' to externally 'planned' interventions. In the case of cottage industries, what we see is that while remarkable organic growth has taken place, since the initial support provided through KHARDEP in the mid 1980s, the sector has since then, been overlooked by development agencies. Even though the potential for reducing poverty is great; especially for women who are primarily involved in the sector.

Experiences show that many of the innovations made for the improvement of the sector, such as the time and labour saving equipment (e.g. wrapping mill and roller shuttles for Dhaka production[302]); development of patterns and designs (during workshops for Dhaka and *Allo*); communication linkages to allow for rapid responses to market opportunities/challenges[303] and marketing skills[304]; require sophisticated skills and better linkages which are, in most cases, beyond the capacity of individuals and cooperatives. Furthermore, as attested by the failures of early KHARDEP product's unappealing designs, many entrepreneurs would not be in a position to bear such huge risks, which end up limiting the growth of the sector (Dunsmore, 1998; Upadhaya, 1984; UNDP & GON, 2000). This has, according to Dunsmore (1998), been the case for *Allo* products and embroidery cloth, which, he argues, has suffered from the lack of support from development agencies as well as the government.

[302] According to Dunsmore (1998) KHARDEP first introduced one wrapping mills and roller shuttles to a group of weavers in Terhathum, which was later replicated and locally made.

[303] The failure of Nepalese carpet manufacturers to meet international environmental and labour standards (i.e. the use of azo dye and child labour) in importing countries forced many medium and small manufacturers to shut down in the late 1990s (UNTAC, 2000).

[304] The ACP products come with a brief explanatory label, identifying the maker and describing the source and methods used. This recognition to make adds a personal touch, which is a helpful tool in marketing (Biggs, 2009).

Here, the support provided by MEDEP in Terhathum, although significant, cannot be regarded as contributing towards the development of the cottage industry as a whole as their activities are primarily focused on providing trainings to participants to set up their own businesses.

The sector is also threatened by increasing competition from cheaper manufactured products form China and India; where the cost of production is lower (UNTAC, 2000).

Siwakoti (2010) notes that already cheaper Chinese clothing products have already started to replace Dhaka cloth within Terhathum; due to the opening of Nepal's markets and greater access provided by road transport. He points out that while a ladies jacket made in China is available at NRs 200, a similar one made of Dhaka would cost NRs 400-700 (ibid). Though this one example, and it does not necessarily indicated the likely rapid decline of the sector. There is still the potential that without necessary innovations and marketing, it may lead to the sector's decline. As was the case reported in the study conducted by Blaikie et al (2007) in west-central Nepal in the 1970s, where the manufacturing of indigenous metal works/utensils along with leatherworks were eliminated due to the flooding of cheaper products from India (ibid).

Table 65 Industry Support Programmes

Project/programme name	**Cottage Industry Programme of KHARDEP**		
Dates	1980-1985		
Geographical coverage	Dhankuta, Terhathum and Sankhuwasabha		
Sectors covered	Cottage Industry		
Project objectives	Increasing off-farm employment and income generating activities		
Target group(s)	Women		
Donor(s)	British Aid		
Government partner(s)	Department of Cottage and Small Industries		
Total costs	GBP 676,400		
Project/programme name	**Micro-Enterprise Development Programme I , II and III**		
Dates	Phase I: 1998-2003 Phase II: 2004-2008 Phase III: 2008-2012		
Geographical coverage	Phase I: 10 districts Phase II: 25 districts Phase III: 38 districts Eastern Districts: Terhathum, Sunsari, Udaypur		
Sectors covered	Employment promotion		
Project objectives	The improvement of the socio-economic status of low income families by promoting micro-enterprises		
Target group(s)	Low income families		
Donor(s)	Phase I DFID – US$2.8m UNDP – US $1.4m NZAID - US$350,000 AusAid – US$560,000	Phase II Total - US$6.2m	Phase III UNDP – US$7.3m AusAid - US$5.3m CIDA - US$1.2m Himal Power Ltd – US$0.3m
Government partner(s)	Ministry of Industry, Commerce and Supplies Ministry of Finance		
Total costs	Phase I: US$5.1m	Phase II: US$6.2m	Phase III: US$14.1m

2.14 Growth of Commercial Sector

2.14.1 Background

Growth of the commercial sector in the Koshi Hills can be related to various factors, such as internal trade (economic base, dualistic economy structure, network of market towns, transport and communication networks, etc.) and external trade. The latter is greatly affected by its position with respect to neighbouring countries, India and China, and overseas. So, at first a brief description about geographical position of Nepal and then an overview of national trade policy follow.

2.14.2 Nepal's Geographical Position and External Trade

The landlocked position of Nepal together with its preponderant mountain terrain limits its external trade. Nepal shares boundary with India on three sides: west, south and east and with China on the north only. Nepal-India boundary is 1,850km long and its major portion runs over the plains in the south and only small mountainous portion lies in the east (Sikkim and Darjeeling) and in the west, whereas a 1,415km long Nepal-China boundary runs over the rugged high mountain ranges.

With both the neighbour countries, the trade flows are being operated across the border as set by the diplomatic treaties. The 1950 friendship treaty between Nepal and India allowed free and unrestricted movement of people and goods across their border. Several transit points were emerged for trading between the two countries and those along the border in Nepal particularly near the Indian railway heads were developed into towns in the early 20th century. Most of them appear to have emerged as the main trading or gateway centres at the main trade routes leading to the interior part of the hills and mountains. According to the Department of Customs, Nepal there are at present 22 mutually agreed trade routes for trade between Nepal and India and 14 transit points for access to the Kolkata sea port. Nepal has recently established 3 dry ports in Biratnagar, Birganj and Bhairahawa for the transhipment of goods directly through the sea port to overseas and the provision of access has been made to connect the Birganj dry port with Kolkata sea port by railway. Nepal has transit treaty with India only and most of the goods enter into Nepal either from or through India. Trade relations with India are occasionally contentious (Kansakar, 1997).

Diplomatic relation between Nepal and China took place for the first time in 1955 and this allowed the customary movement of people and goods across their border. Owing to rugged terrain, however there are few scattered trading posts on either side of Nepal and China (Tibet). In Nepal they are located in Sankhuwasabha (such as Kuti), Dolakha, Sindhupalchok, Rasuwa, and Humla. Since 1986, the revised Agreement has provided option for identifying areas of movement and establishing exact settlements on either side less than 30 kilometre distance from border.

2.14.3 Review of National Trade Policy

Until the mid-1960s, Nepal's trade did not extend beyond India in the south and Tibet in the north. To expand trade, Nepal adopted export diversification and import substitution strategies during the third five year plan (1965-70). This two-pronged strategy was meant to narrow the trade deficit, promote industrialisation and help diversify the economy. Other policy measures adopted by the government to promote exports include the Dual Exchange Rate System-1977, cash subsidy programme, duty exemption on export commodities, special financial arrangement for production and export, simplification of licensing and customs procedure, and introduction of new industry and trade related acts.

In 1992, a new trade policy was introduced to support the economic liberalisation programme and aimed at promoting internal and international trade, encourage private sector participation, diversify trade in terms of both commodity and destination, promote backward linkages, expand employment oriented trade and reduce trade imbalances.

Nepal's export policy seeks to raise production and quality of exportable products and make them globally competitive. The policy emphasises the need to export high value added products and recognises the need to identify new markets and products. In addition, the policy adopts a range of strategies to promote exports such as removal of license (with some exception), exemption of duty on imported raw materials, exemption of income tax on income from exports, introduction of container service and expansion of bonded warehouse.

Trade is closely linked to industrial activity and vice versa. In Nepal, liberalisation that initiated in 1985 and accelerated after the 1990s sought to modernise the economy and accelerate structural changes by creating an environment appropriate for private sector participation. A new liberal Industrial Policy was formulated in 1992. One of the major objectives of the Industrial Policy of 1992 was to privatise public sector industries. The policy sought to create an open and competitive economy by curtailing government interference in price fixing of industrial goods. In addition, the policy aimed to strengthen linkages between manufacturing and agriculture sectors and promote labour intensive, local resource based, export oriented industries.

However, despite efforts to promote exports and reduce the trade deficit, the trade deficit has been widening over the years and Nepal's export is still concentrated in a few products and destinations. Dependence on a narrow export base not only makes export led growth harder but also makes the economy susceptible to global economic volatility.

In 2004, Nepal gained a member status of the World Trade Organization (WTO). It provides flexibility to least developed countries (LDCs) like Nepal to adopt Trade Related Investment Measures (TRIMS) to provide incentives to industries. The government should therefore promote industrial development by balancing regulations with incentives and by updating the industrial policy as relevant to the current environment. It should also focus on co-ordinated learning and sharing with the private sector to understand the constraints and potentials of different sectors of the economy (Pradhananga, 2007).

2.14.4 Product Specific Policies - Tea

Tea is one the principal export products of eastern Nepal, including the Koshi Hills. The history of tea cultivation in Nepal began with the initiation of establishment of Ilam Tea Estate in Ilam district in 1863 and private sector tea estate in Jhapa (Tarai) in 1959. The Government of Nepal established the Nepal Tea Development Corporation in 1966 to facilitate tea cultivation and trade.[305] Realising the potential of tea production and trade, the government has formulated policies to promote private investment in the sector. In 1982, the government declared 'Tea Zones', comprising five districts, viz Ilam, Panchthar, Jhapa, Dhankuta, and Terhathum of Eastern Nepal. An important policy for the development of tea sector has been the privatisation of state-owned Nepal Tea Development Corporation (NTDC) during the Ninth Plan (1992-1997).

The government's commitment to develop the tea sector was further reinforced by the introduction of the Tea Policy-2000. The policy seeks to develop tea as a reliable source of income, enhance employment opportunities and foreign currency earnings by increasing the production of tea qualitatively and quantitatively.

Despite government efforts to promote the sector, tea cultivation still faces various policy constraints. An important constraint is the unavailability of cultivable land. During the Eighth National Plan, exemption of land ceiling in the eastern hills for tea production was planned but it has not been implemented yet. The land ceiling is too low to derive economies of scale and the process to obtain extra land has to pass through complicated bureaucratic hassles and approval of the cabinet.

2.14.5 Trade Institutions

In Nepal, the marketing system for local products has long been carried out mainly by the private sector. Only since the 1960s, has agricultural marketing important enough in the national development for the country to initiate its first public intervention in agricultural marketing by creating a number of public sector institutions (Pathak, 1989). Nonetheless, all the public sector institutions to date concern basically with the promotion of cash crops including jute, tea and sugar. Moreover, the procurement of farm products handled by all these institutions seems to be relatively small in volume. The main

[305] The climatic conditions are suitable for Orthodox tea and CTC (Crush-Tear-Curl) in the in eastern hills and Tarai respectively. By 2008/09, the total area under tea plantation was estimated at 16,700 ha and 16,200,000kg production and employed 40 thousand people. There are 140 registered private tea estates, contributing 85% of the total production of both orthodox and CTC Tea. There are 40 private tea processing factories.

problems for the procurement of farm products are associated with the lack of procurement outlets at the grassroots level and extremely limited funds (Pathak, 1989).

Institutions like the Food and Agricultural Marketing Services and Trade Promotion Centre have also been established to facilitate marketing systems and export promotion. In addition, Cooperatives or *Sajhas* and the Agricultural Inputs Corporation have been set up to provide agricultural input services to farmers through their service outlet centres all over the country. The latter two institutions, the Sajhas in particular, are also being encouraged to participate in agricultural marketing besides provide inputs.

Improvements in the agricultural marketing system have occurred in the country in the last three decades. Particularly, the opening of highways and roads has greatly influenced the internal agricultural marketing system and integrated markets in both Tarai and Hills. Furthermore, the construction of airfields in the Hills and the Mountain has facilitated the movement of certain farm products, especially apple and orange, to the major markets.

However, organized markets are located mainly in the Tarai where marketable surplus is available. But integration of the Tarai markets with the markets in the border areas of India is more pronounced than their linkages with each other or with the markets in the Hills. Consequently, agricultural prices in the Tarai are heavily influenced by price movements in the Indian border markets.

As in other parts of the country, there are two levels of agencies to deal with the trading activities or marketing in the Koshi Hills. At the central level is the Federation of Nepal Chambers of Commerce and Industry (FNCCI) – an association of private sector. Each district has a Chamber of Commerce and Industry (CCI). The CCI facilitates services for marketing systems and channels such as provision of infrastructure, market information and documentation, etc. In addition, other organizations such as district development committees, municipalities, VDCs, NGOs related to commerce and trade, local business associations, and community organizations also provide support to promote marketing systems for local products.

Elsewhere in other countries, new marketing linkages between agribusiness, large retailers and farmers are gradually being developed for instance through contract farming, group marketing and other forms of collective action (Markelova & Meinzen-Dick, 2007). Donors and NGOs are paying increasing attention to ways of promoting direct linkages between farmers and buyers (Shepherd, 2007). Nevertheless, “spot” markets continue to be important for many years, necessitating attention to infrastructure improvement for retail and wholesale markets. Throughout Nepal, various users’ groups associated with the local agricultural products such as milk, vegetables, retail outlets association, wholesale markets association, etc have been emerged in the recent decades for facilitating marketing services to the producers and sellers. They appear to be very effective in promoting internal marketing systems, but the main hurdle they are still facing is the lack of marketing infrastructure such as limited market places, storage, access roads, price and market information network, etc (Pathak 1989; Pradhan 1994).

2.14.6 Historical Pattern of Trade in the Koshi Hills

Throughout the hills and mountains, including the Koshi Hills historical records indicate that an acceleration of trading centres and internal trade appears to have occurred during the late 18th century due to spread of the Newar traders and small manufacturers westwards and eastwards from the Kathmandu valley. They concentrated on settlements developed particularly at the commercial strategic and break of bulk points along the traditional trans-Himalayan trade routes in the Hills (Blaikie et al 1976). Some of the traditional hill towns were Tansen, Pokhara and Bandipur in the west, ***Chainpur*** and ***Dhankuta*** in the east and Silgadi in the far west. They continued to act as a major long distance trading posts. These small urban centres as they grew began to act as local market centres and also to produce their own goods. In 1991, the Newar population accounted for 3% in Terhathum ranged to 9% in Bhojpur. However, inter-regional trade within the country was inhibited by the lack of markets for the products of one region in the other. The most conspicuous example provided by the Hill and the Tarai. Indeed, there was no intercourse in trade between the two regions mainly due to the fact that there was almost nothing to exchange.

The trade between Tibet and Hill region was created due to their specialised pattern of production. The inhabitants of Tibet could not grow sufficient food because of inclement weather and poor soil, but had numerous salt lakes. On the other hand, the Hill region of Nepal raised large quantities of food grains, but lacked sources of salt supply and so had to exchange their food grains with Tibetan salt

(Regmi 1988). This situation led to the development of centres at the favourable location in the northern Himalayan region for transit trade between Hill region and Tibet (Fürer-Haimendorf, 1975). Throughout the Himalayan region the trade comprises the flow of forest based raw materials from northern high altitudes and of the agricultural based products from the hills to the Indian plains in the south. The marketable products pass through several marketing channels and trading towns located along the long-established traditional trade routes between Tibet and India.

Throughout the historic times, the trans-Himalayan trade through the Koshi Hills was centred on the village of Olangchung on the upper reaches of the Tamur River. Its proximity to the relatively accessible Tipta Pass allowed Olangchung to act as an entrepôt for the trade between Tibet and East Nepal. Salt and wool, brought by yak caravans from Tibet were transferred onto the backs of porters for the onward journey to Nepal. Goods from the south included grain, textiles and sugar. According to Fürer-Haimendorf (1975), many of Olangchung's men were prosperous long distance traders with strong business connections along the route through Dhankuta, Dharan, and Biratnagar, and sometimes as far as Kolkata, Delhi and Mumbai. Since the 1950s, however, Olangchung's fortunes have collapsed, partly due to political events that restricted trade with Tibet, but also due to a landslide that destroyed many of the houses.

In 1972, Olangchung's families moved to Hile, north of Dhankuta and formed a new settlement there and continued to live entirely on trade in cloth and other consumer goods. Since the last few years, two of the most important commodities traded through Hile have been *Chiraita* and cardamom (Furer-Haimendorf, 1975).

In the Tarai, trade between Nepal and India was conducted through a number of market towns, which were locally known as *Gola*, a grain, or salt store dealing with wholesale trade in the east, *Gallas* in the west and *Mandis* in the far west. Lying between Chure Hills and Tarai located at strategic points on the main trade routes leading from the Hill and Himalayan regions to the southern plain, these were essentially centres for transit goods. India was the market for a wide variety of products like musk, hawks and horses from the Himalayan region and cotton, cardamom, medical herbs and metal goods of the Hill region of Nepal. Likewise agricultural and forest products including food grains, pulses, oilseeds and timber of Tarai region were exported to India. In turn, kerosene oil and manufactured goods from India were imported into Nepal. The extension of the Indian railway network north to the borders of Nepal around the turn of the century resulted in the growth of many trading centres for the export of local grain surpluses and timber using the rail heads at border towns of northern India (Blaikie *et al* op. cit).

Studies indicate that there are essentially three tiers in the marketing system across the country. At the village level are primary markets where collecting agents and small traders operate; secondary markets including periodic markets and permanent markets at various locations, where wholesalers, agents and processors operate; and final market which controlled mainly by the big processors and traders/exporters. Like in other parts of the country, the construction of highways and roads in the Koshi Hills in the 1980s has brought about change not only in the existing traditional pattern of marketing system which was operated by intermediaries, itinerant traders and temporary (seasonal) markets, but also extended its marketing linkage with both the Hill and Tarai markets (Pathak, 1989).

2.14.7 Change in Commercial Sector

The economy of the Koshi Hills is primarily on agriculture-based, which is reflected through the employment structure. Growth in the commercial sector can be described in terms of change in the employment pattern and trend in the sector itself of the Koshi Hills by year.

Table 66: Trend of Changes in the Employed Population (%) in the Commercial Sector

Areas	1971	1981	1991	2001
Bhojpur	0.3	0.4	0.7	4.4
Dhankuta	0.6	1.6	2.1	14.4
Sankhuwasabha	0.3	0.5	1.4	8.3
Terhathum	0.1	0.4	1.9	5.1
Ilam	0.7	1.3	2.2	8.6

Areas	1971	1981	1991	2001
Khotang	0.2	0.2	0.8	4.1
Koshi Tarai	4.1	3.9	6.7	13.5
Country	1.3	1.6	3.5	9.9

Table 66 indicates that the proportion of the economically active population contributed by the commercial sector to the employment is very low and insignificant, though it has been gradually increased. For instance in 1971, the employed proportion of the gainful population by the commercial sector in all four districts of the Koshi Hills was below 1%. Among the districts, Dhankuta has shown relatively better position in this sector in terms of employment in the following years. It has shown over 14% in 2001, the largest among the study hill districts, or larger than that of the Koshi Tarai and the national average. Next is Sankhuwasabha. In both districts, diversified economic activities other than primary production sector appear to be seen due to Dhankuta as regional headquarters and tourism industry in Sankhuwasabha.

Among the households with non-farm small enterprises, trading business is second important economic activity, after service sector in the Koshi Hills, as well as in other study districts (Table 2). In other words, small and petty commercial activities, primarily non-formal sector appears to have dominated in the business activity, and naturally handling and operating of trade flow also will be small. Other economic activities such as manufacturing and transport that also support to the growth and development of commercial activities share the low proportion, among the type of activities listed in Table 2.

Table 67: Distribution of Households with Non-farm Small Enterprises by Type, 2001 (CBS, 2001)

Areas	HHs with activities	Percent share by type of small scale enterprise sector				
		Trade/business	Manufacturing	Transport	Services	Others
Bhojpur	4,805	22.2	15.7	0.1	46.3	15.7
Dhankuta	5,055	32.1	7.1	0.5	34.4	25.9
Sankhuwasabha	5,134	28.5	24.3	1.2	31.2	14.8
Terhathum	3,459	19.6	10.5	0.5	46.8	22.7
Koshi Hills	18,453	26.2	14.8	0.6	38.9	19.5
Morang	49,906	25.1	7.0	3.1	34.1	30.7
Sunsari	42,041	26.2	3.1	3.6	36.2	31.0
Koshi Tarai	91,947	25.6	5.2	3.3	35.0	30.9
Ilam	8,746	28.3	8.0	2.6	33.7	27.5
Khotang	4,000	24.2	9.8	0.1	46.5	19.5

2.14.8 Towns and Market Centres in the Koshi Hills

Commercial activities including trade flows and marketing of local products depend largely on the distribution, number and size of market towns or centres in the rural region. Like the country, the Koshi Hills is a poorly urbanised region.[306] There are two urban areas, *viz* Dhankuta and Khandbari in the

[306] Nepal is one of the least urbanised countries in the world. In the 2011 census, just over 17% of the population lived in its 58 municipal towns, defined as settlements with a population of at least 10,000 for the hills and mountains and 20,000 for the Tarai. In the last census, urban growth rate has shown 3.4%, declined

Koshi Hills[307], out of the total 6 of the Koshi zone. Having around 20,000 people, both are comparably smaller and relatively new urban areas or tertiary gateway centres in the hill and mountains. Dhankuta acquired municipal status in 1978, whereas Khandbari acquired it in 1997 (Table 3). In 2008, their urban population was estimated to be 23,595 and 24,182 respectively (ISRC, 2008). The major urban concentration is in the Koshi Tarai, where two older cities and economic centres of Biratnagar and Dharan—both acquired municipal status in 1962 together account for 70% of total urban population of Koshi zone and hinterlands of both centres are agriculturally productive. Biratnagar is an important traditional manufacturing cum trading centre, as well as primary gateway centre, which is nearness to the railhead in the Indian border and has air connection to Kathmandu and eastern hills and mountains. Most of the manufacturing activities have moved to the Itahari road corridor that connects east-west highway, but manufacturing base seems to have stagnated over the years and likewise trade and services seem to have unexpanded. But the population grew from 8,000 in 1952 to 45,000 in 1971 and 166,700 in 2001. Dharan is also a well-established secondary gateway centre at the foothill location and has road connection to the east-west highway—a segment of Dharan-Itahari road corridor. It has grown from 530 people in 1952 census to 20,500 in 1971 and 95,332 in 2001. This is a rapidly growing centre for services and trade with little manufacturing.

Table 68: Urban Areas and their Growth and Density, Koshi Hills

Municipalities	Est. year	Urban population			Growth rates		Areakm²	Density per km²
		1981	1991	2001	1981-91	1991-01		
Dhankuta	1978	13,836	17,073	20,668	2.12	1.93	48	429
Khandbari	1997	17,115	18,756	21,789	0.92	1.51	91	239
Biratnagar	1962	93,544	129,388	166,674	3.30	2.56	58	2,850
Dharan	1962	42,146	66,457	95,332	4.66	3.67	103	922
Ilam	1982	9,773	13,197	16,237	3.05	2.09	27	610
Inaruwa	1986	12,000	18,547	23,200	4.45	2.26	22	1,038
Itahari	1997	20,037	26,824	41,210	2.96	4.39	42	973

Notes: Est. Year = municipality established date, Area = municipality area; density = urban persons; the national urban density is 985 persons/km²; total urban area = 3,276km²

The Koshi Hills towns are predominantly based on the agricultural economy. According to the 2001 census, only about 13 and 6% of the total population of 10 years of age and over of Dhankuta and Khandbari were engaged in commercial sector such as wholesale and retail trade, but their 54 and 67% of economically active population were engaged in the agriculture and forestry sector.

Further, market towns locally known as *bazaars* dispersing widely over the Koshi Hills have a significant role in facilitating marketing service of the local products. Though no data about it are readily available, our observation shows that they also act as places for agro-processing mills or small-scale industries, community and production services, transport service, etc. The trail map prepared by Helvetas (2003) provides a total of 135 market settlements to the region as a whole (Table 4). They combine all settlements from one to five levels, as well as two district headquarters towns of Dhankuta

from 6.65% in 2001 (CBS 2003). This was, however, higher than national growth rate of 1.40% and rural growth rate of 1.03%.

[307] Recently two additional towns, viz Bhojpur and Myanglung, have been declared as urban areas, but not yet incorporated into municipal status.

and Khandbari. Those associated with level six are virtually dependent settlements or mostly having a few or any service centre functions are not considered in the total.[308]

It is quite interesting to note that the settlements are distributed quite unevenly, as is evident from Table 4. The density of market towns ranges from five per every 100km² in Terhathum to nearly one per 100km² in Sankhuwasabha, or in other words roughly 20km² to every market town in Terhathum and over 100km² to a town in Sankhuwasabha. The density measure in terms of population size ranges from 3.3 per 10,000 persons for Terhathum to 1.7 per 10,000 persons for Sankhuwasabha. This means that the density of market towns providing essential services including marketing is relatively better in Terhathum than in other three districts.

Table 69: Distribution of Rural Market Settlements, Koshi Hills

District	Total (1-5 levels)	Total area km²	Density/ 100km²	Population 2011	Density/ 10,000 persons
Bhojpur	45	1,507	3.0	183,918	2.4
Dhankuta	29	891	3.3	164,133	1.8
Sankhuwasabha	27	3,480	0.8	159,649	1.7
Terhathum	34	679	5.0	101,709	3.3
Total	135	6,557	2.1	609,409	2.2

The settlements order can also be related to the classes of population size (CBS 2)001).[309] There are two settlements of the first order with population of 20,000-29,999 and 16 settlements combining second and third orders. There are 23 settlements belonging to the 4th order and the same number to the CBS's settlement class size of 5,000-9,999. The number of settlements of population below 5,000 is 140, as compared to 96 settlements with 5th order in the trail map. About 70% of the total population are found in the elevation zone between 1,000 and 2,000 m.

Furthermore, in addition to the urban areas and market towns, commercial activities in the Koshi Hills are operated through a network of rural market centres or periodic markets or *hāts,* which appear to be essential to the articulation of agricultural societies. They indeed act as complement to the market towns for operation of the commercial activities. *Hāts* are usually the places for marketing of rural produce and household goods (Pradhan, 2004). Besides trading as a primary function, the *hāts* are to stimulus to act as integrated regional market network systems for rural development.

Network of rural market centres is a result of process evolved through time and space and crucial to describe the flows of marketable goods between the centres, as well as between centres and producing places or villages. The distribution of *hāts* exhibits a spatio-temporal pattern across the Koshi Hills (Table 70). While spatial pattern refers to the location of *Hāts* being held at different places, temporal pattern refers to the *Hāts* being held on different days of a week. The spatio-temporal synchronization is a relationship between temporal and locational spacing of the *Hāts* within the region. All these features reflect the internal marketing systems of local products and regional integration, which change due to roads and transports, commercialisation of agricultural production, population density and so on. It is also interesting to note that *Hāts* have persistently existed, but rather increased in number and some of them have transformed into permanent towns, for instance *Mangalbare, Budhabare*, etc. Reasons of the preferred Hāt days for trading are yet to ascertain. However, below is the description of the magnitude of trade flows of the merchandise goods.

Table 70: Distribution of Hāt Bazaars by day and frequency, Koshi Hills (Marketing Development Division (2002). Agricultural Market and Hāt Bazaar Study (2056/57), Kathmandu: Department of Agriculture, Ministry of Agriculture and Cooperative; DDC

[308] The definition of the market towns used here can be comparable with that of Lalitpur hill district of the Kathmandu Valley, which has total of 46 market centres of different sizes (Pradhan, 1997).

[309] There are 135 settlements of all levels from 1-5 and 284 settlements including level six in the trail map, while 165 settlements with five classes in terms of size according to the population census 2001.

Dhankuta (2010). District Profile of Dhankuta, Dhankuta: District Development Committee Office (DDC)

Districts	Once in a week							Others	No. of places	*Hāts*/ 100km²
	Sun	Mon	Tue	Wed	Thu	Fri	Sat			
Bhojpur	-	2	-	1	1	1	3	12[1]	20	1.3
Dhankuta	2	2	1	7	2	3	3	1[2]	21	2.5
Sankhuwasabha	-	2	-	1	3	4	2	1[2]	13	0.4
Terhathum	-	2	2	-	1	3	2	2[2]	12	1.8
KH total	2	8	3	9	7	11	10	16	66	1.0
Morang	16	28	34	14	18	24	17	40[3]	191	8.5
Sunsari	7	8	7	11	10	10	12	23	88	5.2
Ilam	3	2	1	3	2	1	-	4[4]	16	0.9
Khotang	-	1	-	2	1	1	3	2[2]	10	0.6
Sub total	26	39	42	30	31	36	32	9	245	3.9
Total	28	47	45	39	38	47	42	78	364	2.4

Notes: Eight districts, comprising six of Koshi zone plus one each of Ilam and Khotang districts account for 51% of the total 451 Hāt Bazaars of the entire 16 districts of the eastern region.

[1]Fortnightly - Aunsi and Purne, Saptami, Tritiya, Nawami, Astami, Dashami, Panchami, 1 Hāt 2/week

[2]Forthnightly – Aunsi and Purne

[3]Not mentioned days and in Morang: daily 2 at places, 2/week at 34 places; in Sunsari: 2/week at 20 places; 3/week at 1 place; 4/week at 2 places

[4]Fortnightly - every Nawami, Panchami and 2/week at 1 place

2.14.9 Marketing of Local Products

Local products as merchandise goods enter into trading through different marketing systems or agents as shown in Table 6. They include in order of importance of volume cash crops, fresh vegetables, fruits, spices, pulses and beans, fishes, and other non-agricultural products. It is estimated that the total quantity of those goods operated through Hāts was 315,975 metric tons and likewise though retail outlets was 105,401 metric tons and accordingly total Nepalese Rupees (in thousands) through these two marketing agents were 12,073,025 and 3,802,542 in the country in 2010. Of these, Hāts is by far the most important marketing agent in terms of volume of trade (Table 6). The Hāts of the eastern region has shared 61.4% among the total trade being operated through Hāts in the country. This gives an average trading per hāt bazaar per year for the eastern region is 430 metric tons, or Rs 17,351,514.

Table 71: Percentile Share of Estimated Trade Volume of Agricultural Products by Eastern Region Through Different Forms of Marketing Systems

Types of marketing agents	Quantity (m. ton)	Value (Rs)
Hāts	61.4	64.8
Retail outlets	14.8	14.9
Wholesale outlets	30.0	30.7
Agriculture collection centres	26.4	25.9

Table 72 exhibits major products being exported through Dharan to Indian towns. In terms of volume of trade and value of money, ginger is by far the largest local commodity. Next exported items include cabbage, orange and so on.

Table 72: Export of Agricultural Products with Over Three Million Rupees by Wholesale Markets Through Dharan to Jogbani and Silgudhi (2010)

Products	Metric tons	%	Rs (00000)	%
Tejpat	1,794.0	14.9	215.0	5.2
Ginger	6,620.4	54.8	3,045.4	74.2
Tomato	688.0	5.7	206.4	5.0
Cabbage	1,895.0	15.7	227.4	5.5
Akabare	25.0	0.2	45.0	1.1
Orange	675.0	5.6	283.5	6.9
Amriso	375.0	3.1	82.5	2.0
Total	12,072.4	100.0	4,105.2	100.0

Major local products entered into trade include tea[310], cardamom, ginger and *Amriso* (grass broom), etc.[311] According to the Nepal Cardamom Traders Association, 10,000 tons of cardamom worth Rs 70 million is exported from the eastern region through India, Pakistan and the Gulf. Available source shows that Terhathum exported cardamom of 290 metric tons in the last year. In the year 2011, the rate was Rs 50,000 per 40 kg of cardamom and prices have been rising every year. Large cardamom farming has increased by 3% in cultivation area per annum while production increased by 10.2% annually. There has been increased in the sale for instance large cardamom with worth Rs 2 billion recorded in this fiscal year 2011/12 compared to Rs 1.17 billion last year (The Himalayan Times, Monday 12 March 2012). Nepal is one of the largest cardamom exporters with its market share being close to 50% of the global market. India, Singapore and UAE are the largest markets for Nepali cardamom. India alone imports 80% of Nepali cardamom.

There is yet limited market access to cardamom farmers and they have to spend a lot of money in transporting the cardamom to collection depots that now are located only in Fikkal (Panchthar), Dharan and Birtamod. There is a need for efficient collection measures so that farmers can get maximum returns for their products without losing out on higher commissions to middlemen.

Likewise, according to the Broom Traders Association, almost 13 tons of *Amriso* worth 1.15 billion are exported every year and according to the Ginger Producers and Traders Association, 95% of the 13 tons of ginger produced is being exported to India.

Table 8 exhibits as an example of the local products of vegetables in trade through six major market places including Sindhuwa, Belhara and others (Dandabazaar, Rambazaar, Rajarani bazaar, Bhedetar, etc.) of Dhankuta. According to the Table 6 data, tomato, cabbage, and potato are the three most important local products in terms of trade volume and income generation. In addition, one study report (Shrestha 2008) reveals that there were altogether 630 trading units (commercial, catering, etc) directly and indirectly involved in collection, supplying, packaging activities and that there were seven cooperatives to facilitate activities for milk products, such as fresh fluid milk collection, chilling and processing in Dhankuta town.

[310] Both the plantation area and production of tea has been increased from 3,502 ha and 2,905,942kg in 1996/97 to 16,718 ha and 16,208,127kg respectively in 2008/09 in the eastern Nepal (TPC 2011).

[311] KH region also produces other crops such as rice, maize, wheat, millet, but there are production for export.

Table 73: Trade Volume of Vegetable Products, Dhankuta, 2010

Products	Metric tons	Percentage	Rs (00000)	Percentage
Cabbage	2,700.0	27.7	270.0	18.6
Cauliflower	1,200.0	12.3	180.0	12.4
Tomato	3,450.0	35.4	613.5	42.2
Potato	2,200.0	22.6	330.0	22.7
Ginger	200.0	2.1	60.0	4.1
Total	9,750.0	100.0	1,453.5	100.0

Terhathum, another district of the Koshi Hills traded agricultural products worth NRs 784,377,000 in 2006, of which vegetables accounted for approximately 14%, potato 18.4%, fruits 3.3% and spices (ginger and cardamom) 11.3%. It exports 2,500 litres of fluid milk to Biratnagar daily.

According to the Commercial Agricultural Development Project (CAPD) that has been implemented in Terhathum and Dhankuta, Ilam, Morang, and Sunsari, and 6 other districts of the eastern development region, an estimated of 140 tonnes of *Chiraita* passed through the Hile-Basantpur roadhead during the 1992-93 trading season. With price of NRs 100/kg, the total turnover was NRs 14 million. With a catchment population of 85,000 households, the annual Chiraita harvest provides an average of NRs 165 per household, or 5% of the average gross income of NRs 3,000 per household (KMTNC, 1991). According to traders in Hile and Basantpur, the most important commodities leaving the Koshi Hills are *Chiraita* and large cardamom (*Amomum subulatum*). *Chiraita* comprises around 75% of the total cash value and 60% of the total volume of trade from the Koshi Hills. In 1991-92, the high value crops such as cardamom and others (Chiraita, kutki, jatamansi, and bikh), being traded through Hile and Basantpur were 424 tons/year and worth of Rs 39,180,000.

2.14.10 Issues and Questions

The commercial sector in the Koshi Hills is dependent primarily on its preponderant agriculture-based economy. The growth of commercial sector is very low, though it has increased from mere 1 to 14% in the past 30 years. Major local products entered into trade include ginger, cardamom, cabbage, *Amriso,* potato, orange, tea, and so on and their volume in the trade has increased gradually in the recent years.

In the Koshi Hills, trade flows of local products have operated through four types of marketing institutions such as Hāts, Retail Outlets, Wholesale Outlets, and Agriculture Collection Centres and of these, the network of Hāts is by far the most important marketing institution in terms of volume of trade flow and value for money. This is purely the reflection of agrarian economic system, because urbanisation is very low with mere 7%, half of the national urban population. Social and economic dualism in the shape of formal and informal sectors exists with a formal sector – or upper circuit – consisting of government officials and non-local large traders. The informal sector or lower circuit includes small-scale, family-run handicrafts, petty traders, and service establishments which dominate the economy.

The marketing system is not efficient. Experiences in developing countries reveal that unless the development process is accompanied by proper functioning of the marketing system, modernisation of the agricultural sector is apt to bring about fruitless results. The underutilised of scarce production resources, low level of production, low prices of farm commodities and high cost of marketing - all are largely attributed to inefficient marketing systems (APO, 1989). Accessibility is an important factor in marketing. It is a question not only of distance between producing areas and market places, but also of the available means of transport (Beaujeu-Garnier and Delobez, 1979). The transportation network, the most important infrastructure for the development of integrated marketing system in the Koshi Hills is extremely limited which is the major constraint for commercial production of agricultural crops. There is a great scope of agricultural products both in domestic and international market. Some improvement has occurred in the commercialisation of agriculture, particularly in vegetables and high value crops

such as cardamom, tea and so on which have already entered into trade, due to the building of Koshi highway and feeder roads and agriculture improvement programme since the early 1980s.

Network of market places facilitates local farmers to allow marketing their produce efficiently. Usually two conditions exist in the market flow in the poor regions like the Koshi Hills (Plattner, 1975). First, if there is one-way movement of local produce in a flow system, i.e. from local to higher level centres, this means that foodstuffs from one rural market cannot reach any other rural market. Under such circumstances all farmers are under pressure to grow a little of everything. The second condition is that, if produce grown in one part of the region reaches many markets, then local farmers can better their economic lot by raising specialised cash crops. In both cases, however road network is essential to facilitate the movements. In the first type of marketing system, the flow of agricultural products begins in a network of low-level bulking centres and moves upward through a hierarchy of markets to a central place for consumption, for export or for both. Paralleling this upward flow is a downward flow of imported manufactures. There is, however, no horizontal flow of farm produce between the different agricultural centres with more or less the same size in the region. This can be exemplified by the poorly developed road network in the Koshi Hills, where only basically four district headquarters have transportation link by feeder roads, and from these centres some local roads mostly now of earthen are emanated towards linking few major villages in the region (see road and transport sector). For instance, Bhojpur town only, which is linked by an earth road with Hile (Dhankuta), has now local roads being linked with other village centres such as Dingla, Chyandada and Ghodetar within the district and likewise Dhankuta town is linked with Hile and Sindhuwa and other centres such as Bhedetar and several villages locating in the interior parts of Dhankuta district. But these small rural centres are not linked between themselves by roads. The same situation also exists in other two districts of the Koshi Hills.

In such a system whatever underdevelopment may already exist in the region will be perpetuated. Farmers cannot specialise lest they gamble their survival on a market system that is not structured to deliver the food they need. Artisans cannot become manufacturers, not only because the goods imported from more developed nations abroad are likely to be cheaper and better made than the local products (Plattner, 1975). Thus, it is that national or regional development requires a free and vigorous system of internal exchange and that such exchange should be facilitated by an articulated hierarchical network of central place markets. As for external exchange, particularly exchange with more developed nations: China and India, Nepal requires finding that judicious restriction is a better option.

Local level market information system is crucial to improve the collection and dissemination of information on market demands and prices. Such system has been tried successfully for the marketing of social forestry products in the Philippines (Hammett, 1992). An informal system already exists in the Koshi Hills on account of the continual passage of porters and farmers or petty traders to and from roadheads, bazaars and villages. Also, the most important market information concerns the seasonal fluctuations in price.

Our inquiries therefore should concern with: (i) local and regional market information system, and (ii) trade is somewhat established, but the information is lacked about the evolution and roles of cooperatives in the Koshi Hills.

2.15 Institutional Development

Simply, governance refers to the *traditions and institutions* by which authority in a country is exercised (Huther and Shah 1996 cited in Zhuang et al, 2010). Good governance is essential to gain beneficial effects on the physical, social and environmental structures within the judicial administrative areas (Adhikari et. al, 2003; ESCAP, 2004). This requires that local government units should have adequate qualified human and financial resources for improving capabilities on organizational development, mobilisation and utilisation of financial resource, enhancement of planning and implementation capabilities for infrastructure development and service delivery and transfer of responsibility and authority to the local bodies. Huther and Shah (1996 cited in Zhuang et al, *op.cit*) argue that three of the most widely used set of governance indicators to measure are: (i) the process by which those in authority are selected, monitored and replaced; (ii) the capacity of the government to effectively formulate and implement sound policies and provide public services; and (iii) the respect of citizens and the state for the institutions that govern economic and social interactions among them. They further argue that improving governance in these dimensions can be used as potential entry points of development strategies for many developing countries.

The essentiality of good governance and institutions has been a key focus in development policy measures in recent years. Literature available reveals that the intrinsic value of good governance and institutions is now universally accepted as ends of development in their own right, but their instrumental value as a means toward better growth performance and more equal income distribution, especially for institutionally weaker and developing countries like Nepal is still not well understood (Rodrik, 2008 cited in Zhuang et al, 2010).

Since the restoration of democracy in 1991, numerous government ministries and departments, local government agencies, NGOs, donors, and private sector have all contributed in some way to the development of different sectors in Nepal. During the insurgency period (1996-2006), the upheavals in Nepal's political landscape however dramatically curtailed delivery of the development activities to the extent that only some local government agencies in relatively more accessible districts and a handful of selected civil society organizations (CSOs) were able to continue implementing basic government services in a relatively small number of rural areas (Ockelford and Shrestha, 2002). Only after the peace agreement between the Government and the Maoist in November 2006, began gradually the normality of the works of all development agencies across the country, though most of the works concentrated on the rehabilitation of the damaged infrastructure and facilities caused by the insurgency.

In these contexts, below is a description of the network of organizations and governance in Nepal, followed by the Koshi Hills, but first begins with the political and administrative settings in the country.

2.15.1 Political and Administrative Structure

Administratively, Nepal has largest development regions.[312] Below the regions are districts, the main areal unit for local level planning and development. Districts in turn are divided into municipalities and villages. Municipalities and villages are divided into wards, the smallest administrative unit, with municipalities containing nine to 35 wards and villages nine wards, depending on population, geographical coverage, level of services and income. Municipalities and villages are legally distinguished by population. Municipalities must have a minimum population of 20,000 for the Tarai and 10,000 for the mountain and hill. They further have been categorised into three levels, *viz* metropolis sub-metropolis, and municipality, based on local population, source of income and availability of physical and social utilities. Thus, Nepal now has a total of five development regions, 75 districts, 58 municipalities, 3,915 villages, and 36,050 wards. The DDCs and their VDCs are classified into two groups such as complete marginalised and partially marginalised. There are 22 such marginalised districts across the mountains and hills of country and Sankhuwasabha district with its 13 out of the total 36 VDCs belong to partially remote district (MLD 1997).

At the central level are the elected representatives that constitute the parliament – the legislative body whereas at the local level, the districts, municipalities and VDCs are the administrative-political units for which the representatives will be fulfilled through direct election by the people.

There is a two-tier system of government agencies at the local level. The District Development Committee (DDC) is the higher tier and within the district are the Village Development Committee (VDC) and the Municipality as the lower tier. All districts have VDCs, but only 45 districts now do have those 58 municipalities. Municipality is an urban focused local body while the VDC is rural focused.

2.15.2 Political and Administrative Structure

The network of government institutions in Nepal through which formulation and implementation of policies and programmes and decision making of the development efforts and service delivery take place can be divided into two major groups. There are also other organizations to support to the government agencies in their activities.

[312] There are 14 zones in between the region and district, which now are mostly dysfunction for government service administration except for some services like health, etc.

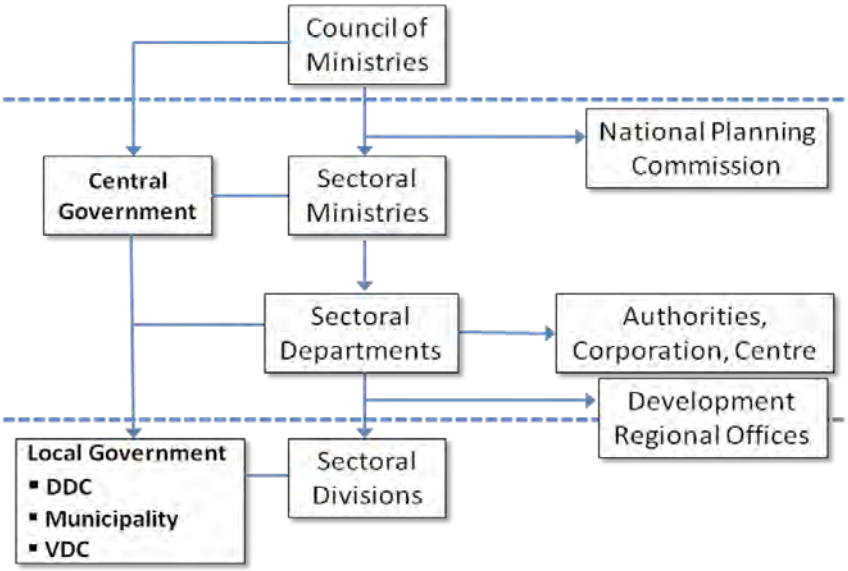
2.15.3 Central Government Agencies

After the peace agreement of the *Jan Āndolan* (people movement) in 2006, Nepal has got the elected president for the first time as the head of the state in 2008. As the head of the state at the apex the Prime Minister leading “Council of Minister" is the head of the government and performs as the Chief Executive of the country. The Prime Minister and Ministers are individually and collectively responsible to the parliament directly elected by the people. The Council Ministers take all major decisions on national issues. A Minister heads each sectoral ministry. Powers are delegated at different layers of government administration from ministry down to district level sectoral agency. The Secretariat of council of ministers coordinates the activities of different Ministries and facilitates them in carrying out day-to-day activities.

Figure 42 depicts the central and local organizational structure existing in the country. There are two institutions – National Planning Commission (NPC) and Ministries of different sectors at the central level. NPC is the advisory body for formulating and setting up periodic development plans, policies, strategies, and national plan targets for all sectors of the country economy. It explores and allocates resources for economic development and works as a central agency for monitoring and evaluation of development plans, policies and programmes. Further, it reviews and approves all development activities funded under Nepal’s development budget, including donor programmes and projects that require government support and co-financing. Furthermore, it provides a platform for exchange of ideas, discussion and consultation pertaining to economic development, as well as serves as an institution for analysing and finding solutions to the problems of civil societies, non-governmental organizations and the private sector in the country.

NPC consists of Prime Minister as a chairperson and others such as appointed full-time one Vice Chairman and several members as specialists in various sectors.

Figure 42: Government Structure – Central and Local Levels



Ministries have undergone some structural changes along with the change in political-economic ambiance[313] and so are their function and the responsibility. The Ministries are the central authority of Government of Nepal and responsible for formulating their own policies and programmes, and guiding and achieving them as to meeting objectives and targets outlined in the National Development Plans. Each sectoral ministry oversees their own activities and provides institutional mechanisms for initiating and facilitating developmental activities.

[313] For instance, previous name of the Ministry of Physical Planning and Works was the Ministry of Housing and Physical Planning, and likewise the Ministry of Education, Culture and Sports now is the Ministry of Education and Sports, the Ministry of Health changed to the Ministry of Health and Population, etc.

Each sectoral ministry has departments, centres and divisions, which are implementing agencies of the policies and programmes. Almost all Ministries have their own outreach offices at district levels, but only few have their offices set up at regional level.

In addition, there are parastatal bodies of the respective ministries like Nepal Water Supply Corporation, Nepal Electricity Authority, Nepal Telecommunication Corporation, Nepal Oil Corporation, Nepal Airlines Corporation, etc which are also implementing and facilitating agencies to deliver services directly to the people.

2.15.4 Local Government Agencies

At the district headquarters are located the divisional agencies of all sectoral ministries' departments. They are the implementing agencies of associated sectoral activities at the local level – district, municipality and VDC. Most of the Departments, except the Department of Urban Development and Building Construction, and others that are newly created, have their divisional (or sub-divisional) offices in all the 75 districts of the country. These divisional offices are staffed with division head or chief officer and supporting administrative and account staff. They support the users committees in implementing the government's programmes. The Divisions also have the mandate of coordinating the district level activities of other agencies working in the sector. The work of the division offices are directed, supervised and monitored by Regional Monitoring and Supervision Office, one in each of the five regions, each headed by a Regional Director. The chief district officer (CDO) who belongs to the Ministry of Home is the chief administrator of the district. The Local Development Officer (LDO) who belongs to Ministry of Local Development (MLD) is the development officer in the district. The role of the CDO is to maintain law and order and deal with corruption cases. The LDO, who serves as secretary to the DDC, plays a crucial role in planning and development of the district. In addition, a number of public corporations have their own offices at regional and district level to deliver services.

Each DDC is further divided into 'ilakas' or service areas from nine to seventeen, depending upon the population size, particularly for the delivery of basic services. Each ilaka has a service centre (Ilaka Kendra). This spatio-administrative approach has been in most cases a failure one in Nepal (Pradhan, 1997).

2.15.4.1 Village Development Committee (VDC)

The VDC is the village-level elected body. It is responsible for village-level administration, local-level planning, and managing local development projects financed through the grant programme for local government. It also has responsibility for coordinating all other development activities within the village. The VDC secretary, who is an employee of MLD, manages the administrative function of the VDC. This is the lowest level at which MLD is represented. Ward committees, within the VDC, are elected to represent their constituents, participate in ward-level planning and project implementation, but have no formal administrative responsibilities.

2.15.4.2 Municipalities

An elected town assembly and a mayor, who oversees municipal functions, govern the Municipality. An Executive Office, an employee of MLD, manages the day-to-day functioning of municipal staff that includes a planning and technical section, an accounts section, and an administrative section. Municipalities, although formally a part of the district administrative structure, are not as dependent on the DDC for project financing or technical support. Municipalities have a significant source of revenue from a variety of taxes, user fees, and municipally owned enterprises. This also allows them to borrow funds for infrastructure development from banks or TDF (Town Development Fund). Some funds are also provided directly from central government sources outside the district development planning process. Municipalities can and do participate in this planning process and do request funds through the DDC. Since DDCs perceive that municipalities have other sources of funding, these requests tend to receive lower priority.

To support to both the central and the local government agencies and in some cases to complement to the public service delivery, different types of non-state agencies exist to operate. The associations of the local bodies such as Association of District Development Committees of Nepal (ADDCN), Municipal Association of Nepal (MuAN) and National Association of VDCs in Nepal (NAVIN) have an important role in developing the capacity of local bodies, policy lobbying, mobilising external resources through local bodies, institutionalising decentralization, and implementing the acts, etc.

In addition, there are a number of donor and multilateral agencies such as DFID, DANIDA, JICA, FINIDA, World Bank, Asian Development Bank, UNDP, IUCN, etc involved in planning and development of each of their specific sectors across different parts of Nepal.

Furthermore, an organization of private business communities called as the 'Federation of Nepalese Chambers of Commerce and Industry (FNCCI)' is at the central level and under its umbrella, each district has a Chamber of Commerce and Industry (CCI).

2.15.5 Decentralization and Local Governance System

Planning from below and local governance initiated for the first time in Nepal in 1952, when the village development programme called 'Tribhuvan Village Development Programme' was launched (Shrestha, 2004; Rai, 1987). Since then a number of polices, programmes, and acts have been formulated with regard to strengthening decentralized planning, but the most crucial one is the Local Self-Governance Act (LSGA) 1999.

The LSGA has been designed to strengthen the decentralization process by delegating greater authority and responsibility to the local bodies – DDC, Municipality, and VDC. The act has provided a sound legislative platform for initiatives to decentralized governance system in Nepal. Some basic services such as agriculture extension and livestock services, primary education, primary health services, etc have been devolved to the local bodies, which also can mandatorily work in the field of development, planning, revenue generation, and so on as per their resource and capacity within own jurisdiction boundary. The local bodies are therefore considered as autonomous, self-governed and representative institutions in Nepal.

The Village Development Programme being initiated in VDCs in partnership with DDCs by the United Nations Development Programme (UNDP) under the Participatory District Development Programme (PDDP) in November 1995 has been a milestone in the decentralization planning process (ESCAP, 2004). The PDDP was a continuation of the Strengthening Decentralized Planning Programme initiated in 1990. The PDDP continued but with different names like Local Governance Programme (LGP), Decentralized Local Governance Support Programme (DLGSP) and now LGCDP that began in July 2008 and will remain till July 2012. The main goal of all these programmes has been to improve the socio-economic condition of the rural population through organizing them into groups and providing opportunities to develop their potentialities. They assisted the DDCs to implement a "trickle-up" planning and monitoring process, based on the principles of participation, transparent decision-making and coordination between political bodies, technical agencies, NGOs and the communities. The process documents people's needs and the available resources at the grassroots level (communities and local bodies) and percolate it up through several prioritising layers to the district where they are incorporated into the District Development Plan. The NPC and the sectoral Ministries are the final agencies at the national level for final approval of the programmes being forwarded by the district government.

Here, a brief description of the roles played and impacts occurred in the areas as well as on the communities by these programmes, taking DLGSP as an instance.

The DLGSP being implemented in 66 districts and their 880 VDCs across the country between April 2004 and July 2010 appears to have supported to build the capacity of the local bodies to plan, programme, and manage local development within the framework of LSGA (ESCAP, 2004). They also covered all four Koshi Hills districts – Bhojpur, Dhankuta, Sankhuwasabha and Terhathum, as well as other three study districts – Morang, Sunsari, and Khotang. Though the information on its activities at individual district was not available in the report, those available on the achievement of specific activities covering entire 66 districts have been considered and calculated. On average, 66 community Organizations (COs) per district or 5 COs per VDC were set up by the Programme. With the seed grant support of the Programme, each of the VDCs of the Koshi Hills district seems to have shared 1.7 community infrastructure projects (drinking water, irrigation, roads, bridges, public toilets, electricity) being completed and that benefited to about 49 community members of the Koshi Hills, on average. Each of the seven districts of the Koshi Hills study region also got to set up the District Information and Documentation Centre and the computerised accounting package, as by all other Programme districts.

2.15.6 Critiques

Based on the available studies, the observations being made below are related to the essences of the good governance and the decentralization process.

- The process of decentralization across all districts of Nepal, including the Koshi Hills is seen on the whole to be ineffective and remained as half hearted effort in planning as well as implementation. Devolution of authority for service delivery at local level is remained confusing, inadequately prepared, and hesitation in parting with authority and finance. The practice of direct appointments of key staffs in the local governments by the centre government has caused dual loyalties among the local governments staffs, which has constrained smooth and sustainable functioning of the local governments. These issues have significantly affected the momentum of decentralization and public service delivery to citizens in the country (ADB, 2009).
- In democratic practices, it is widely accepted that the local bodies must be run by the representatives of the people who are elected democratically. That is how good governance can be maintained and the local bodies can be made accountable. But the local bodies throughout the country have continued to remain still today without representatives elected by the people since July 2002 due to the Maoist insurgency and therefore their activities have not been effective in terms of participatory, people-oriented, transparent, and accountable. Such situations of the local bodies that directly related to the local people have deprived them of the minimum goods and services. According to the study by ADB (2009), politicians argue that absence of elected local bodies in the local bodies has encouraged an act of procrastination and corruption in the development works. However, in absence of the local bodies, public servants are being made fully responsible for the time being to deliver services and operate other development activities in close coordination with all party mechanism at local level. It appears that no election will take place in the near future due to prolonging political transition, despite the Interim Constitution of Nepal also strongly focuses on the existence of elected representatives in local bodies.
- The ADB's study (*ibid*) indicates that there are problems in planning process at all levels. The problems include lack of strictly adhering to the prescribed planning process by the VDCs and municipalities, weak coordination between line agencies and DDC in regard to the planning process and implementation, adhoc plans due to inadequate database, lack of seriousness in prioritising programmes, weak in horizontal coordination in plans, etc at local level, as well as mismatched in prioritised programmes between the national and local levels (some of the local prioritised programmes not included in the national priority list), very weak monitoring and evaluation systems, etc at the central level.
- While the central government appears to have an interest in enhancing the provision of public services by enabling local bodies in fiscal and policy-making capabilities, many ministries are in real sense not willing to delegate relevant functions to the local bodies in general and within intra local governments, i.e. from the district to VDC and municipality in particular (Shrestha, 2004). With time bound actions and phase basis, the LSGA provisions and associated Rules 2000 are to be implemented at VDC and municipality level, but no such practice appear to be seen. Further, most of the VDCs and Municipalities are believed to be weak in the mobilisation and management of financial resources and have to depend on the central, as well as district government for long-term investment.
- However, more efforts are needed to improve the measurement of governance and institutional quality and research are to be carried out to better understand the complex relationships between institutional quality and development.

2.15.7 Non-Governmental Organizations in Nepal

2.15.7.1 Background

Collective action through forming and mobilising user groups initiated by the government is an innovative concept of decentralized policy measure for local development in Nepal. Beyond the government, particularly the user group is recognised as a grass root level institutional body (Curtis, 1991). Nowadays, growing people's participation in user group-based programme, increasing number of user groups in different development fields, dwindling in conflict between communities and government officials, etc across different parts of the country indicate the encouraging trend and importance of the user groups. Of several CSOs, forest resource management by the forest user groups for instance has emerged as the most successful of decentralized forest management policy in Nepal (Adhikari, et. al, 2003).

In Nepal, the CSOs, also known as 'Non-State Actors' have been existed since long time back. Social, religious, and economic organizations such as *Guthi* (of Newars), *Rodi* (Gurungs), *Parma* system

(exchange of free labour for agricultural works), *Dhikuri* (system of deposition of money by the entrepreneur community members and borrowing it by one or more of them), and the indigenous groups managed local forest resources and irrigation systems are some of the examples of traditional informal civic organizations of Nepal (Bhattachan, 2002). These traditional organizations appear to have served the objectives of mutual support, but restricted to members of their own organizations in terms of ethnicity, religion, location, etc.

Unlike the traditional organizations, non-governmental organizations (NGOs) are formal civic organizations and are a recent phenomenon owing to the fact that they do not have very long history in Nepal. The first NGO was established in Nepal in 1926. NGOs in Nepal got legal status only after the restoration of democracy in 1991 and then followed by formulation of favorable policies, rules and regulations, which gave rise to the rapid growth of NGOs. According to SWC (2010), NGOs proliferated from 220 in 1990 to 37,026 in 2010. The nationwide figure indicates that the majority of the NGOs are involved in the community and rural development, followed by youth services and women services.

In Nepal, Social Welfare Council (SWC) and the District Administration Offices are the main governing bodies of CSOs and act for coordination and facilitation. All CSOs are expected to comply with the requirements of the SWC. There are different associations of NGOs, namely NGO Federation of Nepal, National Federation of Nepali NGOs, NGO Coalition/Nepal, Association of Development Agency of Nepal, Child related NGO network, Federation of Dalit related NGOs, etc. These federations are being established to support networking, mutual co-operation among the NGOs and formulate NGO ethic (Dhakal, 2007).

Since the early 1990s, particularly the NGOs have been playing an important role in employment generation, human capital formation, infrastructure development, mobilisation of resources, reaching out to the grass roots, etc (NGOFN, 2006). On the other hand, they are reeling under various constraints such as lack of effective coordination, weak financial base, lack of professionalism, lack of monitoring and evaluation, lack of transparency, lack of commitment among the NGO activists, absence of public surveillance, etc (Dhakal, 2007). These constraints coupled with scarcity of impact studies on the role and function of NGOs in development sector pull NGOs into controversy. The performance, scope and impact of NGOs in development sector remains highly debated. The role of NGOs is belittled with general assumption that these types of organizations are established for dollar farming.

Dahal and Timsina (2007) point out that Nepalese CSOs have demonstrated their strength in participating in non-partisan political activities. They are quite diverse and reflect the social, economic and political plurality of the country. But they have very limited communication facilities and also inadequate human resources. Unlike traditional charity-based organizations, CSOs, particularly NGOs are dependent on external assistance for their operation. Most of them are not able to develop their own resources sustainably and are active only when they are supported externally.

Singh and Ingdal (2007) show that most of the NGOs are not member-based organizations, but being in closer contact and financially dependent on the donors and directed their accountability more towards the donor side than towards the beneficiaries in whose name the organizations have been established. The current main crux of the matter in Nepal is how to reach out to the most excluded and needy. Both donors and NGOs apply different approaches to this issue; some INGOs go as far as contracting directly with local communities and user groups – bypassing intermediary Nepali NGOs (often based in urban areas). Further, they indicate that there is an immediate noticeable difference in the level of engagement of the NGOs with different donors. While DFID, SDC (Swiss Development Cooperation), and DANIDA have a direct and 'hands-on' approach to their partners' management and governance practices, Norway and USAID hardly channel any direct support to civil society (with a few exceptions) rather through INGOs. SNV does not channel funds directly, but provides advisors on organizational development (OD) for partners in a long-term perspective.

The essence of the decentralization of the user group-based local resources management programme is to empower local user groups. In so doing, the user groups will efficiently manage local resources available for them. Yet, the government policies in Nepal are not clear about the ultimate ownership of the local resources managed by the user groups, creating suspicion among the user groups, particularly the forest users (Adhikari, et. al, 2003).

2.15.8 NGOs in the Koshi Hills

As other parts of Nepal, the Koshi Hills region also comprises different types of traditional as well as modern NGOs. While the Koshi Hills are dominated by the ethnic groups like Rais, Limbus, Tamangs, Magars, Gurungs, and Newars and they have been practicing traditional organizations for supporting their social, cultural and economic needs, the modern CSOs are slowly growing in the region, as shown in Table 74.

Available sources indicate that prior to 1990 there were only three CSOs, including one in Dhankuta district and two in Sankhuwasabha district. The growth of CSOs in the post 2005/06 period appears to have even more rapid in the Koshi Hills. The number probably increased after the Maoist insurgents joined the main political stream giving up violent revolutions, which during the insurgent period constricted CSOs to reach out to people. By 2009, the number of CSOs grew rapidly in all districts of the Koshi Hills, but however, it is yet difficult to ascertain their exact number actively working in region because all the CSOs registered with the District Administration Office (DAO) are found not working actively and do not renew their registration every year. Likewise, not all of the CSOs registered with the DAO have registered with the SWC and other organizations of NGOs like NGO Federation Nepal who keep proper records of NGOs activities.

Table 74: Cumulative Growth (number) of CSOs in Koshi Hills (*Social Welfare Council, 2012; NGO Federation Nepal (2005), District Profile of NGO)

Years	Koshi Hill districts			
	Bhojpur	Dhankuta	Sankhuwasabha	Tehrathum
Before 1990	0	1	2	0
1991-1995	0	5	2	5
1996-2000	9	6	6	14
2000-2005	3	17	24	26
2009*	52	72	50	92

Further, increase in number of NGOs does not guarantee the increment of quality of work in the areas of socio-economic development. For instance, out of 229 NGOs registered with the DAO Tehrathum during the fiscal year of 2005/06, only 53 continued to secure their existence and 12 of them were active (NFN Tehrathum district 2006).

2.15.9 Working Sectors of NGOs in the Koshi Hills

Table 75 shows that most of the NGOs are found working in forestry and sanitation, which is particularly true in three districts: Dhankuta, Bhojpur and Sankhuwasabha. Next to it are the organizations of women empowerment in Bhojpur and Dhankuta whereas the organizations of saving, credit and group mobilisation in Sankhuwasabha and Terhathum. Though the relative importance of other sectors in terms of involvement of NGOs differs remarkably among the districts of the Koshi Hills, it is interesting to note that agriculture and livestock sector has received less importance.

Table 75: Relative Distribution of NGOs (%) by Major Sector, Koshi Hills (NGO Federation Nepal (2006), District Profiles of NGO)

Sector type	Bhojpur	Dhankuta	Sankhuwasabha	Terhathum
Physical infrastructure	11.36	6.45	8.57	20.00
Saving, credit and group mobilisation	15.38	6.45	25.7	20.00
Forest and sanitation	53.84	55.17	25.7	17.77
Education	30.76	6.45	8.57	15.55
Health	30.76	20.68	11.42	2.22
Dalit	11.36	20.68	2.85	4.44

Sector type	Bhojpur	Dhankuta	Sankhuwasabha	Terhathum
Women empowerment	38.46	22.58	8.57	6.66
Agriculture and livestock	0.00	20.68	5.7	11.11

The NGOs working in the sectors as mentioned in Table 75 have received support from different national, foreign and international agencies such as GTZ, BNMT, RAP, IDRC, LFP, DFID, Pact Nepal, USAID, CIDA, ADB, ICIMOD, Danida, SNV etc. Some of the NGOs draw in from their own internal sources as well.

2.15.10 Impacts of NGOs in the Koshi Hills

There are indeed limited studies available on the impacts of programmes and projects implemented by the NGOs in the Koshi Hills. While the description of the NGOs' impacts and their profile is provided in terms of nine selected case studies of NGOs of the Koshi Hills in separate section, below is the description of the CSOs so far available.

There were users' groups that played roles for local development in the Koshi Hills several decades ago. For instance, Rai (1987:117-119) in his paper has dealt with many types of projects in different parts of the hill districts of Nepal, but only two of them run by the users groups in the villages of two districts of the Koshi Hills. One such project was the drinking water project in Pangma Village of Sankhuwasabha district. The project was started in 1979 and completed in 1982, with the active participation of local users or beneficiaries in the construction work. The project constructed a total of 11km long pipe and served 2,100 inhabitants. The project was sustainable due to the joint efforts of the beneficiaries or users groups who were responsible to maintain the pipe lines and stand-posts, as well as conservation of the water source, whose works were supervised and monitored by the technical personnel – engineers and technicians. The second project was also similar with the first one, which was rather supported by the voluntary organization called the *Bhajani-Mandal* that comprised the women's group of Myanglung town in Terhathum district. The group contributed to the construction of nine kilometres long drinking water system, serving particularly the inhabitants of Myanglung.

In other hill districts outside of the Koshi Hills, according to Rai (*ibid*), the projects supported and run by the users' groups included mule tracks and foot trails construction, irrigation canals (Kulo), food for work such as transportation of food grains carrying by the villagers to the district headquarters from the locations of near-by air fields or road-head points in the eastern and western hills.

In the further west of the Dang Valley, Pant and Lohani (1983, cited in Curtis 1991) illustrate that how local organization for common benefit is possible even in the castes-based stratified society. A common interest in managing water on to the fields demands work and reward, sharing arrangements which in present-day circumstances does something to modify the exploitative relationships that otherwise prevail between the landowning class (higher castes) and the rest. Farmers' organizations represent a form of complex reciprocation in which farmers – big and small – have an interest in mutual assistance; this assistance turns out to be quite powerful, flexibility, fair shares and labour commitments, and equity and effectiveness.

2.16 Evolution of Government Services

2.16.1 Introduction

This section intends to describe the evolution of public or government services across the country. As public service is a concern of the government only and the public service system undertaken by the government is the same for all districts, no distinct service system and pattern is expected for the Koshi Hills districts. Supply of public services and vertical (among different hierarchical levels of agencies) and horizontal (inter public service sectors within the district) linkages are also the same throughout the country. The impact of public services may rather differ, depending on the efficiency of service providers (individual or team work of particular service type) as well as on the nature of service seekers or local inhabitants. However, the data on the latter are not readily available, and depend squarely on the studies, if any.

In Nepal, government services are provided through two levels of public agency: national capital and district headquarters, but the latter is the primary centre where most of the public service facilities are

deployed and through which services are dispensed out to the local people, and for few services such as health, education, police security, agriculture, veterinary, postal service, etc, they are dispensed through the village level units scattered across the district. All the government services delivery at the district level is of fixed type and in case of health services delivery it is also of mobile. While the paramedical staff having with more sophisticated training is deployed in health posts, the junior auxiliary health workers travel village to village (Wake, 1980).

2.16.2 Evolution of Government Services

Public (or government) service provided by the government to its citizens directly through the public sector in Nepal has evolved through different historic periods.[314] However, the modern public service began only when Public Service Commission (PSC) was set up in 1951. Evolution of government services can be related to the change in administrative systems in different periods.

As elsewhere in other countries of the world, Nepal is divided into different spatio-administrative units for provision of basic public services, as well as reaching their wide spread delivery to the people. Until recent past, the country was divided administratively into fourteen zones and head of each of the zonal office was directly appointed by His Majesty of the Government. Every zone was further divided into a group of districts and the districts were then into municipalities and villages for purposes of administration and development activities. The administrative system was based on top down planning process and thus all programmes and policies came down to the local level from the central level, so were the appointments of the heads of the local government offices. In so doing, the government employees were used to be just accountable to their managers and political masters but not to the local people and as a consequence there used to be existed no transparency and accountability in the government activities. Most of the key public servants including chief district officer (CDO), local development officer (LDO) and head of regional and zonal branches of various other services used to work under the politically appointed zonal officers. This made the public servants vulnerable to political pressures.

In 1990, the democratic government abolished the zonal administration to decrease the influence of central rulers in district public administration (Thapa, n.d.). This was because the zonal head used to be appointed by the King himself. It was also to give a symbolic message to the people that the new government was the democratic one. Having done away with the zonal system but maintaining district administration and lower units a new system was necessary and it was created with the Ministry of Local Development (MLD) as a focal agent. So in new system, the government introduced decentralization and self governance through the acts and regulations in order to reduce the gap between centre and local governments and also districts and villages could function efficiently.

[314] The public service dates back to 1770 in Nepal, when Nepal was united to a single kingdom. Since then, the royal palace enjoyed all of the rights in appointing public servants and, mainly, the courtiers and their off-spring and relatives decorated all of the important roles of public servants. In various branches of the public service, like finance, foreign service, law, and so on, these courtiers got easy appointments, as they were the ones with access to education. However, the situation changed a lot after the first revolution in Nepal in 1950, which witnessed the overthrow of the Rana oligarchy. Since then, even common Nepalese started to function as prominent public servants. Free access to education helped the common Nepalese achieve this feat (Thapa, n.d.).

Table 76: Different Administrative Divisions in Nepal

1951-1990 royal period	1990-2007 democratic period	2007- until now interim period	May 10, 2010 (after new constitution
His Majesty of Government	His Majesty of Government	Government of Nepal	Federal Democratic Republic of Nepal
Zone	↓	↓	State/Province
District	District	District	↓
City/Village	City/Village	City/Village	City/Greater Village
Ward	Ward	Ward	Ward

MLD is responsible for local development, so the ministry deputes one local development officer (LDO) to every district and one planning and administrative officer. But both these gazetted second class officers are the ones recruited by PSC. Moreover, even for sections such as account, procurement, registration and dispatch in a district development office, the positions are filled with staffs elected by the PSC.

2.16.3 Efforts in Government Service Improvement

One year after the establishment of PSC in 1952, an administrative reform commission was constituted to streamline PSC and formalised it with enacting the Public Service Act 1975 and the Public Service Rules 1975. However, from 1953 to 1975, the country witnessed four administrative reform commissions, such as the Buch Commission 1953, the Acharya Commission 1957, the Jha Commission 1968 and the Thapa Commission 1975. These Commissions were set up with specific objectives and all their reports contained a series of recommendations. But their implementation remained limited. It is fair to say that the recommendations of the Acharya Commission were largely implemented and its spirit of reforms continued to remain dominant for the next eleven years (Shakya, 2009). In 1989, the Interim Government prepared guidelines for the public services and committed to enable PSC to carry out its task of ensuring equal opportunity for all the Nepalese citizens to enter the public service according to their merits and without any discrimination (Thapa, n.d.). The guidelines also mentioned to avoid anomalies like nepotism and favourism that would result in undesirable and irregular appointment, transfer and promotion of the employees.

The post 1991 reform was a departure in its recent history as it witnessed a drastic change in the political system –from one of partyless system to that of multiparty democratic. Following the restoration of multiparty political system in the country, three important initiatives took place in the administrative reforms. The High Level Administrative Reform Commission was set up in October 1991. The study on Civil Service Reform in Nepal by the support of Asian Development Bank in March 2000 contained recommendations on three important elements, viz organizational reform of central government, reform of major sectoral areas, and civil service management reforms and decentralization. The recommendations dealt with performance-reward issues such as linking rewards to performance, ensuring that pay to be related to the value of the job, improve civil service leadership and management by creating Senior Civil Service Group, and provide a reasonable career path for Gazetted Officers. Others include new job description, service delivery indicators, training and development and ethics component. The Interim Constitution 2007 has envisaged the PSC as an independent constitutional body. So, it is expected that functioning of PSC will take place without any political interference. But, given the practices prevalent in Nepal, it is difficult to achieve by mentioning it in the provisions of constitution of Nepal. Almost at all levels of Nepalese public services, favoritism is being practiced based on proximity to political parties. Nepotism and kinship are other instances that helped to provide appointments while sidelining meritorious candidates (Thapa, op.cit.).

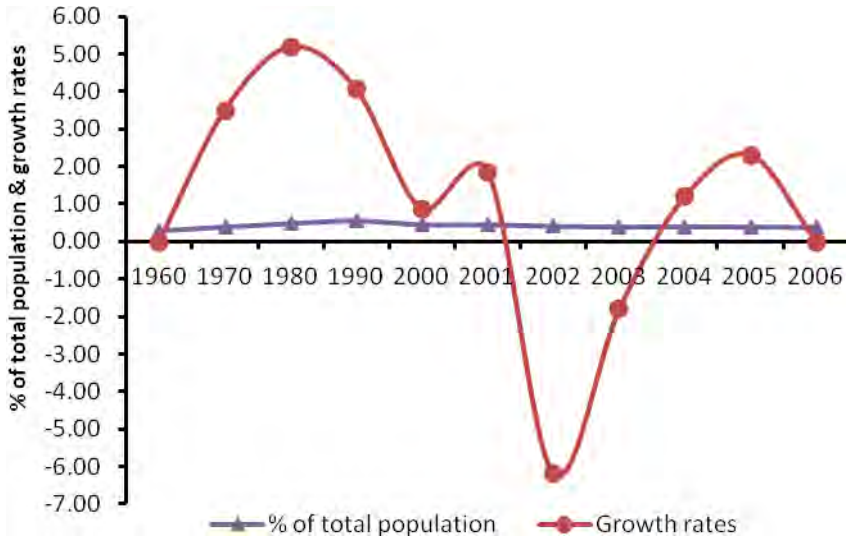
2.16.4 Current Status of Public Services

In Nepal, the public service system is broadly classified into technical and non-technical areas. Public servants for economic policy, engineering service, agriculture, health, legal service, foreign service,

general administration, forestry, education are selected based on these two broad categories. An anomaly in Nepalese public service relates with capital centric decision-making. For example, public servants appointed in Tarai region are generally selected from Kathmandu and they are unfamiliar with local language and customs.[315] Moreover, they have difficulty in maintaining rapport with representatives elected in local bodies. This has led to a demand that public servants in the region must have some kind of proximity or affinity with region.

In the fiscal year 2006/07, Nepal had a civil service that consisted of the total strength of 105,510 positions with 0.4% employees of total population (the same percentage was also in 1950) and 1.2% of total economically labor force.

Figure 43: Growth of Permanent Posts in Nepal Civil Service



While the percentage sharing of the civil servants in the total population has shown more or less the same, the growth rates are very fluctuated, with the growth rate of about 5% in 1980 to the negative growth rate of nearly 7% in 2002 (Fig. 1). In 2002, there was nominal participation of people in development planning process because of non-election of new office bearers. Forced by political instability due to insurgency, the elections were postponed. Because of this, LDO, a public servant, was made responsible for running district level development activities (Shakya, 2009; Thapa, n.d.).

Based on the total size figure of Nepal's public service of 94,105 people in 2005/06, the density was approximately 0.57 public servants per hundred populations, which was quite small by developing country standards (Shakya, 2007).[316] It does not include the military and police forces or public enterprises.

In 2005/06, personnel expenditures comprised approximately 17.7% of the total in government budget which is also quite low as compared to average personnel expenditures of 20 – 25% in other developing countries (Ibid). Of this, the largest share with 13.8% is by general administration, followed by foreign services (1.23%), and others.

[315] For instance, the Morcha armed group of Jwala Singh in Siraha has given an ultimatum to government employees from the hill community who are working in the plains to leave within seven days or face dire consequences (Indo Asian News Service, 2007).

[316] Sri Lanka has highest ratio with 4.5 public servants per hundred, while that in Pakistan and India is 1.5 and 1.0 respectively (Shakya, 2007).

2.16.5 Issues

The public sector productivity is important for three main reasons (Shakya, 2009): first, public sector is a major employer; secondly, it is the major provider of services in the economy (affecting costs of inputs) and social services (affecting the labor quality); and lastly it is a consumer of tax resources. Changes in public sector productivity particularly civil servants can have significant implications for the economy. With this regard, the following issues and problems are derived based on available literature:

- Productivity of the public sector is increased if reform in its system is made as to the contemporary demand or need. In Nepal reforms usually start with political initiatives and are implemented by civil servants. However, political situation continues to remain unstable and the government has undergone frequent changes, and as a consequence the continuity in the efforts at the political level is often missing in the implementation. Civil service reform has never been the top priority agenda of the government (Ibid). Nepal provides a unique instance where all the leaders, politicians and members of the civil society speak unequivocally about the need to introduce far reaching administrative reforms, yet their contribution for carrying out the reforms process forward has always been far less than the expectation.
- A number of civil service reform commissions have been constituted and recommendations made for strengthening the civil service. Despite five decades of experiments with democratic practices, the behavior and mind-set of both politicians and bureaucrats have not changed significantly to introduce civil service reforms on a result-oriented basis. The success of any civil service reform hinges on the political as well as bureaucratic will and commitment, and the utilisation of reform in context is crucial for its success. Attempts were made to devise and implement policies for: augmenting the internal capacity of the government to improve the efficiency and the overall competence of civil services; for improving governance and reducing corruption of civil service; for establishing processes for improving performance in key ministries; but however they remained to be futile due to lack of seriousness and commitment of the government.
- Bureaucrats are found to react negatively towards attempts to implement reforms unless reforms include the possibility of increasing their personal benefits. They are more conservative and resistive to change than their political masters, ministers, politicians, or people at large. One of the reasons is that, at the end of the day, it is the civil servant that has to take on the responsibility to implement new measures which means new and additional responsibilities, additional risks, departure from the existing system where they are accustomed to working with, and involves changes in the functions and responsibilities they consider as being not commensurate with existing perk and privileges or that that they see less possibility for an increase in their perks and privileges.
- Nepalese Civil Service is on the way to become a dumping ground for the unemployed graduates, and the existing civil service community - less productive, less innovative, and less decisive. The values and ethics in the civil service are fast deteriorating, causing low morale and poor productivity. But there is as yet no indication that an employee had been appreciated, promoted or awarded for his pursuance of the code of conduct or for following ethical values in the civil service nor has there been any cases.
- The desire of the politicians to control administrative power and the desire of the bureaucrats to try to influence policies has led to politicisation of administration and administrationisation of politics. Both are not desirable for the sound civil service system in the country. These developments have given rise to doubts on what we call ‘bureaucratic neutrality’. In many Western democracies, it is a highly valued ideal that bureaucrats shall not act in a partisan way, in the sense that it should not support any political party. But in Nepal it is fast losing its non-partisan character. At times, the political parties openly invite the civil servants to join political rally to press the demands of the opposition parties, thus motivating the civil servants to break the code of conduct.
- Bureaucracy in general seeks to promote stability, not change. Several empirical studies elsewhere also indicate that bureaucracies are notoriously difficult to change (Crozier 1964; March & Simon 1993). This is also true for Nepal. In Nepal, both politicians and bureaucrats are found to act in varying degree to maximize personal benefits.
- It is necessary to revise the public service system of Nepal in the shape suitable in the age. Shifting demographics, the rising unemployment in the labor market, and low productivity of the administrative machinery require leading edge and competitive employment practices to recruit quality entrants. Modernisation in public service can attract capable human resources in public

service and public sector. It is needless to say that without capable human resource in public service, government would never be able to implement the new and timely agendas in central or local level.

2.17 Foreign Aid

This chapter provides an overview of foreign aid in Nepal since the mid 1950s and how it has changed over time. It then goes on to briefly discuss the types of foreign aid that has supported different programmes in the Koshi Hills.

2.17.1 Introduction: Issues with the Analysis of 'Foreign Aid'

'Foreign aid' is defined as the Official Development Assistance (ODA) channelled through the national budget in Nepal. This aid constitutes grants, loans and technical assistance by multi-lateral agencies (e.g. World Bank, UN agencies, Asian Development Bank, etc.), and from bilateral government and non-government organizations. An analysis of the total volume of foreign aid in Nepal is complex and cannot be conclusive due to the lack of transparency in 'aid flows' into the country. Since the 1990s many of the large donors in Nepal have moved towards the use a mix of aid instruments – sector support, parallel funding and multi-donor trust funds – all of which is not reflected in the government budget. The Government of Nepal (GoN) figures only include foreign assistance agreements between the donors and the government which in turn gets reflected in the annual budget and are recorded annually in the 'Red Book' – the document of 'Estimates of Expenditure' that is published by the Ministry of Finance each Fiscal Year.

Not all of foreign aid which flows into the country is reflected in the government records thus there wide variances in figures provided by different sources such as the GoN, UNDP through the Organizations for Economic Co-operation and Development (OECD), and the Social Welfare Council (SWC) the main semi-autonomous body established to organize effective co-ordination, co-operation, mobilisation and promotion of social organizations and institutions in the country.[317] As an example, Sharma (2009) notes that for 1999, GoN's Economic Survey shows a total of US$251.4 million while UNDP's Development Cooperation Report records US$414.6 million entering the country, a difference of close to 40% (2009: xxix). Similarly, others have also shown that the actual disbursement as observed in OECD sources can be higher than the government figure by anywhere from 50% to more than 100% (Khanal et al. 2008: 68-9, in Panday, 2011:35). The figures for the amount of foreign assistance being provided through International NGOs also vary widely. In 1999, for example, the UNDP recorded a total of 21 INGOs disbursing US$24.1m compared to the SWC which listed 96 INGOs disbursing US$19.8 m. This discrepancy is important to keep in mind while reviewing this chapter since the analysis presented here is primarily based on GoN figures unless otherwise indicated.

The Paris Declaration 2010 target is for countries to have 85% of aid accurately estimated on the budget, or to halve the gap (OECD, 2008).[318] Nepal, participated in the monitoring process for the first time in 2008 and the results showed that on aggregate, an encouraging 74% of aid disbursed by donors to the government sector in Nepal was accurately estimated in the government budget. However, for the average donor only 46% of aid was accurately recorded in the budget (ibid).[319]

---

[317] http://www.swc.org.np/swc_act.php (Downloaded on 22 March 2012).

[318] Achieving this target will require a considerable effort by both government (to make realistic budget estimates) and donors (to share information about disbursements). Concrete progress is possible, by establishing consistent accounting systems to record disbursement, based on the date of delivery (OECD, 2008).

[319] Some of the gap was due to donors and the government operating with different fiscal years and having different conceptualisations of disbursement. Also significant aid funds were spent on procurement and consultants without being recorded in the government budget. Some donors preferred to retain the system of direct funding because of their lack of confidence in government systems. Additionally, commitments made by donor headquarters do not always take sufficient account of limited implementation capacity in donor country offices. Thus, actual disbursements might not have been at the level of commitments (OECD, 2008).

Over the years the national budget of Nepal has been widely characterized in terms of expenditure into two main categories – 'development' (or capital aid) and 'regular' expenditure. The 'regular budget' includes all those expenditure of recurrent character such as administrative and security expenses whereas the 'development budget' includes all projects and programmes related to production or output (NPC, 2004). Foreign aid along with revenue surplus and domestic borrowing are the three key sources of financing the 'development' expenditures in the country.

2.17.2 The Initiation of Foreign Aid in Nepal

With the establishment of diplomatic relations with the United States in 1947, US aid began formally with the Point Four Agreement in January 1951 (though actual flow of US funds started only in the following year). In fact, a month before the end of the 104 year old Rana regime in 1951 the USA signed a technical cooperation agreement with Nepal leading to "foreign aid making a debut before there was any serious thinking on economic development as a goal within the country's administration" (Panday, 1983:270). Since then the flow of foreign aid has continued to date despite serious recurring questions regarding its effectiveness across different sectors and over the years.

In 1951 the Swiss government also extended funding to the GoN for a geological survey. Soon after this other countries and agencies began their support; India in 1954, China in 1956, the USSR in 1958, the United Nations agencies and the Ford Foundation also initiated economic and technical support in the mid 1950s (Metz, 1995:179; GON, 1962). Thus, in the mid 1950s changes in foreign policy in Nepal was associated with a veritable 'aid scramble' (Mihaly, 2002: ix). The country attracted considerable attention due to the geo-political concerns, the global political ideological hostilities, as well as the romantic notion of supporting a relatively untouched 'Shangri-La'.

The US and Indian assistance that Nepal received between 1955 and 1958 was for the first development programme in the country – the Village Development Program. This flow of foreign aid for development programmes in these early years initiated a trend of growing dependence on external financing for the GoN especially for development programmes (Mihaly, 2009:98). Yet a US expert who administered the aid acknowledged that despite the assistance "the foundations had not been established adequately for any substantial economic growth" (P.W. Rose quoted in Mihaly, 2009: 99).[320]

British aid in Nepal has been historically tied with the recruitment of soldiers from the mid hills of the country. From 1816 to 1990, Nickson (1992) states that "access to Gurkha recruitment provided the cornerstone of British foreign policy towards Nepal". Though such recruitment was unpopular with some segments of the population, Mihaly declared that Gurkha recruitment was equally important for Nepal, "for soldiers were her most profitable export..." (Mihali, 2009[1965]). British foreign aid to Nepal began with a modest start of fellowships for higher education, and began in earnest following the royal coup in 1960, eventually leading to subsequent interventions by the UK government and its overseas aid ministry/agency.

During the next decades more nations, UN agencies, the World Bank, the Asian Development Bank, the International Monetary Fund, and numerous non government organizations became contributors. Mihaly (2002) characterised the growing amount of foreign aid in 1964 as 'a stream turning into a torrent'.[321] A recent 2012 report of the Government of Nepal (GoN) identifies 19 different countries as bilateral development partners, and 22 other multilateral development partners who have lent support in a wide range of sectors and programmes. Much of the support of INGOs has gone into the social sectors as well as on issues like democracy, good governance, human rights, gender and social inclusion, especially since the 1990s.

[320] P. W. Rose was the first American to establish the headquarters for the US Technical Co-operation Mission in 1952, and led the Village Development Programme. The above quote comes from his undated and unpublished manuscript, "The First Years".

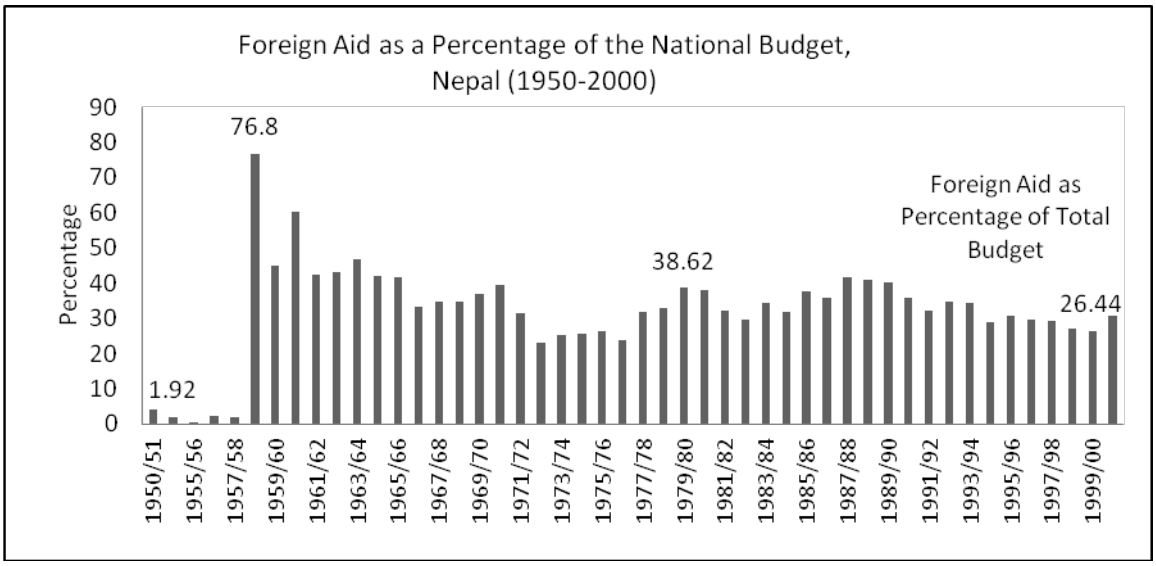
[321] Mihaly's (1965) study of foreign aid and politics in Nepal was one of the first ever studies to question the effectiveness of aid, at a time when globally the general view was of the positive and beneficial nature of foreign aid for poor countries.

2.17.3 Foreign Aid over the Years: 1950s to the Present Time

"In the Nepalese context, foreign aid is development and development is to a large extent foreign aid. Foreign aid has to be viewed not only from the volume of cash flow within the country, but as a total package that comes with the cash flow: the western concepts, assumptions, values, beliefs, advisory services, technical expertise, manpower training and so on" (Pradhan and Shrestha, 1983:99).

Scholars have written about how theoretically political changes provide fresh opportunities for re-thinking policies and programmes, including that of foreign policies and foreign aid. Yet in reality, the historical trends of foreign aid in Nepal has demonstrated its own logic as it flowed into the country in its "politically neutral" mode providing legitimacy to all kinds of regimes and governments in its own interests (Panday, 2011:21). All of the national plans of the GoN – since the very first one in 1956 - have focused on the role of the state and the contribution of foreign aid to programmes related to economic growth and social changes.[322] Sharma (2009) presents a yearly breakdown of the amount of foreign aid received by Nepal from 1950/51 to 1999/00 (Figure 1).[323] From the very first national plan, it was noted that, due to limited national resources, the GoN decided to rely heavily upon foreign aid.

Figure 44 (Sharma, 2009.[324])



In his analysis of foreign aid over a period of about 25 years (from 1986 to 2010) Acharya shows the evidence that, in Nepal, foreign aid is "shrinking in relative importance compared with the size of the total budget, domestic revenue mobilisation, various sources of foreign exchange earnings and the GDP" (Acharya, 2011:2). As a share of the total budget over the years, the size of domestic resources increased from 61% in the late 1980s to 78% between 2006 and 2010. At the same time the share of foreign aid as a percentage of the total budget fell from one-third to 13% as can be seen in Figure 45 (Acharya, 2011).[325] The share of foreign aid of the development budget has also decreased during this timeframe from a high of 49% in the mid 1980s. Yet at over 39% in the current times, it is still the major source of financing of the development expenditures as can be seen in Figure 45.

---

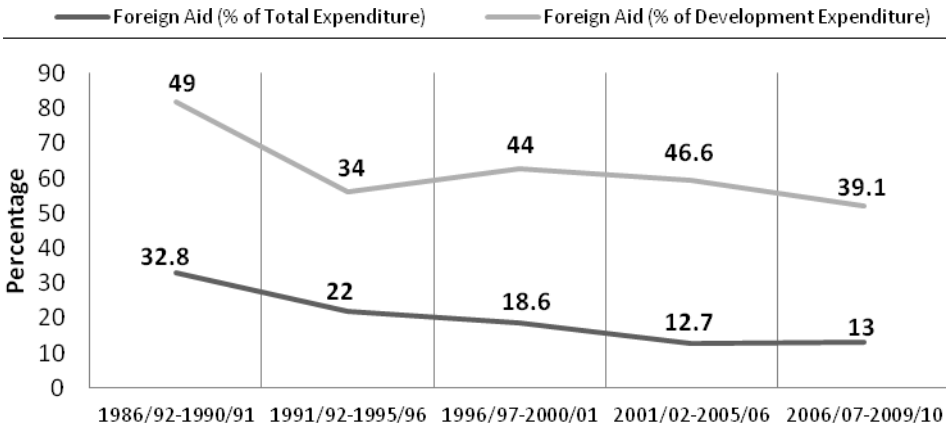
[322] Refer to the chapter on "Development Theories and Practice in Nepal" in this report for a discussion of the 12 national plans between 1955 and 2012.

[323] Figures from the budget and foreign aid were estimated for FY 1951/52 to 1963/64 (Sharma, 2009).

[324] CHECK for explanations for the Sharp increase in 1958-59.

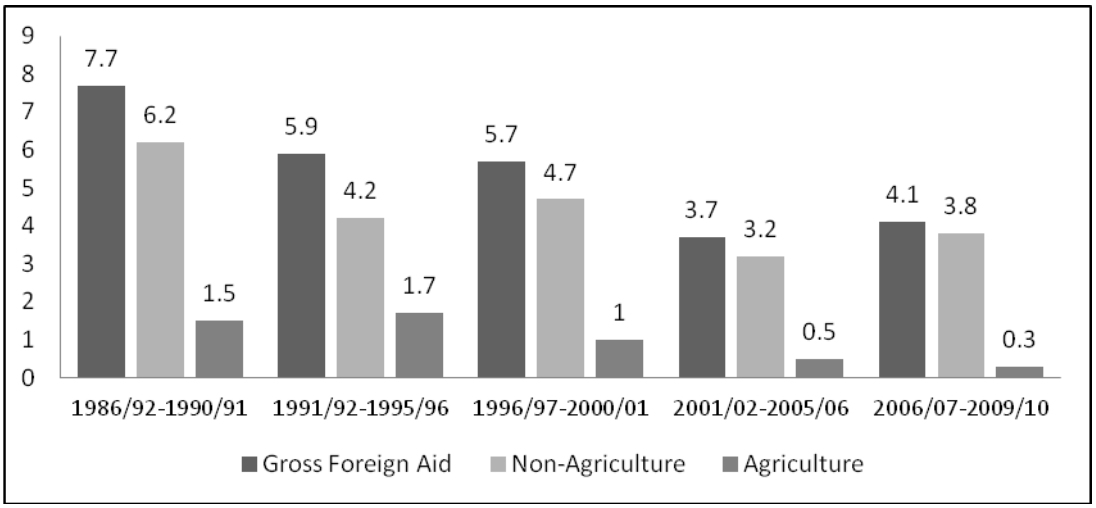
[325] Acharya (2011) calculates the percentages from adding annual figures in each group of years and dividing it by the number of the years in that group. He splits the span of 24 years (1986-2010) into five distinct political phases, i.e. Panchayat era (1986/92-1990/91), Post Democracy era (1991/92-1995/96), Low Intensity Conflict era (1996/97-2000/01), High Intensity Conflict era (2001/02-2005/06), and Political Transition era (2006/07-2009/10).

Figure 45 Foreign Aid as a Percentage of Total and Development Expenditures, Nepal (1986-2010) (Acharya, 2011)



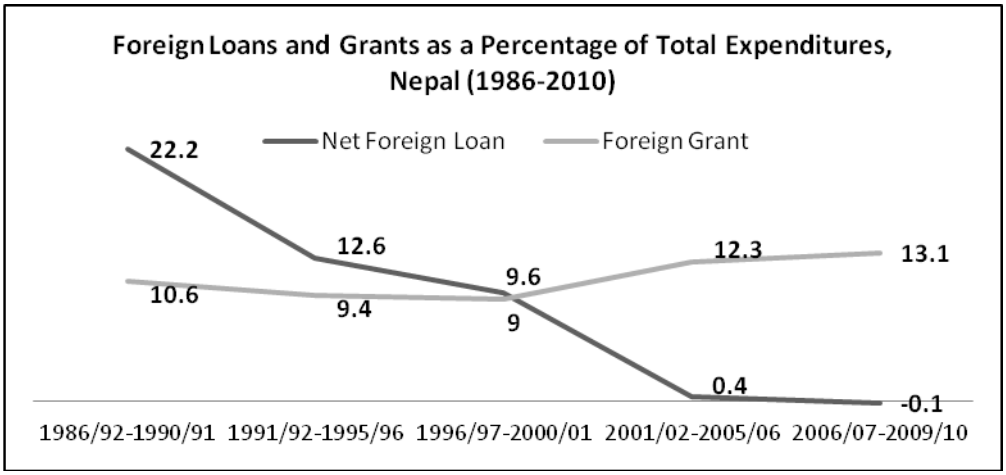
The gradual decline in foreign aid as a percentage of the national GDP is also shown in Figure 3. Additionally the distribution of foreign aid to the agriculture sector has not only consistently been much less compared to the non-agriculture sector but has also reduced as a percentage of the GDP over the years from a high of 1.7% of the GDP (in 1991-1996) to a low of 0.3% of the GDP (in 2006-2009) as can be seen in Figure 46.

Figure 46: Distribution of Foreign Aid in the Agriculture and Non-Agriculture Sectors, as a Percentage of the GDP, Nepal (1986-2010)



Foreign aid to Nepal has comprised loans and grants. A closer look at the breakdown of total foreign aid into loans and grants show a picture that has changed over the years. The country's first foreign loans in 1964 which comprised just 10% of the total of foreign aid rose steeply during the 1970s and by the mid-1980s was twice as much of the grant component as shown in Figure 47 (Sharma, 2009). The figure also shows that since the mid 1990s, the period of the onslaught of the political conflict in the country, the proportion of foreign aid loans has decreased.

Figure 47: Foreign Loans and Grants as a Percentage of Total Expenditures, Nepal (1986-2010) (Acharya, 2011)



Global development discourses have had a heavy influence on the development trajectory and national development plans and policies in Nepal. This has been discussed at length in two other chapters in this report. The 1950s and the 1960s were about "modernization" of traditional societies or the "emerging states" and assisting them to catch up with the West. The very language in the very first national plan (1956-1961) manifested western liberal influences (Mihaly, 2009). In the 1970s, poverty alleviation became a catchword and strategies such as the 'basic needs' and 'IRDPs' ensured the involvement of major bilateral donors and multilateral lending institutions. Scholars have said how despite cumulative growth in specific sectors during 1950-80, this growth did not help much in augmenting the country's productive capacity and generating employment for the people to live and work in the country (Gurung, 1982 cited in Panday, 1983:281).[326] It also had very limited impact on inclusive and equitable economic growth in relation to gender, caste, ethnic and regional disparities in health, education, political representation (Gurung, nd. & 2003; Bennett et al. 2008).

At present, Panday (2011) states that Nepal is behind its regional neighbours in per capita gross domestic product (GDP), growth rates of GDP and in the growth of value added in manufacturing also. It is only the service sector which has grown, helping the GDP register growth at slightly above levels of the 1970s and 1980s. Agriculture is still far from contributing its potential to the national output. It is still a neglected sector, "even by the donors who virtually sacrificed it at the altar of the so-called economic reform and priority for good governance" (ibid). Fall in poverty levels due to remittances that ironically have become the mainstay of the Nepali economy. Remittances have doubled to reach 23% of the GDP in the last ten years enhancing the survival of rural households but can fall anytime given the volatility of the market. But as Panday aptly points out that, "if poverty reduction is to be achieved through remittances, not domestically generated financial and organizational resources that would have limited meaning" (Panday, 2011: 32).

The most ominous trend is the drastic increase in government regular expenditure limiting the scope of domestically financed development in the public sector. The sub-economy of Kathmandu as a factor of underdevelopment of the rest of the country which was pointed out in 1982-83 by Misra and Sharma (1983:6) continues to hold true.

Due to its own inability in increase production and the imperatives of development assistance, Nepal has followed the different currents of aid ideology, modalities and instruments of its deliveries over the years (SAP in the 1980s, economic liberalization and reforms, to name a few). At different points of time "the inability of a given initiative to produce the intended results inspired discussion on the next generation of aid modalities" (Panday, 2011: 9). But the impact of foreign aid on poverty alleviation, economic growth, and social justice and equity is highly questionable.

[326] Gurung states that between 1950 and 1980, there was 13 times growth in road mileage, 70 times in power generation, 13 times in irrigation facilities, 134 times in school enrolment, 12 times in number of hospitals also with control of various endemic diseases (Gurung 1982 cited in Panday, 2011).

The Other Side of the Picture: Given that the figures from government sources are underestimated and do not fully capture expenditures directly incurred by all donors, Panday (2011) provides a second picture of how foreign aid as a percentage of total public expenditure has increased from 18.9% in 2002-03 to 21.1% in 2008-09 with wide variations in aid disbursements between years (2011:34-35). The country's dependence on aid has actually been increasing over the years. Aid dependence in economic and financial terms remained more or less constant between the beginning of the 1960s and the end of 1970s. But the resource gap between savings and investment has been steadily growing since the 1980s increasing the reliance on foreign aid (grants and loans) to fill in the gap.

Changes in Approaches - Projects to Sectors: Early foreign aid tended to be focused through projects and programmes – but not necessarily sectoral. In most cases the 'project' approach provides direct services to one or more specific sector in the target country and many donors have used this approach to support development initiatives. But in some sectors such as education, donors have been supporting a sector wide approach (SWAp) since the mid 1980s and have also moved towards a similar approach for supporting the health and forestry sectors since 1990s. In the sector wide approach, the donor agency provides the national treasury with money in order to finance budget expenditures in a governmental sector that requires external assistance to promote development initiatives (Maslak, 2002:90). This approach requires donor agencies to work in concert with governmental officials to negotiate policies and plans for development in the identified sector. While many donors have extended support through a SWAP they have also continued to support specific projects in specific geographic areas as well.

2.17.4 Foreign Aid in the Koshi Hills

Foreign aid in the Koshi Hills has been a part of this 'current of aid ideology' throughout the years, as is reflected in the evolution of programmes (government and non-government funded) that have been reviewed in different chapters in this report. With the 'project' focused approach of donors in Nepal (and to minimize duplication of efforts), another characteristic of foreign aid has been the apportioning of different geographic areas and sectors by donors. Along this line, the Koshi Hills has received considerable attention and investment in different sectors from the UK government and non-government agencies. Additionally this area has also received support from other bilateral and multilateral agencies which are also discussed below.

2.17.5 British Government Interventions in the Koshi Hills

One of the key factors that led the British government to envisage allocating funds for regional development in the east – in addition to the expressed interest of the government of Nepal - was its historical links to the region and its people through the recruitment of Gurkhas from the eastern hills and its presence in Dharan, through the pension paying post and related activities. They included the construction of the Dharan-Dhankuta road, establishment of an agricultural research centre at Pakhribas, with an initial focus on providing technical assistance to ex-Gurkha farmers (in agriculture and 'rural trades', and subsequently funding a series of 'integrated rural development programmes' from the 1970s to the 1990s. Gross bilateral aid averaged around £3.3 million per annum in the 1970s rising consistently (except in 1983) reaching £20 million in 1988. While the aid had been supplied on a half grant – half loan basis until 1976, since then all aid to the country has been on grant basis (Nickson, 1992).

A 2010 study estimated that some GBP 247 million has been invested in the Koshi Hills by foreign agencies since 1972. The bulk of this (70%, i.e. about £90 million) was from DFID. Other agencies and donors were the government of Netherlands, Danida, SNV, ADB, World Bank who supported different sectors (refer to Annex 19 for details). A summary of this estimation in terms of broad sectors is presented in Table 1 while more details are presented in Annex 19. Adjusting the investments to 2008 values, the total was about GBP 247 million, of which approximately GBP 129.0 million (52%) was in the agriculture, forestry and other rural development efforts.[327]

[327] An approximate estimate of 2008 values using GDP Deflator Index, correcting historical GBP values to 2008 values based on average UK GDP for year. Mid-point values were taken for the project duration.

Table 77 Foreign Aid Investment in Koshi Hills, 1968-2003

Programme/projects	Period	Total in GBP (2008 values)	(%)
Agriculture and rural development	1968-2013	129,533,519	52
Roads projects	1972-2009	102,085,483	41
Health projects	1968-2010	7,022,271	3
Conservation programmes	1986-2003	8,624,721	3
Total		247,265,994	100

Despite the volume of British aid, Nickson argues that British aid in Nepal was largely unsuccessful if the development objectives were to be considered:

The poor developmental record of British aid to Nepal during the 1980s ... can only be understood in the context of the overriding political objective of the British government in Nepal during the period. This was to maintain excellent relations with the Nepalese monarchy, thereby ensuring continued access to Gurkha recruits for the British army. The purpose of foreign aid was primarily to contribute to the attainment of this political objective.[328] When viewed from the standpoint of this latter objective, the aid programme was largely successful. This does not negate the fact that when viewed in terms of the developmental objectives of the executing agency, the ODA, the aid programme was largely unsuccessful (Nickson, 1992).

This view that British 'aid' is at least in part driven by political considerations is supported by the fact that the 1992 Interim Country Programme Review of DFID emphasised the "strongly justifiable" grounds for the need for increase in the aid programme to Nepal on account of poverty, recently established democracy and the long-standing warm political friendship between Britain and Nepal.[329] The period after the 1990 Jana Andolan I, with the restoration of multi-party democracy heralded changes in the GoN priorities and policies. GoN expressed an interest in a shift in donor support from a project-focused (and often geographically - confined) to a more sector-oriented approach where possible. Thus the DFID Country Programme Review highlights the opportunity to shifting policy and financial commitment significantly more in favour of the social sectors and good governance, as well as in gender planning training, while continuing to capitalizing on experiences in agriculture, forestry and roads particularly in the eastern part of the country.

The report also cautions against the need to not stretch across too many sectors. By 2006, DFID and its partners had achieved a much wider level of outreach and delivery of benefits reaching the rural populations in 74 districts over half of whom live in remote locations, over three hours from the nearest road.

A report on the evaluation of DFID's Country Programme in Nepal 2001-2006 states that "60% of Nepal's development budget is donor-financed, and much of the aid is in the form of projects". The

---

http://www.measuringworth.com/ukcompare/. Prior to conversion into 2008 values, the highest investment (51%) was in the roads sector followed by 41% in agriculture and rural development (refer to Annex 1).

[328]Senior officers in the British Regiment of Gurkhas described this function of the aid programme to the author in the following terms: "as being seen to be doing something in the areas of Gurkha recruitment", and the relationship between British aid and the political factors as follows: "The Gurkha connexion brings a lot of money to Nepal - remittances, pensions and fare earnings of Royal Nepal Airlines as carrier. There is also the bilateral aid from the ODA. If it was not for the Gurkha connexion, this aid would not be forthcoming."

[329] The report proposes GBP 17.5 million for 1992/93 and also points out how British aid to Nepal was modest as compared with many similarly-sized poor countries in the region which received 4-5 times as much aid in per capita terms during that time (DFID, 1992:6). Yet, the report also cautions about the absorption and effective use of aid (equal to 16 per cent of GDP) as a problem due to the government's inadequate administrative system and poorly planned public expenditure programme.

report estimates that DFID provided 12% of all foreign assistance during this period and that the budget support represented only 9% of the total DFID expenditure since the rest was disbursed through other mechanisms (DFID, 2007).

2.18 In-depth Case Studies

2.18.1 Governance and Decentralization

Decentralization processes that were sponsored by the state began in the 1960s in Nepal. Yet critiques point out that the decentralization process during these early years focused narrowly on administrative decentralization (Agrawal, 1999:45). The Nepali Constitution of 1962 and the party-less Panchayat System tried to institutionalize a concept of decentralization through the formation of local bodies at the village, city, district and zonal levels. Yet in reality the local bodies served merely as units under the administrative bodies set up by the state which used them extensively as an extended arm of the central government. The highly centralized system of governance remained reluctant to provide any meaningful role to the local government bodies, private sector and civil society in the actual governance process (Chhetri et al., 2008).

In 1971 the government created the Department of Local Development under the then Home & Panchayat Ministry. It was only in 1980 that it was upgraded to a ministry. The Ministry of Local Development, in the current organizational form and structure, has been in place since the 1990 and has been assuming the role of expediting local development and decentralization.

2.18.2 The Decentralization Act

The passing of the Decentralization Act in 1982 and its Bye-laws in 1984 were important policy measures taken by the government to institute formal and state led processes of decentralization and local governance. The initiation of such significant processes of decentralization focused on placing all district level line agencies under the umbrella of the respective District Panchayats. Secondly, the legal measures promoted the management of local resources through “users’ committees” rather than the existing political bodies (i.e. the Panchayats). Thirdly, attempts were made to extend some administrative and functional powers to the local bodies.

Despite these attempts at legalizing decentralization processes across the country in the 1980s, government efforts at promoting local governance and decentralization were not successful. A review of selected decentralized programmes by Bienen and colleagues (1990) showed the difficulties involved in setting priorities, planning, and implementing programs at district and sub district levels. The study also showed the dangers of the process due to the capture of local programs by local elites. The researchers concluded that, at that point of time, decentralization appeared to have “further burdened the system of informational flows between the centre and the peripheral areas without any notable improvement in efficiency” (ibid).

2.18.3 Changed Political System - Multiparty Democracy

The inception of multiparty democracy in 1990 gave a renewed emphasis on decentralization and local governance. Three separate Acts - The District Development Committee (DDC) Act, the Village Development Committee (VDC) Act, and the Municipality Act - were enacted in 1992 and these local bodies were formed in accordance with the new Acts. At present there are altogether 75 DDCs, 3915 VDCs and 58 Municipalities in the country[330].

The decentralization process received high priority in the Ninth Five Year Plan (1997-2002). The Plan document stated that the goal and objectives of decentralization were maximizing the association of the 'sovereign people' in governance, institutionalising participatory development processes, and

[330] In 1995 and 1996 the local bodies formed associations to collectively represent their interests. The Association of District Development Committees (ADDCN), National Association of VDCs in Nepal (NAVIN) and the Municipal Association of Nepal (MUAN) are playing a pragmatic role through the collective voicing of their interests. This is also contributing to the internalization of the decentralization process.

strengthening the local bodies to assume the responsibility and authority to plan and implement local development activities, and enabling local leadership to take appropriate decisions (MLD, xx).

Local government after 1990 involved elected councils at village and district level (VDCs and DDCs) and for towns and cities (municipal councils). In addition to these elected bodies, there were nominated local officials, including the Chief District Officer (CDO) and representatives of most central ministries, including those involved in supporting the local economy (agriculture, forestry, etc.) and social services (education, health, etc.). The elected local representatives in the country practiced the local governance for two full terms after 1990 until their terms expired in July 2002.

2.18.4 History of Local Governance in the Socio-Cultural Context of Nepal

Agrawal and colleagues (1999), Bhattachan (2002) and Biggs and colleagues (2004), among others, point out that there were established indigenous systems of decentralized governance before the formation of a strong central Nepali state. Bhattachan provides examples of different types of traditional voluntary local self-governance systems based on caste and ethnicity and indigenous national group practices in Nepal, that range from management of natural resources, social and cultural activities, to labour sharing and administrative functioning.

Bhattachan (2002) and Biggs and colleagues (2004) provide a synopsis of different voluntary governance and local regulatory systems of different ethnic groups. For example: the system of Posang (local governance through a Village Assembly) of the Syangtan (Panch Gaule) in Mustang; Bheja, a multipurpose voluntary organization of the Magars of Western Nepal which performs functions pertaining to religion, agriculture, resource management, entertainment, and conflict management; the Mirchang of the Marhpatan in southern Mustang which was responsible for the management of natural resources, including forest; the 150 year old management of the irrigation system owned and controlled by the Tharus of the Chatis Mauja area in Rupandehi; the labour exchange systems of Parma (Nogyar (of the Gurungs) /Porima (of the Limbus); the Guthis of the Newars focusing on management of religious and social life; the local administration system of Choho of the Tamangs; the socio-economic management system of Ttho of the Gurungs; and the socialization and information Management system of the Ro-Dhin ("Rodi") of the Gurungs.

2.18.5 Participatory District Development Programme (PDDP) and the Local Governance Programme (LGP)

These two key programs provided the much needed impetus to the decentralization and local governance efforts in the mid 1990s. UNDP initiated large-scale support nationwide starting in 1995 to build up the capacity of local bodies and communities for self-governance through the Participatory District Development Programme (PDDP)[331]. The main objective of PDDP was to use decentralized district and village institutions to bring about participatory development by the rural people. PDDP aimed at addressing the challenge of poverty alleviation by strengthening and supporting decentralized, participatory and more sustainable management of development at the district levels.

The promulgation of the Local Self Governance Act (LSGA) in 1999 heralded a concrete step in this direction by making planning and programme implementation more accountable to local people and putting social services such as education, health and others under local control. The LSGA transferred political, administrative and financial authority to three key local bodies – the District Development Committees (DDCs), Village Development Committees (VDCs) and the Municipalities. Decentralization initiatives were also taken in various spheres of resource management and public service delivery such as those related to the concept and practice of community forestry where local community forest user groups (CFUGs) received legal rights to manage and utilize forest resources; farmer managed irrigation systems (FMIS) and water users associations (WUA) which promoted farmer participation in water resources management; the concept of community management of public schools mandating representative community groups to supervise, monitor and manage such 'community schools' (Chhetri et al., 2008). Power and authority was also transferred to local representative groups called the Health Facility Operation and Management Committees (HFOMCs) to manage local health facilities. The aim of the HFOMC was to serve as a bridge between government

[331] http://www.undp.org.np/programs/details.php?i=96. Downloaded on 1/18/2012.

and local communities, communicate the concerns of community members to health facilities and VDCs, provide information to communities on new services or modifications to the health care system, help develop and monitor action plans, and help manage local health facilities (CARE, 2011).

2.18.6 Lack of Elected Government: 2002-2012

From October 2002 onwards there was no elected government in Nepal. National assembly had been dissolved by the king and a series of appointments to cabinet made by him in collusion with individual politicians and the political parties. At the local level, council members came to the end of their terms of office and these were not renewed; nor were there elections because of the security situation in much of the country. Instead of elected councils, local government was undertaken by the appointed officials and bureaucrats of the various ministries, with some support in many districts from the unelected local politicians who remained of course members of the local elite.

A decade without elected local government has had its negative effects on local governance and on the representation of local interests, particularly of those who have less wealth and power. There has been a tendency to assume that non-government organizations (NGOs) and Community Based Organizations (CBOs) can in some sense replace elected local government, but all of the local NGOs and CBOs represent particular and often sectional interests and are not accountable in a formal sense to their members in the way elected representatives are, at least in theory.

It has also been difficult often to implement local development initiatives as a result of the lack of elected local councils and local government. The LDO often works somewhat in isolation, or with local NGOs and CBOs.

The Tenth Five Year Plan (2002-2007) focused categorically on poverty alleviation based on a Poverty Reduction Strategy for the country and identified decentralization as one of the cross-cutting priorities for attaining this goal. Despite the political instability during this period due to the Maoist insurgency and the challenges it imposed on the country's development, this period saw reforms toward improving service delivery and accountability. The government formulated an 'Immediate Action Plan' (IAP) in 2002 to identify areas of reforms that were critical to attain the goals of the Tenth Plan. Prioritizing public expenditures, improving local delivery of social services, and fighting corruption and improving accountability were the three major areas of reforms[332].

The formulation of the Local Bodies Fiscal Commission (LBFC) in the same year was a step in the direction of fiscal decentralization, aimed at developing the fiscal transfer system from the central government to local governments (NPC, 2010). The system till date lacked transparency both in the vertical share and in the horizontal distribution (WB, xxx). Little progress has been made in fact in ten years.

2.18.7 Decentralized Local Governance Support Programme (DLGSP) (2004-2009)

Building on the foundations laid by the PDDP and LGP (and a Bridging Phase of LGP/PDDP), UNDP and the Government of Norway lent support to MLD for the Decentralized Local Governance Support Programme (DLGSP) at a total cost of $21.7 million. The goal of the programme was 'to enhance effective participation of people in the governance process ensuring improved access of socio-economic services to Dalits, disadvantaged groups including women, in particular, as envisaged in the Tenth Plan/PRSP" (Ueli, et al., 2009:16). This all despite the lack of elected government at village or district level.

Along the lines of the former programmes, the DLGSP also provided support at all three levels of governance. At the micro level, participatory people centred development processes were supported using social mobilisation based village Development Programmes and positive discrimination as the prime strategy. At the meso level capacity building and strengthening the efficiency of government service providers at VDC and DDC level to deliver basic services was supported. At the macro level support was provided to the government of Nepal, in particular to MLD and the NPC, in preparing and implementing necessary acts, policies and guidelines on decentralized governance and poverty

[332] http://www.npc.gov.np/en/plans-programs/economic/. Downloaded on 18/1/2012.

alleviation (ibid). The absence of elected local government from 2002 and the depredations of the conflict seriously undermined progress on decentralizing government. This led to DLGSP directing much of its resources to supporting local communities to manage their own development through community based organizations (CBOs).

2.18.8 Local Governance and Community Development Programme (LGCDP) (2008–2012)

In an attempt to streamline all foreign aid supporting decentralization and local governance efforts, a sector wide approach was adopted by the Ministry of Local Development and the Local Governance and Community Development Programme (LGCDP) (2008–2012) was initiated. Over 10 multilateral and bilateral aid agencies have committed US$161.5 million in addition to the US$260.8 million in Block Grants allocated by the government of Nepal to support the LGCDP[333]. This again, in place of elected local councils and local government services able to implement programmes and projects according to an agreed local VDC or DDC development strategy.

The *goal* of the LGCDP is to contribute towards poverty reduction through inclusive responsive and accountable local governance and participatory community-led development that will ensure increased involvement of women, *Dalits*, *Adibasi Janajatis*, Muslims, *Madhesis*, disadvantaged groups in the local governance process. The ***purpose*** of the Programme is "improved access to locally and inclusively prioritised public goods and services". The programme focuses on four strategic areas to fulfil this goal: (i) active and effective participation by communities in the local development processes and strong interface with their local governments; (ii) building the capacities and procedures of local bodies, and their financing arrangements; (iii) assist in the development of the overall policy and enabling regulatory framework for devolution and local governance, community development, social empowerment and safety net; and (iv) formulating institutional mechanisms for downward accountability (particularly in the context of elected representatives not being in place in the local bodies in the current time) (MLDP, 2008). Moreover, LBs, line agencies (LAs), non-government organizations (NGOs), community-based organizations (CBOs), and private sector are working together to enhance better service delivery through decentralized governance at local level.

'Social mobilisation' has been used as the key tool for poverty alleviation at local levels, and it is currently being implemented through the local bodies, government line agencies, NGOs and the banking sectors. The social mobilisation strategy has been accepted by foreign development agencies and by local development organizations and agencies as an entry point for community development activities at local level in the absence of elected local councils capable to representing local communities' views on the appropriate development strategy and specific interventions.

A baseline study of the LGDCP was conducted in 2010 for the MLD where information was collected from 5,873 households (4,590 rural and 1,283 urban) covering all 75 districts and all 58 Municipalities, as well as selected VDCs and DDCs (USCN, 2010). Box 6 presents selected findings from the baseline.

Box 6: Selected Results from the LGCDP Baseline Study, 2010

- Household Survey
- Over 28% of households had attended ward level planning meetings during the last 12 months from the survey period
- Only 14% of respondents had knowledge about the development activities completed by DDC during the last 12 months though 30% had knowledge about the development activities completed by VDC and Municipality. Of the households having knowledge on completion of development activities, 78.6% knew about road projects.

[333] ADB, DANIDA, CIDA, DfID, UN System (UNDP, UNICEF, UNCDF, UNFPA, UNV, etc.), SDC, GTZ, JICA, World Bank, Government of Finland, and the Government of Norway.

- Only about 20% of the respondents had knowledge on the budget of VDC and Municipality and about 21% had knowledge on ward level budget. Such knowledge was highest in mountain and lowest in Tarai, and was higher in rural areas compared to urban areas.
- About 45.3% of household respondents perceived that there was 'no corruption' in VDCs and Municipalities, but more than 55% perceived that there was 'some degree of corruption' in these local bodies.
- 45% of respondents said that employment opportunities had increased but 25.7% of them said that rich and influential persons had benefited from such opportunities.
- 35.5% respondents had heard about Social Mobilisers and a little over 24% said they were satisfied with their performances.
- VDC Survey Results
- Over 50% of the block grants in VDCs were found to have been allocated for the infrastructure development projects followed by educational projects (23.4%).
- 40% of the VDCs surveyed (i.e. 79 VDCs) said they did not have any development partners working in their localities.
- DDC Survey Results
- 56% of the respondent DDCs said that they were moving towards self-reliance.
- Over 70% responding DDCs had assigned a Gender Equality and Social Inclusion (GE/SI) focal person though only 28% had prepared a gender mainstreaming policy.
- Over 65% had implemented child friendly local governance by establishing relief funds, child/women development funds and other funds targeting deprived communities.

2.18.9 Local Governance and Decentralization in the Koshi Hills

Although from relatively early on, there was the notion of 'regional development' was introduced, which has allowed commentators to refer to the eastern development region, but there is no specific body responsible for development planning and strategy at this level. Within the eastern region many identify specific 'zones' (*anchals*) e.g. Mechi and Koshi 'zones'. Under the Panchayat system, these zones were the responsibility of an appointed official (an *Anchaladhish*). They usually included mountain, hill and Tarai areas or districts. Thus the Koshi Zone included Sankhuwasabha, Bhojpur, Tehrathum, and Dhankuta, and also Morang and Saptari in the Tarai. The position of *Anchaladhish* was abolished, however, in the early 1990s, and there has been no alternative or replacement at this level. There is now no intermediate governance structure between the national level and the district level. The highest form of local government is that of the DDC[334].

At present a 'federal' system of government and administration is being proposed though no final proposition has been accepted as yet. Thus at the local level, the district, the VDCs and the Municipalities remains the crucial unit for development strategy planning and implementation. The rest of this case study will focus on how local governance structures and processes of decentralized planning, decision making and resource allocations are being implemented at the local levels especially vis a vis the opportunities being created and instituted by programmes such as the LGCDP.

2.18.10 Commercial Agriculture Development ProgrammeImpact Studies in the Koshi Hills

2.18.10.1 Objectives

The programme was implemented in 2007 by the Department of Agriculture (DoA) with the grant support of the Asian Development Bank (ADB). The main objective of this programme is to establish a network of value chains for High Value Crops (HVC), primarily tea, cardamom, ginger, citrus fruits,

[334] Refer to Annex 1 for a list of the VDCs and municipalities of the four Koshi Hills Districts.

tomato, and potato to sustainably increase the level of commercialisation of agriculture in the Eastern Development region (EDR) (ANZDEC, 2003).

The programme is based on the assumption that isolated farmers and agro-business are themselves unable/unwilling to invest in new technology, infrastructure and post-production systems; which in turn does not allow for new innovations, nor the capture of new opportunities arise from the increasing regional and international linkages. As such, the emphasis of the programme has been on facilitating the exchange of information; facilitate the transformation of loosely-organized famer groups into more efficient and active networks; development of a market information system; construction of infrastructures for improved market access and the enhancement of project partners capacities (CADP, 2008b).

Table 78: Top Five Orthodox Tea Growing Districts, 2010

District	Cultivable (ha)	Production (MT)	Yield (MT/ha)
Jhapa	90,880	14,471.6	0.15
Ilam	5,262	1,636.82	0.31
Panchthar	878	230.95	0.26
Dhankuta	452	126.78	0.28
Terhathum	260	47.65	0.18

According to the programme documents, the EDR was chiefly selected for the programme due to its 'comparative advantage' in producing a range of crops both within the hills (seed production, citrus, spices, off-season vegetables) and across the Tarai (vegetables, oilseed, cereals). The close proximity with Indian markets in Siliguri, Calcutta and New Delhi along with Bangladesh were also identified as being significant and an important market potential, which needed to be tapped due to the rising population and income levels.

At the time of the project planning, in 2001/02, data shows that shows that pulses, ginger, cardamom and vegetables were the main exports from the region (ANZDEC, 2008b). There are however inconsistencies with regards to the data of the magnitude of trade across different sources. For example, the Nepal Rastra Bank (NRB) had estimated the export of NRs 26m worth of tea from the EDR, while the Trade Promotion Centre (TPC) puts the figure at NRs 69 m.

Nevertheless, according to a baseline study of the programmes key indicators, over 31,232 ha of land within the hilly areas of the EDR[335] were under HVC production in 2006/07; accounting for 13.2% of the overall cropped area. Assessments of the value chains of selected 10 HVCs[336] also showed that the volume of production of all the HVCs, except ginger, has been increasing (Fulbright Consultancy 2008a, 2008b, 2008c, 2008d, 2008e, 2008f, 2008g, 2008h, 2008i, 2008j). Table 79 provides a brief overview of the production volume at the time of the programmes launch.

Table 79: Volume of Production of Selected HVC in 2006/07 within the CADP Districts (CADP Value Chain Reports)

HVC	Ginger	Cardamom	Tea	Banana	Cabbage	Mango	Onion	Tomato	Potato
Production (MT)	4,4987	7,015	15,168	5,715	94,388	18,354	72,393	34,461	34,700
Yield (MT/ha)	13.0	0.61	0.9	15.0	17.1	10.5	15.0	18.6	12.5

[335] This includes Dhankuta, Ilam, Panchthar, Taplejung and Terhathum (Business Promotion and Research and Communication 2009).

[336] This includes ginger, tea, cardamom, banana, cabbage, mango, onion, orange, tomato and potato. Reports are available at www.cadp.gov/np/reports

2.18.10.2 Interventions and Impacts

The progress reports note that the programme has been successful in creating a Commercial Agriculture Alliance (CAA) of over 267 members by 2011; with farmers groups representing 49.44%, cooperatives 29.9%, traders 12.7% and processors 7.8% (CADP, 2011). Unfortunately, these reports do not mention how the alliance has been functioning, nor they have been active in improving the commercialisation of HVCs as intended by the programme. Though the reports highlight that the number of membership requests coming from all of the programme districts has far exceeded expectations, leading one to infer that membership has lead to benefits.

The same reports however go on to point out that the construction of infrastructure projects, market roads and market development centres, have been slow, with up to 1 year lags. Within the Koshi Hills, two road improvement projects[337] and one collection centre was established within Dhankuta district; while only an agricultural production collection centre was built in Terhathum by the end of 2011. These projects were built with the support of the Commercial Agricultural Fund (CAF)[338] (75% of costs), DDC (15%) and local communities (10%). Financial support was also provided for 75 on-infrastructure projects to procure processing equipment, setting up storage facilities, marketing and packaging plants (CADP, 2011). According to the annual report of 2011, the immediate effect of these projects, both infrastructure and non-infrastructure, has been the generation of over 63,000 person days of employment.

In addition to the support provided to physical structures, the programme has also sought to increase access to information through the use of local radio and the setting up of a website; with the former circulating daily price bulletins on 15 radio stations and the later providing relevant information to partners. According to an internal assessment conducted by the programme in 2011, 28% of the respondents had utilised the daily radio updates to fix the prices of their produce resulting in better prices ranging from 8- 36% increases (CADP, 2011 citing the internal assessment).

The programme documents do not however provide information on how the various components have or have not led to greater commercialisation within the region, either in the increase or diversification of employment opportunities (both on farm and post-production) in HVC. One reason this maybe due to the fact that the programme is still on-going and as yet no evaluations, neither internal nor external, have been conducted.

Some of the problems identified in the programme documents include issues related with production, marketing as well as international fluctuations in prices (Fulbright Consultancy, 2008g; CADP, 2008b, 2011). One of the most significant being the inadequate research directed towards HVCs. An assessment of the value chains for off-season vegetables, notes that though efforts have been made, particularly in PAC, it still lags behind in terms of addressing the needs of the farmers (Full Bright Consultancy, 2008g). The lack of dry season irrigation systems was also another important factor affecting production (Fulbright Consultancy, 2008a, 2008g, 2008e). It was noted that most of the production was confined to the monsoon period, when water was available. The over-dependence on Indian markets for certain commodities, such as tea and cardamom, was also reported to make the sector increasingly vulnerable to price fluctuations (Full Bright, 2008b).

The programme objectives also do not specifically mention excluded groups such as the landless, small farm holders, ethnic minorities and women. But, there is an underlining assumption that poverty reduction will take place when these groups, particularly small farmers are organized efficiently, their capabilities enhanced and linked with up- and down-stream providers (input suppliers, processing units, traders) to enable them to access technology, credit, markets and cope with risks. Furthermore these groups are however included in the targets within the Log Frame and reports were found to have monitored the progress with respect to their inclusion in programme activities. For example, capacity enhancing trainings were provide to 3,168 trainees; amongst which 22.8% were women, 28% belonged to Janajatis, while Dalits only constituted 2.4% (CADP, 2011).

[337] This includes: the Sidhuwa Maua Mahabhir Gramin Road and the Hile Bhirgaun Gramin Road (CADP, 2011).

[338] The CAF was established as a cost sharing grant facility, which is supported by the Ministry of Local Development.

Vocational and technical trainings were also provided to small farmers to develop and strengthen income generating activities. While efforts through local NGOs were also conducted to raise awareness, mobilise and integrate women into the value-chains through trainings and workshops. As a result, the reports note that 30% of the CAAs were women.

The programme has also worked closely with the Japanese Fund for poverty Reduction (JFPR), which is also an ADB supported programme that is seeking to "…improve the livelihoods of farmers and disadvantage groups" (CADP, 2011:2). This programme, which is also implemented in 4 of the CADP districts[339], through the support of a national NGO, Development project Service Centre (DEPROSC), is focused upon organizing small farmers into Self Help groups (SHG) to help them mobilise themselves and link them with the DADO; provide trainings to build up their capacities and support in income generating activities. The 2011 annual progress report notes that by the end of 2011, 449 SHGs had been formed; which included 41% Dalits, 50% Janajatis, and 10% other castes (CADP, 2011).

[339] These include Dhankuta, Morang, Sunsari and Saptari.

3 CUMULATIVE CHANGE IN THE KOSHI HILLS

3.1 Review of National and District Level Data

The data for the analysis of cumulative changes in the Koshi Hills are based on district level data sources for four districts (Bhojpur, Dhankuta, Sankhuwasabha, and Terhathum) of the Koshi Hills (KH), two Koshi Tarai districts (Morang and Sunsari), and two neighbouring districts (Ilam and Khotang). There has been an attempt to gather and review data from all available sources, but the main source for the sectors being considered at national and district level is the Central Bureau of Statistics (CBS). This source provides data for every ten years from 1952/54 to 2011 generated from the decennial censuses, but here we have analysed the data for the past 40 years from the 1971 census. The census of 2011 has just been completed and the final data is yet to be released for public use. In addition, data has also been mined from publications, information systems and archival documents of various line ministries, development programmes, public institutes, and private publishing institutes. This section presents a review of the major national and district data sources. This study has prepared datasets of these sources.

3.2 Major Data Sources

3.2.1 Central Bureau of Statistics

Central Bureau of Statistics (CBS) is an authorised national agency for the population census, being conducted every ten years. The demographic data from this source are available at the district level that can be aggregated at zonal, development region and national levels. Data are also available below the district level such as municipality and Village Development Committee, but they are on very basic population indicators. The first population census of Nepal was taken in 1911, but it was only since the 1952/54 the scientific population census was carried out. The 1991 population census for the first time covered the population disaggregated by caste and ethnicity, while the data on electricity, toilet, water source, cooking fuel, and possession of physical assets at household level were incorporated only since the 2001 census.

For the purpose of the study, the datasets being prepared include the population censuses of 1971, 1981, 1991, and 2001. The preliminary data sets of 2011 population census being available include basic demographic data at district level such as population by sex, growth rate, absent (abroad) population, number of households, average household size, and population density.[340] These will be used wherever feasible and appropriate. The datasets also include the disaggregated data by gender at the VDC/Municipal level available with the CBS's population censuses from 1981 to 2001.

The CBS published the datasets on demography, agriculture and livestock holdings, literacy rates, economically active population, etc at VDC and municipality levels in 2002.

CBS is also a source for other data, in addition to the population. Other national surveys carried out by the CBS are Nepal Living Standard Survey (NLSS), Nepal Labour Force Survey (NLFS), and Manufacturing Establishments (CME) Census.

The first NLS survey was conducted in 1995/96 and since then two surveys such as NLSS-II and NLSS-III were completed in 2003/2004 and 2010/2011 respectively. The NLSSs are based on households sample size across the nation and have generated datasets on the extent, nature and determinants of poverty in terms of welfare, consumption, income, housing, health, education, employment, remittances, etc. As the sample size is not enough for district level analysis, these data will be appropriately used for the Koshi Hills or regional levels, as well as for urban and rural levels.

Two NLFS surveys have been carried out by CBS in 1998/99 and 2008, comprising the data on employment (formal and informal sectors), migration, remittance, and others. These data are also

[340] While consulted with the Director General of CBS by the study team about other disaggregated data such as caste and ethnicity, physical assets by household, etc, they can be available sometime after 2012, as normally processing of data will take about two years.

based on the household samples across the nation and therefore are appropriate for the analysis at the regional and national levels.

The CBS has been conducting CMEs since 1964/65 at every five years and has published them into nine series. The data being covered are number and type of manufacturing establishments, number of person engaged, total wages and salaries, etc., at the district and national levels. In addition, the datasets of the Small Manufacturing Establishments Survey of 2008/09 of CBS are also prepared.

Other data sources of the CBS, but based on those censuses being published in alternate year are *Statistical Year Book* and *Statistical Pocket Book.* The Year Books, which have been published since 1987, provide most of the population data and other indicators related to land holdings and precipitation at the district level. This study has gathered those Year Books. CBS's other publications to be used as references are population monograph, etc.

3.2.2 Agriculture Census

The second largest data source available at the district level is the National Sample Census of Agriculture (NSCA) conducted by CBS. The first NSCA was carried out in 1961 and then continued to carry out the survey after every ten years. It covers data on the agriculture indicators such as number and area of holdings, size of holdings, livestock, cropped area and production of various cereal crops, cash crops, vegetables, food sufficiency, fertilizers, seeds, etc. There are datasets compiled by the study from 1971 and onwards.

The Ministry of Agriculture and Cooperatives (MOAC) also collects and generates time series data on the agricultural sector at district level. The agricultural sector data was published by MOAC for the first time in 2005, based on those from 1990/91 to 2003/04. Another series has been published in 2011 covering the datasets of 1904/05 and afterward.

3.2.3 Nepal Demographic and Health Survey

The Department of Health Services (DOHS) had carried out the Nepal Demographic and Health Survey (NDHS) for the first time in 1976 and thereafter has published its eight series. These series comprise the data on fertility and family planning, infant and child mortality, children's and women's nutritional status, amongst others. The health data are available at the national, regional, and sub-regional levels (including urban and rural areas), but not disaggregated at the district level. Prepared datasets are of 1996, 2001, and 2006.

3.2.4 Health Management Information System

The DOHS established the Health Management Information System (HMIS) for the first time in 1993/94. The HMIS comprises data on immunisation, maternal health, family planning, among many other health related indicators by different levels of health services at the district level. The study has collected datasets from 1993/94 to 2009/2010.

3.2.5 Educational Management Information System

The Department of Education (DOE) has set up "Educational Management Information System" (EMIS) in 1962 and made it into computerised system in 2004, consisting of datasets on number of schools, students, teachers, and many others. The datasets are available at the district and are disaggregated by gender and caste and ethnicity for selected educational indicators at the VDC level as well. The EMIS has made provision to retrieve its digital archival data on VDC level from 2007 onwards.

The DOE has been publishing its annual statistical reports on education status since 1951. The data on the student enrolment, teacher ratios, etc are available at the district level. Except the datasets for 1970 and 2000, the datasets for all other years have been collected.

3.2.6 Programme/Project and Local Offices

The Coffey and Metcon (2010) is being the main source to get into most of the documents where and with whom they are. The study team members visited different projects and local government offices outside the Kathmandu Valley to gather documents from Pakhribas Agricultural Centre Library, education and health services, etc in Dhankuta and Lumle Agricultural Centre and Gurkha Welfare Centre in Pokhara. The earliest record document at VDC level for education was 1998, while that for

health was from 2000 onwards. Former project staff (national and international) members of the Pakhribas Agriculture Centre were also contacted whether they had reports.

A total of 116 archival documents hitherto related to programme/projects implemented within the Koshi Hills region since 1980s and onwards have been collected. The study team will keep on acquiring additional archival documents during the review of the documents.

3.2.7 Private Publishing Agencies

The private publishing agencies and resource centres such as Nepal Development Information Institute (NIDI), Mega Publications, Informal Sector Research and Service Centre (ISRSC), and Intensive Study and Research Centre (ISRC) have published data at district level, containing those based on the population census and various other national sources. This study has compiled the datasets from these sources as complement to the district level analysis. The private agency like Intensive Study and Research Centre (ISRC) has also published VDC directory based on the population census and line ministries in 2008.

3.2.8 Data Gaps

The data gaps derived from the review of the data sources mentioned above are as follows.

3.2.8.1 Lack of Aggregated Data at Sub-district Level

While most of the sources available concern with the data aggregated at district or higher spatial level, the data existing and available at the local levels, i.e., VDC and municipality in the Koshi Hills are limited and scattered; no data existing are available at settlement level.

3.2.8.2 Data Inconsistency

The available data vary considerably from one source to another. For example, the quantitative indicators related to demography, migration and occupation to be generated from the population census are available for 1971, 1981, 1991 and 2001, whereas those indicators related to standards of living are available only in 1991 and onwards.

3.2.8.3 Lack of Disaggregated Data by Gender and Caste/Ethnicity

The disaggregated data by gender and caste/ethnicity are limited to only a few data sources, such as CBS, EMIS and HMIS. Even within these sources, the disaggregated data are available only for recent years. For example, the disaggregated data by caste/ethnicity with the CBS population census from 1991 onwards, while the land ownership by gender are available from 2001 onwards. Similarly, the HMIS data exists only from 2003 onwards.

3.2.8.4 Programme/Project Specific Data

Most of the archival datasets are based on samples, as well as on specific indicators, time and context with the only exception being the longitudinal panel data of the KHARDP studies (1980-1985). In the KHARDP studies, the level of analysis varies greatly. While most of the reports are found mainly to aggregate their findings at the regional or district level, others have been confined to specific project and community groups (e.g. Community Forest User Groups, Local Road Users' Committees). The VDC level disaggregated data for key sectors across the study time period are extremely sparse. As such, it is clear that the data available from the archival documents are not sufficient to form a coherent database at the VDC level for the entire study districts, nor for key sectors.

3.2.8.5 Unequal Value of Programme/Project Studies

The methodologies adopted by the different studies so far reviewed vary remarkably, ranging from household survey or case study to key informant interview; with some possessing inherent biasness in the selection of sampled study sites and beneficiaries. As such, not all can be relied on for obtaining accurate data and information for generalisation. All datasets need to be themselves evaluated as regards of reliability, generalisability, validity, etc.

3.2.8.6 Lack of a Single Baseline Data

There is lack of baseline data and therefore the study has to piece together for a coherent assessment based upon multiple sources or studies across different time periods.

3.3 Population Changes in the Koshi Hills

3.3.1 Data Sources and Review

This overview of population changes in the Koshi Hills is based on census data of 1971 onwards as well as selected published reports. However census data of previous years such as 1961 and 1952/54 have also been taken as reference. The overview of population changes is also made with reference to the Koshi Tarai region and two neighbouring districts of Koshi Hills—Ilam and Khotang, as well as to Nepal.

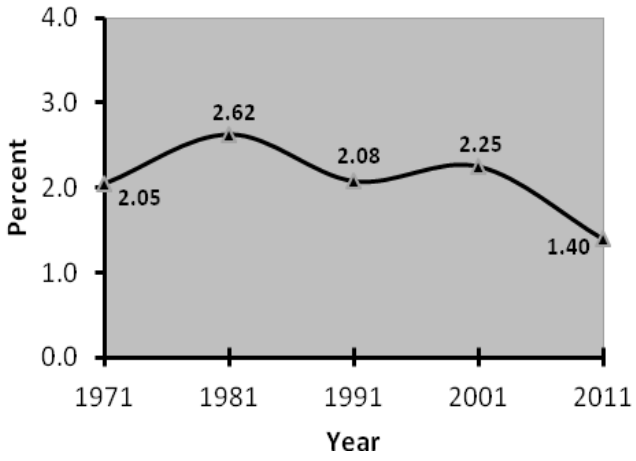
There are three major sources for population changes in Nepal. One of the key sources comes from the effort of Gurung (1989). His paper deals with migration patterns in Nepal based on census data from 1952/54 to 1981. Analysis of migration patterns at regional levels such as east, centre, west and far west and their sub-ecological units like Mountain, Hills, and Tarai has been linked to population changes or growth rates. The paper reveals that there was a remarkable variation in growth rates among the regions and sub-ecological units and much of this differential was due to migration. The principal migration trajectory was from the highlands (mountain and hill) to the Tarai lowlands. Factors of both out-migration and in-migration and growth patterns by region and sub-ecological units are described. Data and illustrations of this paper are useful, but the analysis of migration has not been done at individual district level. Demographic processes and policy measures for transformation particularly in the hills—the origin places of bulk of out-migrants—are provided for further concerns.

A second source is the population monograph published by CBS (2003). Its two chapters dealing with internal and international migrations in Nepal are useful. Internal migration is related to the native born population within the country, primarily based on the data collected during the 2001 census (KC, 2003). Volume and pattern of life-time internal migration by region, district, and town, various streams of migration, and reasons and characteristics of internal migrants and non-migrants are examined. Statistical data on various aspects of internal migration, including in-migration by sex and district are also provided. It indicates that there is a close link of geographical regions with migration trajectory, for instance eastern hill-eastern Tarai, central hill-central Tarai, and so on. The paper suggests that more recent indicators of development and relating these with migration at village as well as district level and consequences rather than causes of migration would be an important topic for further investigation. Another chapter dealing with international migration and citizenship in Nepal describes trends of immigration of foreign citizens or nationals in Nepal by development regions (eastern, central, western, mid-western and far western) and their sub-ecological units since 1961, international migrants by ethnics, and destination countries of Nepalese origin (Kansakar, 2003). The paper indicates that population data and other data relating to international migration lack consistent plans and policies relating to quality and importance.

The third source is the World Bank's Nepal Migrants Survey of 2009. This data is based on 3,200 sample households representing districts, VDCs/municipalities, development regions and ecological regions across the country. The survey covered reasons for migration, degree of internal and international migration, volume of remittances and their use/ impact, money transfer system/ channels, and cost and processes of migration. In addition, information on overall migration scenarios and the socio economic status of the people living in the communities was acquired from key informants through a community survey. Of the 200 PSUs, 50 wards and 11 PSUs of the sample were allocated to the Koshi Hills. The report has made an overview of migrants and remittance and impacts at ecological and development regions. If the statistical data is made available to the KHST, it would be possible to conduct more detailed analysis which would be useful for the study.

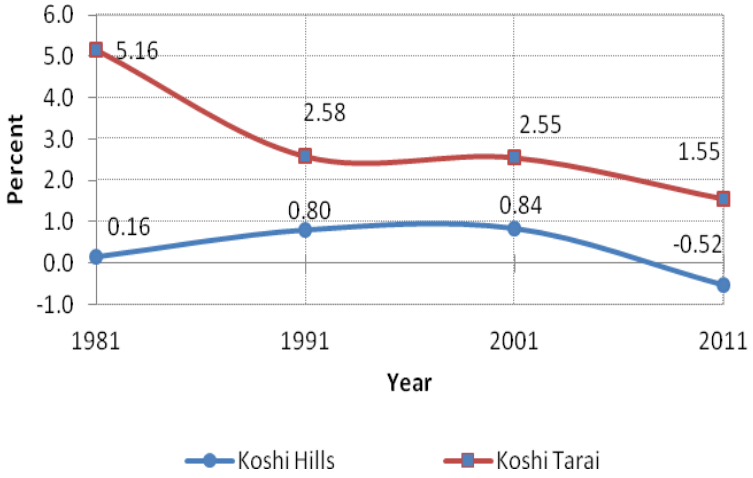
3.3.2 Population Growth

Figure 48: Trend in Population Growth Rates, Nepal



Nepal has been experiencing rapid population growth over the last four decades. However, population growth rates show a decreasing trend albeit in an irregular manner since 1981 (Figure 49). After an increase to 2.62% in 1981, the growth rate declined in 1991 and seems to have increased again between 1991 and 2001. The growth rate, according to current 2011 census, is at 1.4% (well below replacement levels), which is the lowest growth rate in the history of past 60 years of population enumeration in Nepal and the reasons for this is still being analysed and not conclusive as yet.

Figure 49: Trend in Population Growth Rates, Koshi Hills and Koshi Tarai



Compared to the growth rates of the country, the growth rates of the Koshi Hills embracing four districts, viz Bhojpur, Dhankuta, Sankhuwasabha, and Terhathum have a very low magnitude with below 1% and shown a fluctuating trend: increasing trend in all three years, 1981, 1991 and 2001, and a decline with a negative trend in 2011 (Figure 49). Unlike the Koshi Hills, the growth rates of the Koshi Tarai districts (Morang and Sunsari) have shown a constant decreasing trend, but the magnitude of the growth rates is extremely very high with 5.16% during 1971-81 which declined to 2.55% in 2001 and further declined to 1.55% in 2011.

Furthermore, the pattern of population growth rates has varied remarkably for each of the individual four districts of the Koshi Hills. Terhathum district has a distinct pattern of growth rates from other three districts (Figure 50). The growth rates for Terhathum shows a steep rise in 1981-91 (from -2.5% during 1971-81 to over 1.0% during 1981-91), after which there has been a gradual decline during 1991-2001. Bhojpur has shown a similar pattern of growth rates like Terhathum, but with a very low growth rate during 1981-91. Unlike Bhojpur and Terhathum, the growth rates for both Dhankuta and Sankhuwasabha districts have shown a decreasing trend from 1981 to 1991 and a slight increase

during 1991-2001. In all four districts of Koshi hills, the growth rates of population have declined sharply during 2001-11 and except for Sankhuwasabha all other three districts have negative growth rates with varying magnitudes to the growth rates of the Koshi Hills districts, the neighbouring two hill districts, Khotang and Ilam, have different patterns from 1981 to 2001.

Figure 50: Trend in Population Growth Rates by Districts of Koshi Hills

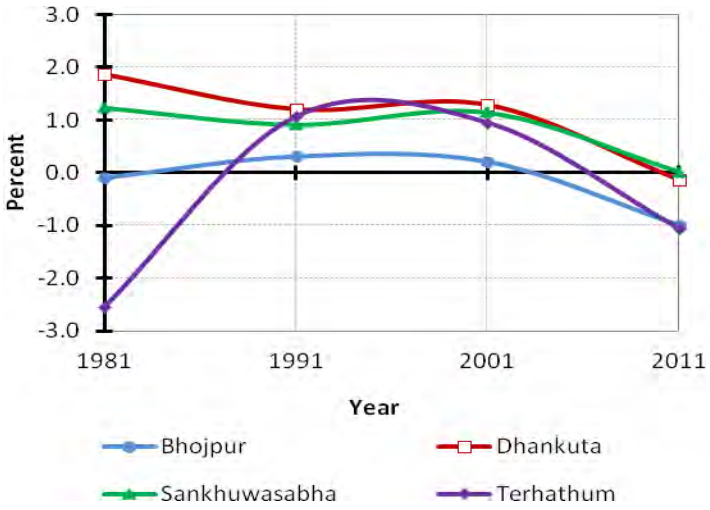
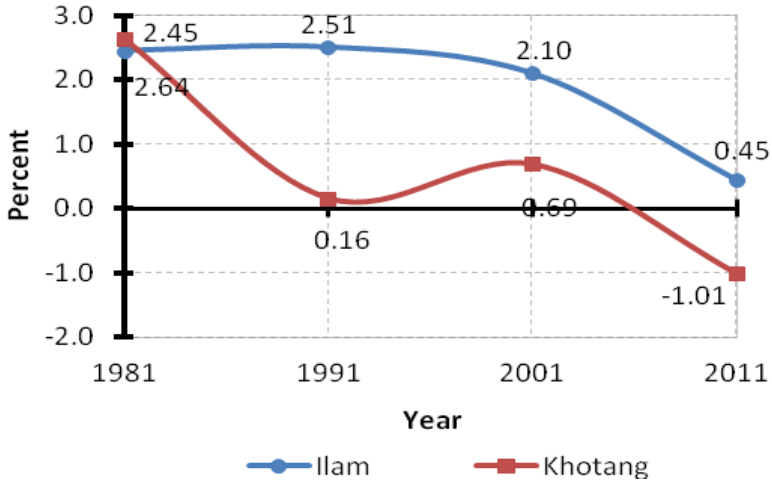


Figure 51 shows that Khotang experienced an abrupt decline in growth rates between 1971-81 and 1981-91 followed by an increase during 1991-2001. Ilam experienced growth rates higher than those of all the districts of the Koshi Hills, including Khotang. Further, Ilam has shown a constant decline in growth rates. Like all other districts, these two neighbouring districts also have shown declined in the growth rates during 2001-11.

Figure 51: Trend in Population Growth Rates, Ilam and Khotang



CBS (1987) showed that the 1981 census recorded a net loss of about 0.68 million populations from the Hills and Mountains while a gain of 0.69 million populations in the Tarai. 67% of the in-migrants of the eastern Tarai were born in the eastern Hills. KC (2003) also reported that from 1961 to 2001 the absolute volume of inter-district migration increased by seven times. The major destination areas of the migrants from the eastern hills were to the eastern Tarai (76.3%), followed by people moving from the eastern mountains (8%). In 2001, the total volume of inter-regional migration in the country was 2,047,350 persons, of which migrants from the eastern hills moving to the eastern Tarai, central hills and central Tarai were 298,929, 55,212, and 26,667 respectively. Among the towns in the Koshi Tarai, Dharan (41.3%) and Itahari (41.6%) have been the most dominant in receiving internal migrants. The largest number of migrants from the Eastern hills comprised Rai and Limbu ethnic groups.

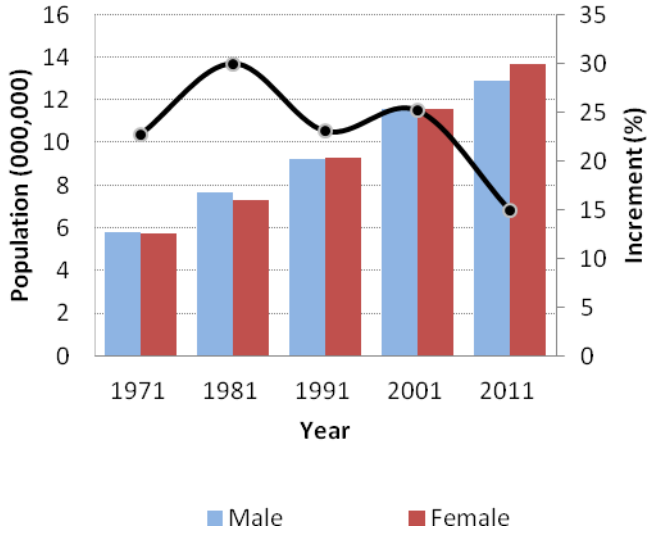
According to Kansakar (2003), in terms of source regions of the Nepalese absent abroad in 2001, the Eastern Development Region was the second largest sending region accounting for 16% of the total, after the Western Development Region (43.5%). The highest proportion of Nepali emigrants originating from the Eastern Development Region had migrated to the Maldives, Singapore, Kuwait and Bahrain.

Historically the hills were the homeland for the majority of the Nepali people. The control of malaria in the Tarai and Inner Tarai lowlands in the last five decades has led to a large-scale shift of population from the hills to these new frontier lands (Gurung, 1984). The programme of malaria control was first introduced in Nepal in 1955 and by 1962 had spread to the five Tarai districts of east of the Kamala River. The Tarai region has been the prime destination of most migrants and has therefore experienced a rapid change in land use. Essentially the process involved the conversion of forest and other land into cropland. The depletion of the forest area was associated with expansion of cultivated areas. The Eastern Tarai had the largest magnitude of population increase and therefore the greatest loss in forest land (ibid). The 2001 census indicated that marriage has been the most important reason for migration; 23% of the inter-district migration and 46% of the foreign migration has been due to the cultural practices of women moving to their husband's homes after marriage. This was followed by agriculture (18.1%), employment (11.5%), study /training (10.3%) for inter-districts migrants.

Migrants in Nepal are mainly of the "subsistence" category rather than the "betterment" ones. Underemployment and unemployment, poverty, indebtedness and landlessness are stark realities for a vast majority of the rural population of Nepal (Gurung, 1989; KC, 2003). Outmigration from rural areas is primarily due to the growth of local population beyond the carrying capacity of the land. Excessive pressures on land resources and increasing poverty generate a large volume of migration. A survey indicated that the extent who had migrated due to inadequate land and poor livelihood conditions at origin ranged from 39.2% to 43.6% and 68.2% (KC, 2003).

3.3.3 Population Distribution by Sex and Age

Figure 52: Population Growth by Sex, Nepal



According to the 2011 census, Nepal's population is 26.6 million with females at 51.4% outnumbering males. The country's population has grown speedily. The KHs share 2.3% of the total population which is almost three times smaller the share (6.4%) of the Koshi Tarai (KT). The population increment pattern of the Koshi Hills is quite different from that of the country as well as of that of the Koshi Tarai (Figure 52, Figure 53 and Figure 54). In the KHs, the population has increased slowly from 5 million to 6 million over the past 40 years, while in the KT it has increased tremendously from 5 million to 17 million during the same time duration.

Figure 53: Population Growth by Sex, KH

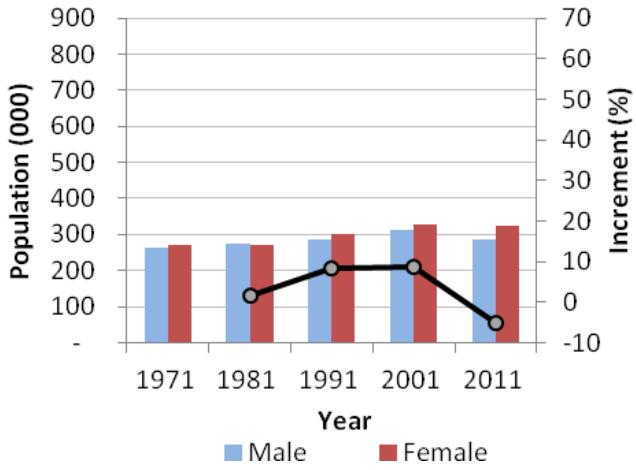
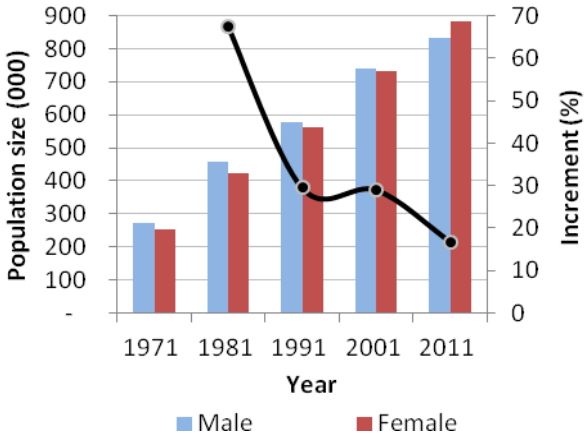


Figure 54: Population Growth by Sex, KT



The distribution of population by sex over the last 40 years in all areas: Koshi Hills, Koshi Tarai and the country, shows that the number of females have been slightly over half of the total population in each of the census year.

Figure 55: Population Growth by Sex, Bhojpur

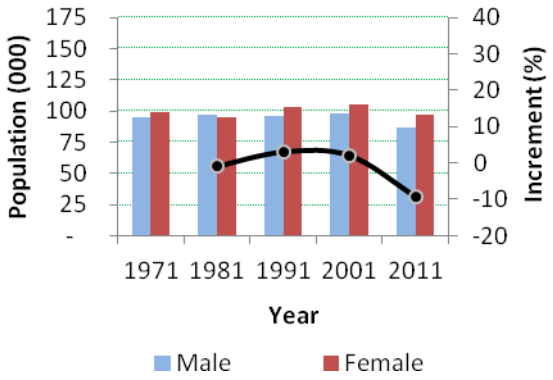


Figure 56: Population Growth by Sex, Dhankuta

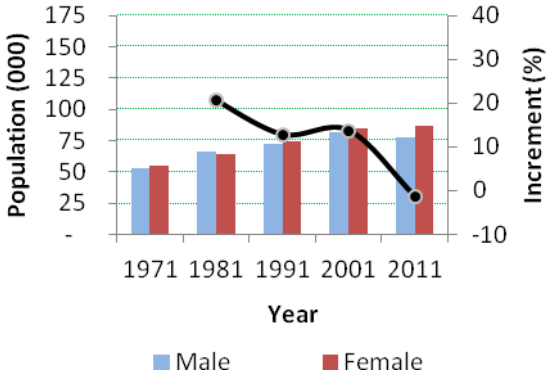


Figure 57: Population Growth by Sex, Sankhuwasabha

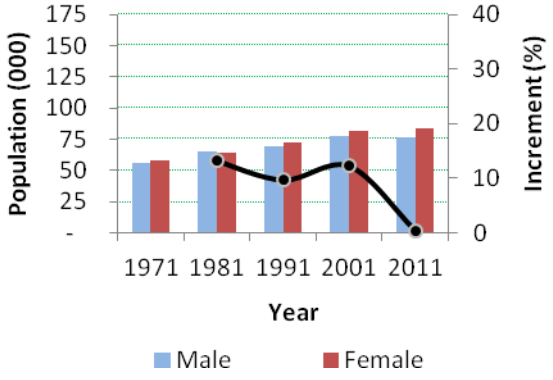


Figure 58: Population Growth by Sex, Terhathum

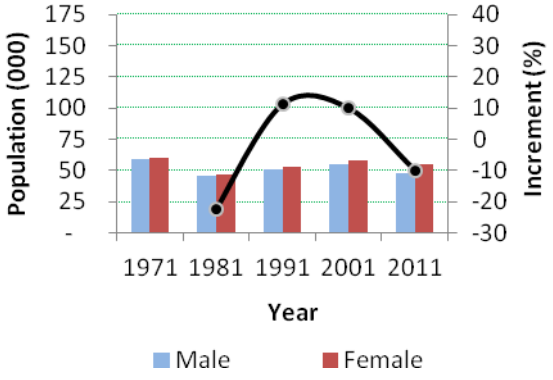


Figure 59: Population Growth by Sex, Ilam

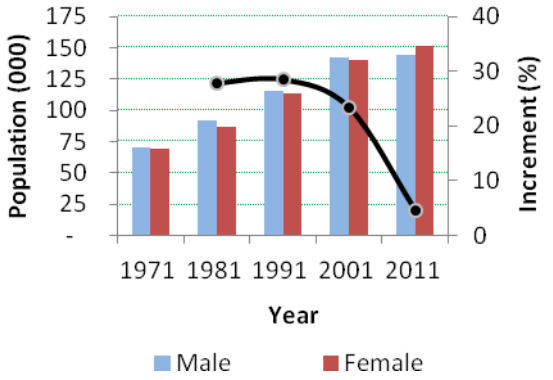


Figure 60: Population Growth by Sex, Khotang

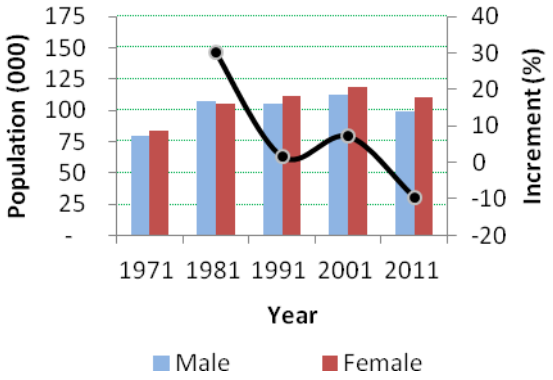


Figure 61 shows that, the working population in the age group of 15-59 years constitutes over 50% of the total population, followed by children of under the age of 14 years and adults of 60 years and above. The same pattern of age composition of population seems to have existed in all areas—all the KHs districts, the KT, and the country throughout all censuses from 1971 to 2001. Only in the KT, the working age group increased relatively greater than those in the other two age groups in 1991 and 2001.

Figure 61: Population Growth by Age: Koshi Hill, Koshi Tarai, and Nepal

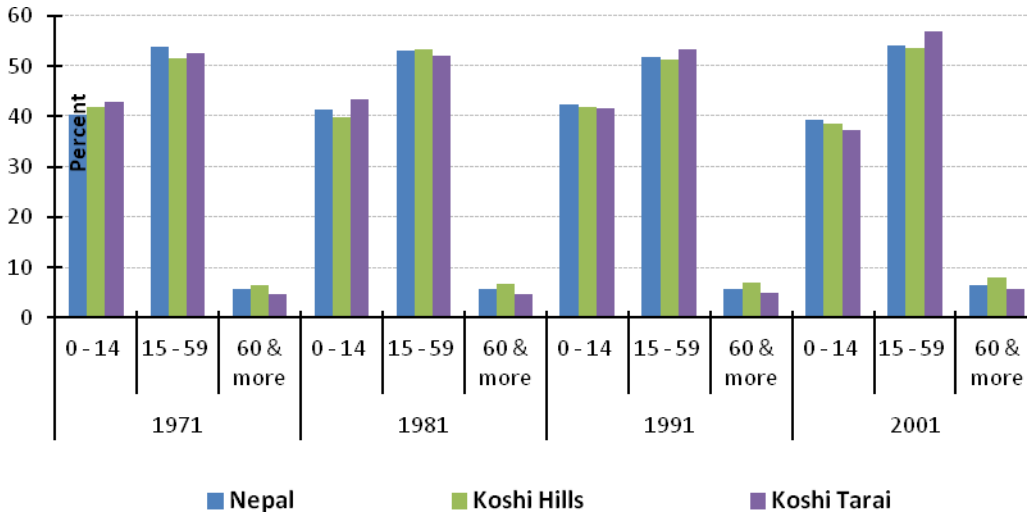


Figure 62: Population Growth by Age, Koshi Hills Districts

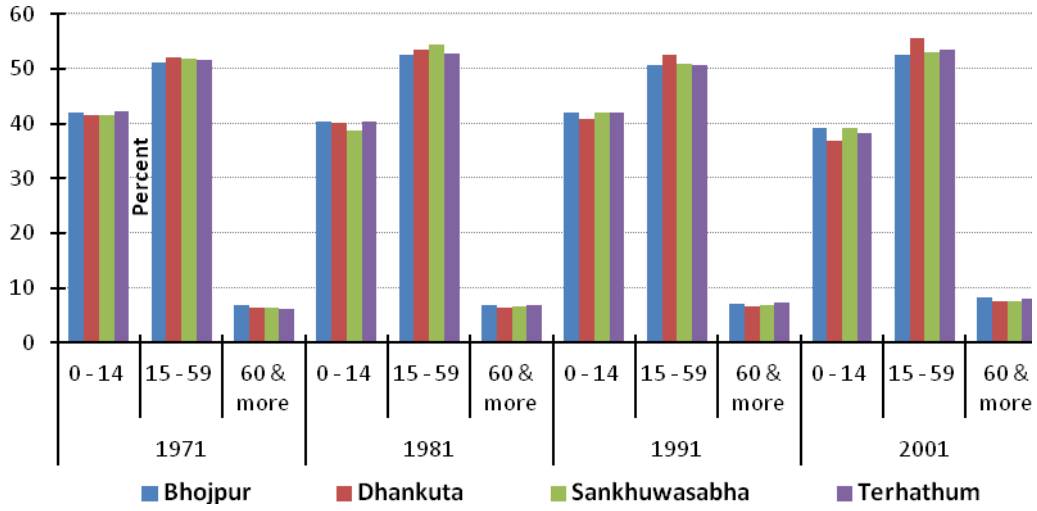
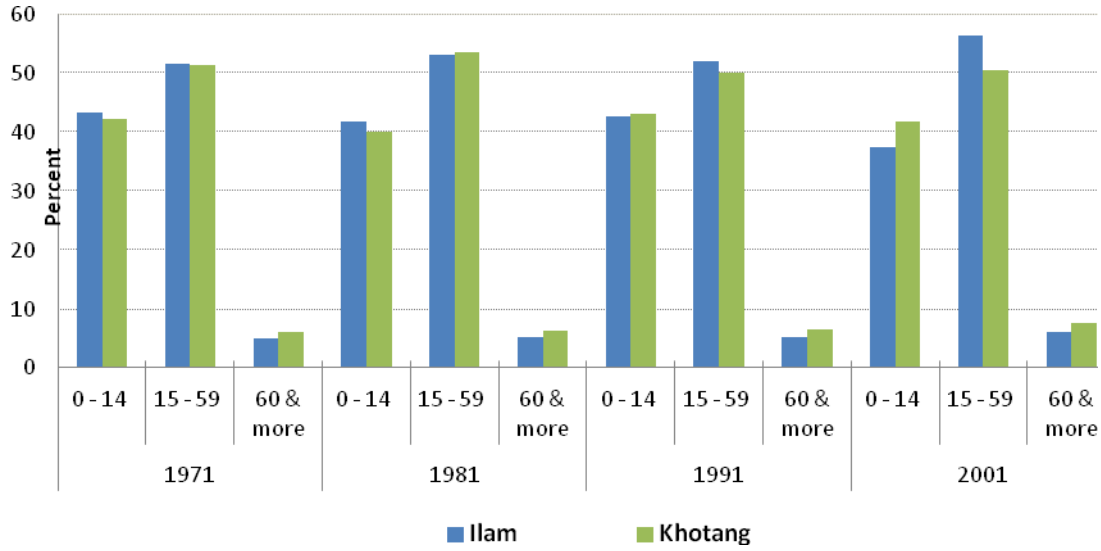


Figure 63: Growth in Population by Age, Ilam and Khotang



3.3.4 Urban Population

In Nepal, urban population refers to the inhabitants residing in the designated municipality area or the Nagarpalika. So, the municipal jurisdiction boundary comprising all settlement localities within its boundary is known as the 'urban area'. In Nepal, population size is the basis for designating areas as municipality (versus rural areas or gaon), the actual number of which has changed during different census years. Since the 2001 census, the minimum population for designating a municipality area has been fixed at 10,000 for the hills and mountains and 20,000 for the Tarai. Three hierarchical levels of the urban areas have been identified namely, metropolis, sub-metropolis, and municipality (MLD, 1999).

The urban population in Nepal has increased gradually over the past 40 years. The urban population ratio has increased in the successive census years from 4% in 1971, 6.4% in 1981, 9.2% in 1991 and nearly 13.9% in 2001. Likewise, the number of urban areas has also increased from 16 in 1971 to 28 in 1981, 33 in 1991, and 58 in 2001. Currently 41 'new' municipalities have been declared, making a total of 99 throughout the country, but the population data and other relevant information on those recently inducted municipalities are not available as yet.

Table 80: Growth and Distribution of Urban Areas

Municipalities	Total urban population				Area km^2	Persons per km^2
	1971	1981	1991	2001		
Dhankuta	×	13,836	17,073	20,668	48.21	428.7
Khandbari	×	×	×	21,789	91.03	239.4
Biratnagar	45,100	93,544	129,388	166,674	58.48	2,850.1
Dharan	×	13,998	20,503	42,146	103.38	922.2

The urban density in the eastern development region is 690 persons per km², which is below the national urban density of 985 persons per km².

In the Koshi Hills, Dhankuta was designated as a Nagarpalika in 1981 and Khandbari (in Sankhuwasabha) was declared in 1997. Both Biratnagar (Morang) and Dharan (Sunsari) were declared in 1962. Two other municipalities of Sunsari district, Inaruwa and Itahari, got municipal status in 1981 and 2001 respectively. In 2011, four new municipalities in the KH that have been designated are Bhojpur (in Bhojpur district), Myaglung (in Terhathum), Diktel (in Khotang), and Urlabari (in Morang).

Map 1 shows the distribution of urban areas by size in the KHs and other parts of the eastern region of Nepal. The growth of urban population during the censuses of 1981-91 for Dhankuta was 38.3%. For Khandbari, it was 16.2% during 1991-2001.

Being small in size, poor infrastructure, and with limited resources, both Dhankuta and Khandbari are weak in generating revenue from their own sources. In 1961/62, for instance, the revenue generation was only about 39 and 19% for Dhankuta and Khandbari respectively and likewise the contribution from local development fund (LDF) was also very low, with only 12 and 24% of the two municipalities respectively. Compared to these, Biratnagar and Dharan had generated revenue of 74 and 57% respectively from their own sources.

The literature indicates that, one of the contributing factors to urban growth in Nepal is the adding up of additional municipalities in every census year. Other factors of urban growth across Nepal as well as in the Koshi region include annexing of adjoining village areas to municipal areas, natural growth of population and migration, and others (Choe and Pradhan 2010; Pradhan 2012).

Map 1: Urban Distribution in the Koshi Region

3.3.5 Migration

People in Nepal often move from one place to other places within and outside the country for different reasons. The movement of people or migration as recorded by the population census in Nepal can be measured mainly by comparing the census data on place of birth and place of enumeration (Gurung, 1989). The foreign born population is considered as 'in-migrant' and absent population is considered as 'out-migrant'. The 1971 census did not include data on absent population. It provided data on native born and foreign born at the district level. The population censuses of 1981, 1991, 2001 provided data on native born, foreign born and absent population.

3.3.6 Native Born and Foreign Born Population

In Nepal, the trends showing proportion of both native born and foreign populations have remained more or less the same over the past thirty years (Figure 64), while in the Koshi Hills and the Koshi Tarai, the trends were different (Figure 65).

Figure 64: Native and Foreign Born Population Trends, Nepal

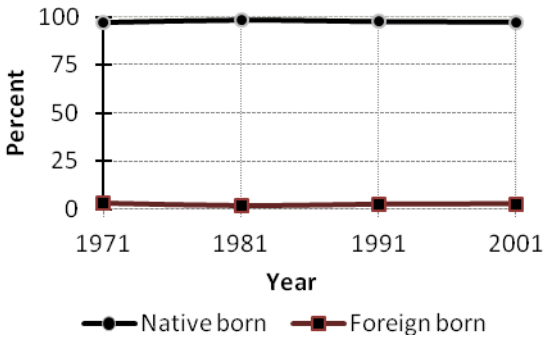
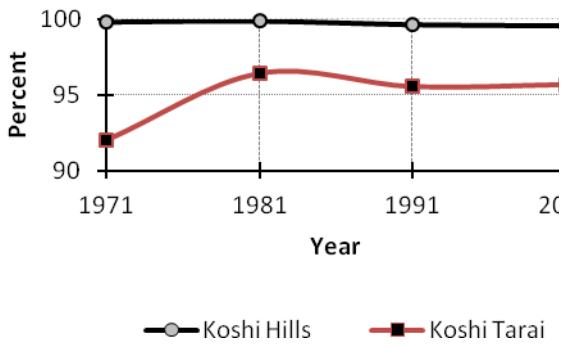


Figure 65: Native Born Population Trends, Koshi Hills and Koshi Tarai



Over the past 40 years, according to the census data shown in Table 81, the trend of proportions of native born population in the Koshi Hills has been more or less the same at over 99% but slightly below 100%, which was higher than that in the Koshi Tarai, where the proportions of native born population ranged from 92% to slightly over 96%. Conversely, the proportions of foreign born population in the Koshi Hills were far less than those in the Koshi Tarai over the past 40 years.

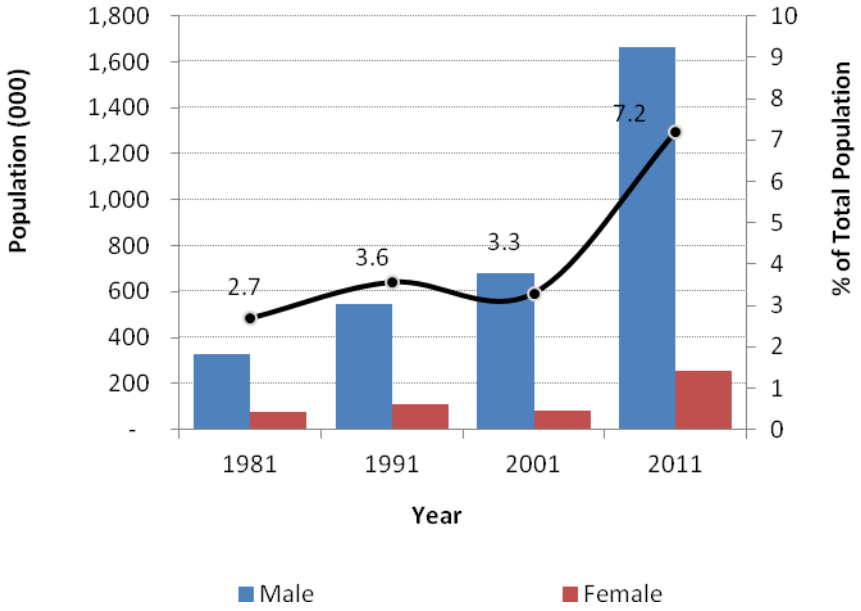
Table 81: Growth in population (%) by type of born, Nepal

District, region and country	Native born				Foreign born			
	1971	1981	1991	2001	1971	1981	1991	2001
Bhojpur	99.9	100	99.8	99.8	0.1	0.0	0.2	0.2
Dhankuta	99.9	99.8	99.6	99.3	0.1	0.2	0.4	0.7
Sankhuwasabha	99.6	99.8	99.6	99.5	0.4	0.2	0.4	0.5
Terhathum	99.8	99.9	99.4	99.6	0.2	0.1	0.6	0.4
Koshi Hills	99.8	99.9	99.6	99.5	0.2	0.1	0.4	0.5
Morang	89.8	96.2	95.2	95.6	10.2	3.8	4.8	4.4
Sunsari	95.1	96.7	96.0	95.7	4.9	3.3	4.0	4.3
Koshi Tarai	92.0	96.4	95.5	95.7	8.0	3.6	4.5	4.3
Koshi Zone	96.0	97.7	96.9	96.8	4.0	2.3	3.1	3.2
Ilam	99.4	99.5	98.9	98.6	0.6	0.5	1.1	1.4
Khotang	99.9	99.9	99.7	99.8	0.1	0.1	0.3	0.2
Nepal	97.1	98.4	97.6	97.3	2.9	1.6	2.4	2.7

3.3.7 Absent/Abroad Population

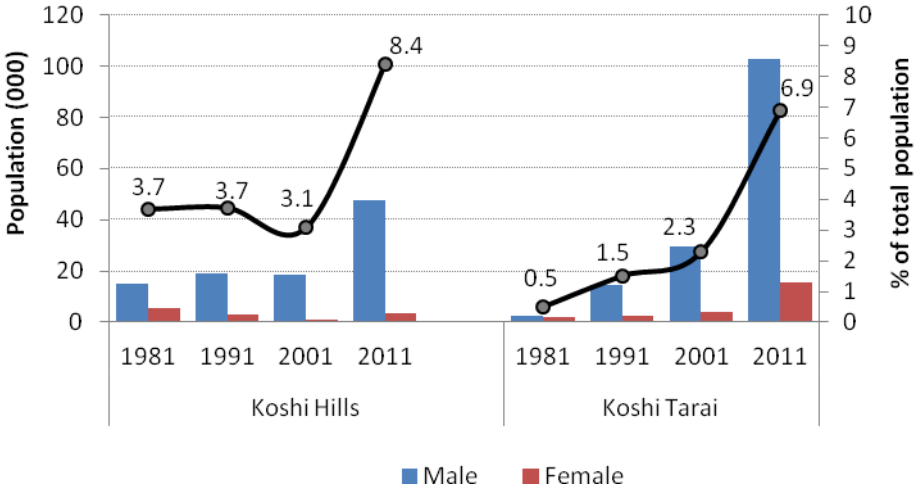
The trend of absent population proportions has remained increasing since 1981 (Figure 66). The current 2011 population census has recorded the largest volume of absent population living abroad in the history of the census. The census indicates that nearly two million people or 'out-migrants' were out of country for more than six months during the enumeration period, making up approximately 7.2% of the total population. Along with the increase in proportion of total out-migrants, the share of female out-migrants has also increased.

Figure 66: Absent Population Trend, Nepal



In the Koshi Hills, the proportion of out-migrants remained within 3.1 – 3.7% until 2001 and then rose tremendously to 8.4% of the total population in 2011, recording 45 thousand people as 'absent'. In the Koshi Tarai, there has been a constant increase in the proportion of absent population, from 0.5% in 1981 to 6.9% in 2011 (Figure 6b). Interestingly, the share of the female population that is 'absent' has also been a relatively large proportion in the total absent population in the Koshi Tarai in 2011 though no such big changes have been recorded in the Koshi Hills. The enormous increase in the volume of out-migration from both the Koshi Hills and Tarai in 2011 corresponds with the national out-migration proportion.

Figure 67: Absent Population Trends, Koshi Hills versus Koshi Tarai



Each of the four districts of Koshi Hills has a typical pattern of trends of out-migration. Sankhuwasabha has had over 7% out-migrants both in 1981 and in 2011, while the rates of out-migration in the intervening years were also relatively higher than for the other KH districts (Figure 68). (Figure 6c). But the out-migration proportions for the other three KH districts surpass that of Sankhuwasabha (7.6%) for 2011, which ranged from 8.2% in Bhojpur to 9.5% in Terhathum. However, the pattern of out-migration trend differs among the four districts from 1981 to 2001 as can been seen in Figure 6c. The trends for out-migration also show a very sharp rise in 2011 for the two neighbouring districts of Ilam and Khotang as shown in Figure 69.

Figure 68: Absent Population Trend, Koshi Hills Districts

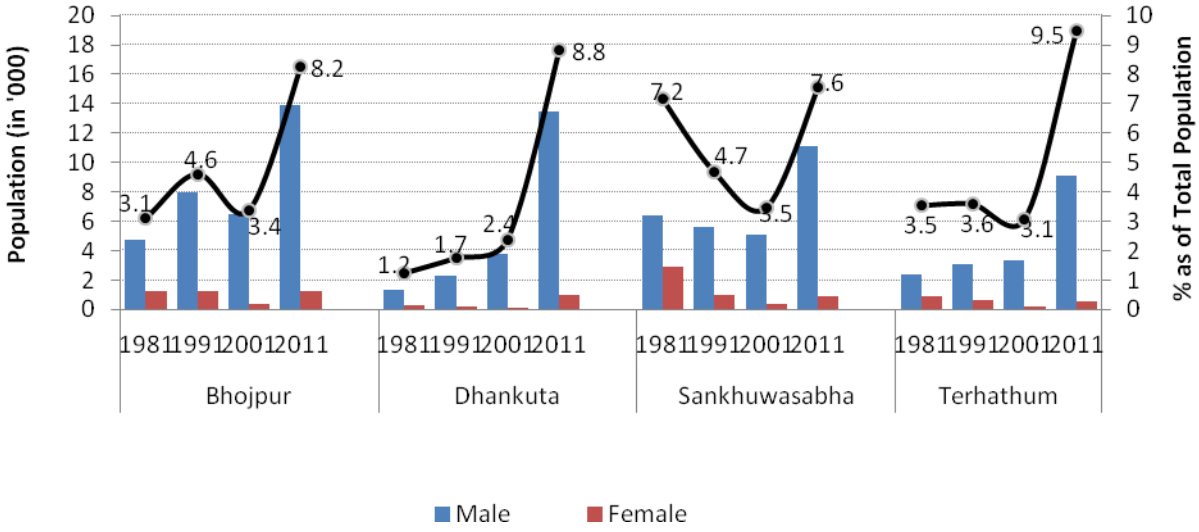
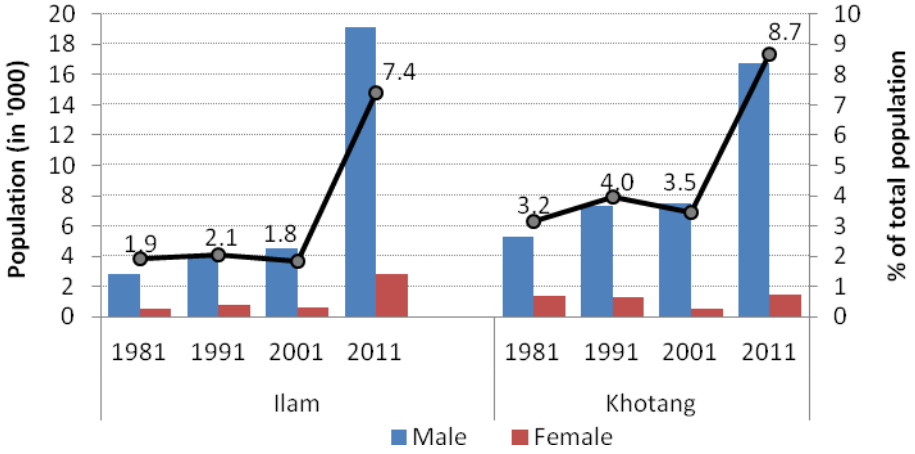


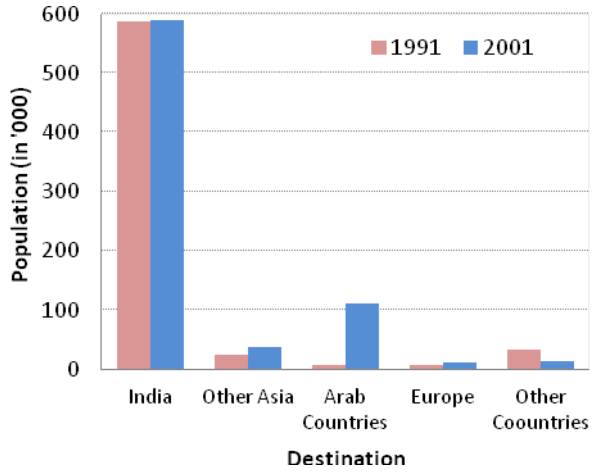
Figure 69: Absent Population Trend, Ilam and Khotang



On the whole, female absentees are comparably very low. However, the relative proportions of the female absentees appear to be a bit higher in Sankhuwasabha and then in Bhojpur than in other two districts.

3.3.8 Destination of Migrants

Figure 70: Out Migrants Trend by Destination, Nepal



Only the population censuses of 1991 and 2001 have recorded the destination (countries) of out-migrants or absente population. According to the census, the major destinations are classified into five groups—India, Other Asian countries, Arab countries, Europe, and Other countries. The total number of the out-migrants to those destinations has increased from 0.6 million to 0.7 million, with an annual increment of 10.4 thousand migrants between 1991 and 2001. Majority of the out-migrants are in India. The total number of out-migrants to India remained at around the same, but the proportion declined from about 89% in 1991 to about 77% in 2001, while that to Arab countries increased tremendously with 15% in 2001 compared to mere 1% in 1991 (Figure 70). Similar pattern of out-migration trends does exist in the Koshi Hills districts, as well as in the Tarai districts (Figure 71, Figure 72).

Figure 71: Out Migrants Trend by Destination, Koshi Hills

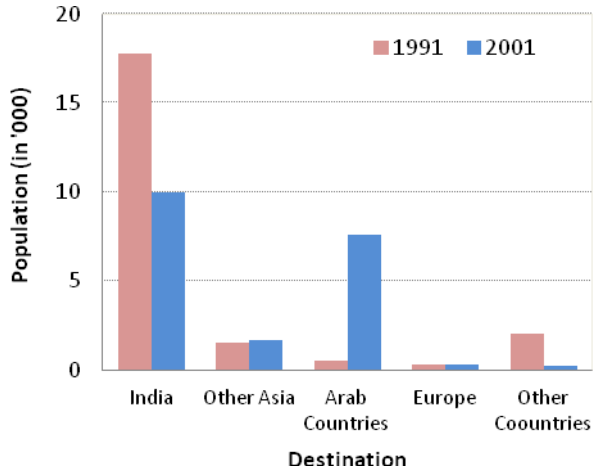
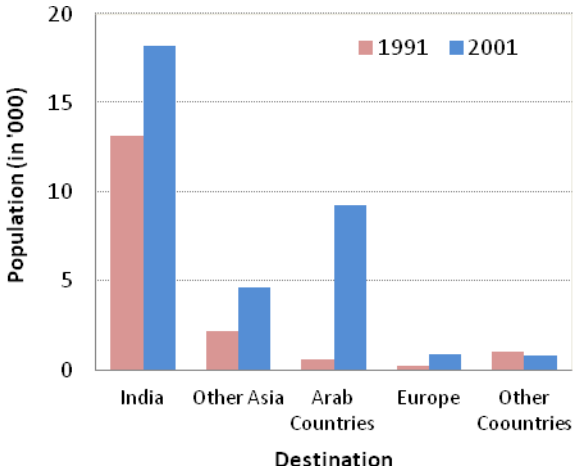


Figure 72: Out Migrants Trend by Destination, Koshi Tarai



Among the Koshi Hills districts, relatively higher proportions of the out-migrants to Arab countries have been from Dhankuta and Terhathum in 2001 and also relatively larger proportion to Arab countries was from Dhankuta in 1991.

Figure 73: Out Migrants Trend by Destination, Bhojpur

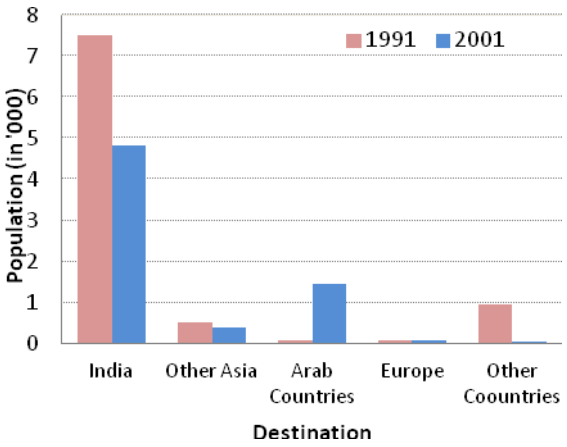


Figure 74: Out Migrants Trend by Destination, Dhankuta

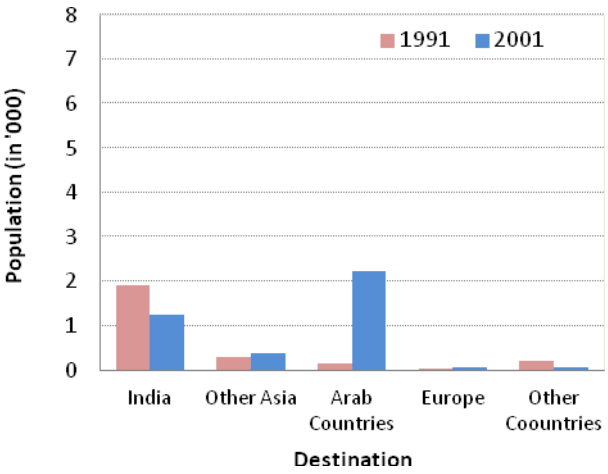


Figure 75: Out Migrants Trend by Destination, Sankhuwasabha

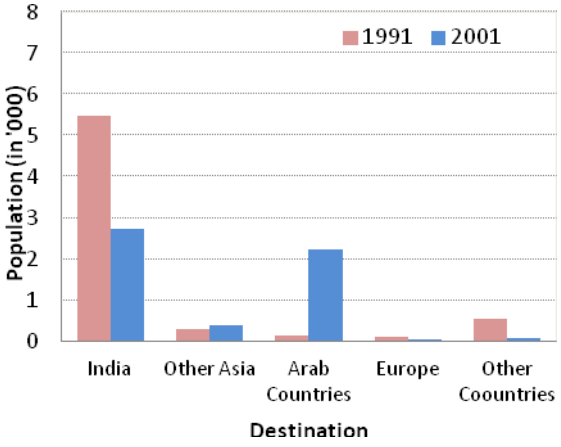


Figure 76: Out Migrants Trend by Destination, Terhathum

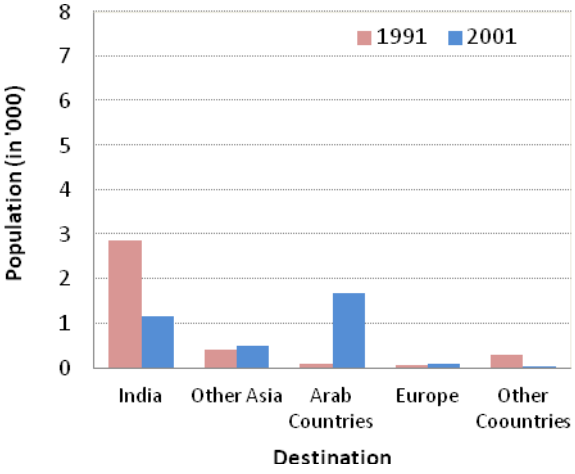


Figure 77: Out Migrants Trend by Destination, Ilam

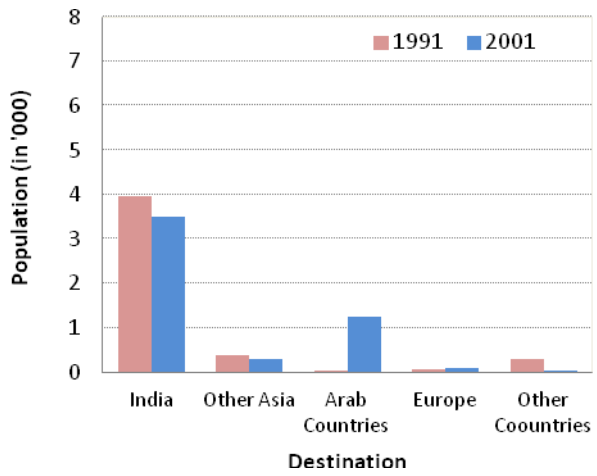


Figure 78: Out Migrants Trend by Destination, Khotang

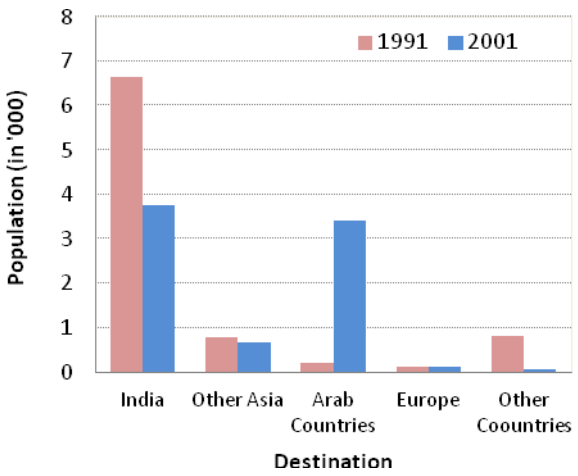


Table 82: Distribution of Absent Population (%) by Destination, 1991-2001

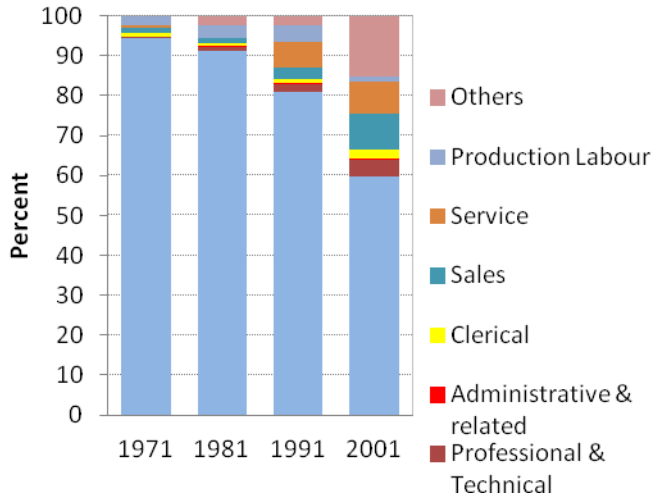
District, region and country	Census years	India	Other Asia	Arab countries	Europe	Other countries	Total absent population
Bhojpur	1991	0.82	0.06	0.01	0.01	0.10	9,176
	2001	0.70	0.06	0.21	0.01	0.01	6,844
Dhankuta	1991	0.74	0.11	0.06	0.01	0.08	2,561
	2001	0.31	0.10	0.56	0.01	0.01	3,967
Sankhuwasabha	1991	0.83	0.05	0.02	0.02	0.08	6,625
	2001	0.50	0.07	0.40	0.01	0.02	5,516
Terhathum	1991	0.77	0.11	0.03	0.01	0.08	3,687
	2001	0.33	0.14	0.48	0.03	0.01	3,493
Koshi Hills	1991	0.81	0.07	0.02	0.01	0.09	22,049
	2001	0.50	0.09	0.38	0.02	0.01	19,820
Koshi Tarai	1991	0.76	0.13	0.03	0.02	0.06	17,245
	2001	0.54	0.14	0.27	0.03	0.02	33,733
Ilam	1991	0.84	0.08	0.01	0.01	0.06	4,745
	2001	0.68	0.06	0.24	0.02	0.01	5,160
Khotang	1991	0.77	0.09	0.02	0.01	0.10	8,590
	2001	0.47	0.08	0.42	0.02	0.01	8,030
Nepal	1991	0.89	0.04	0.01	0.01	0.05	658,290
	2001	0.77	0.05	0.15	0.01	0.02	762,181

3.3.9 Economically Active Population

In the 1971 census, economically active persons were defined as those who had worked at least for eight months either at a single stretch or at intervals, either for pay, profit or remuneration in cash or kind during the year proceeding the day of census enumeration, while since 1991 census, the

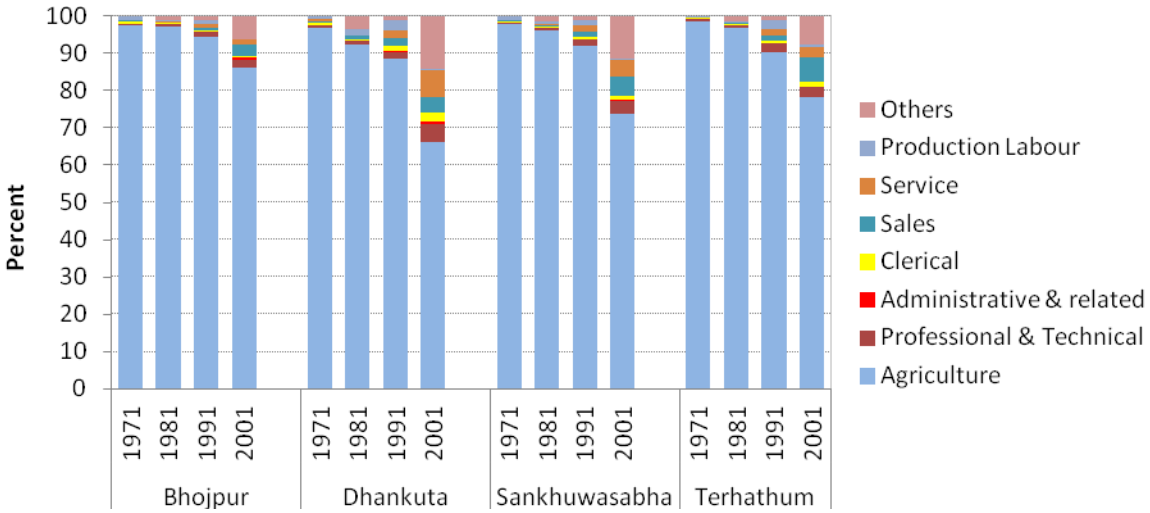
definition of economically active person has been changed and referred to a person of aged 10 years and over who worked for any length of time during the twelve months preceding the census date, he/she was treated as (CBS 1991).

Figure 79: Distribution of Economically Active Population by Major Occupations, Nepal



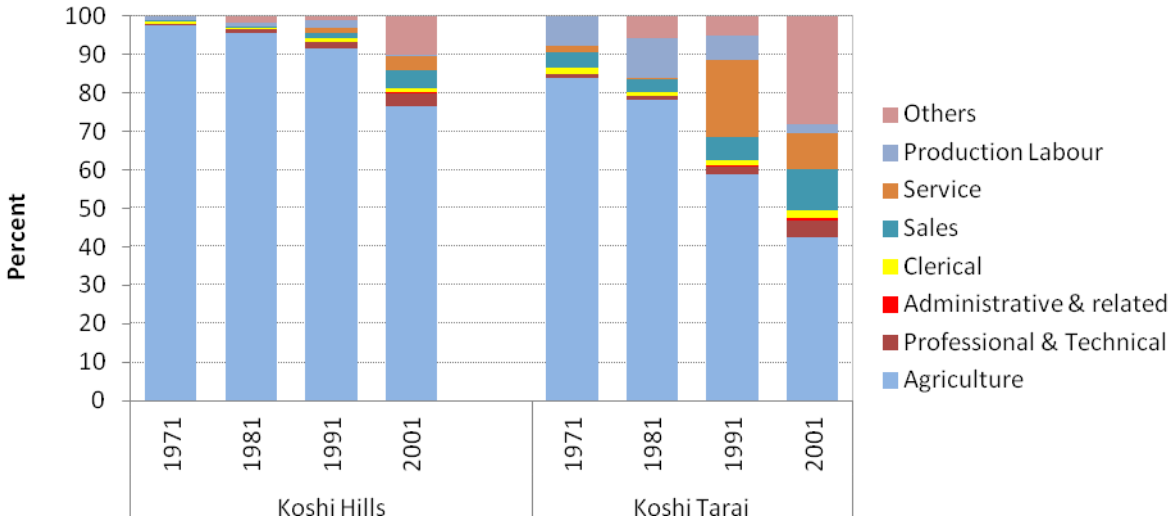
The major occupations considered in the censuses of Nepal are agriculture, professional and technical, administrative and related, clerical, sales, service, and production labour. The sharing of economically active population as shown in Figure 79shows that agriculture as major occupation has decreased from about 97% in 1971 to 66% in 2001. On the other hands, there has been a gradual increase in the proportion of the occupations such as sales, services, and professionals. Though this is an encouraging trend, Nepal has to do more on increasing employment in other than primary production sector such as agriculture.

Figure 80: Distribution of Economically Active Population by Major Occupations, Koshi Hills



Like the country, the Koshi Hills districts, too have a similar situation and trend. Only relatively greater decrease in sharing of the economically active population employed in agriculture is noticed in Dhankuta than other three districts (Figure 80; Table 83), while Bhojpur district has not yet gained significant reduction in the importance of agriculture. Figure 81 depicts that relatively significant reduction in the economically active population occupied by agriculture is found in the Koshi Tarai than in the Koshi Hills.

Figure 81: Growth in Economically Active Population by Major Occupation, KH and KT



There is relatively better situation (i.e. decreasing proportion) of the economically active population being engaged in agriculture in Ilam than in Khotang (Figure 82).

Figure 82: Growth in Economically Active Population by Major Occupations in Ilam and Khotang

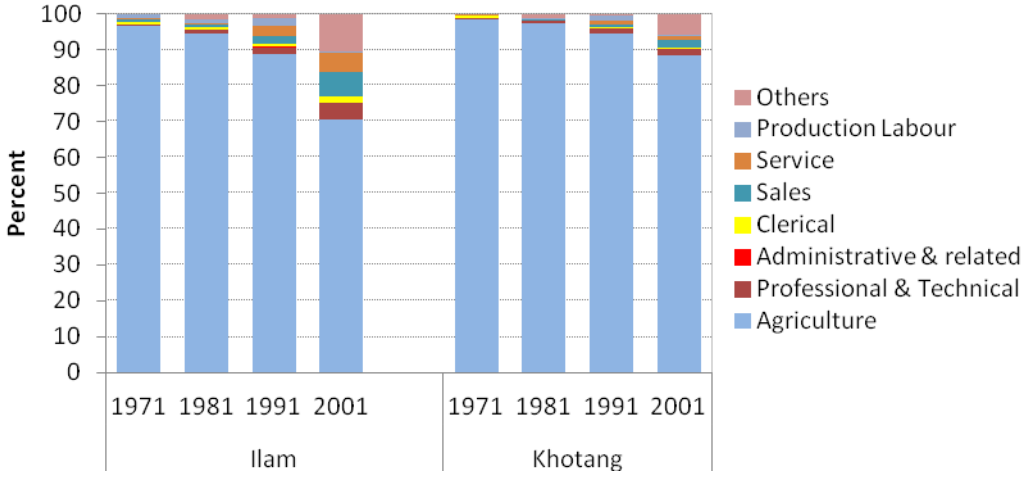
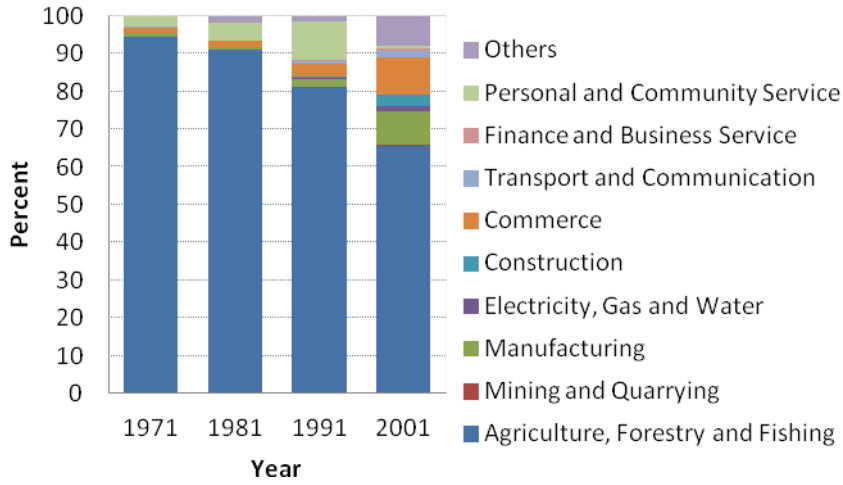
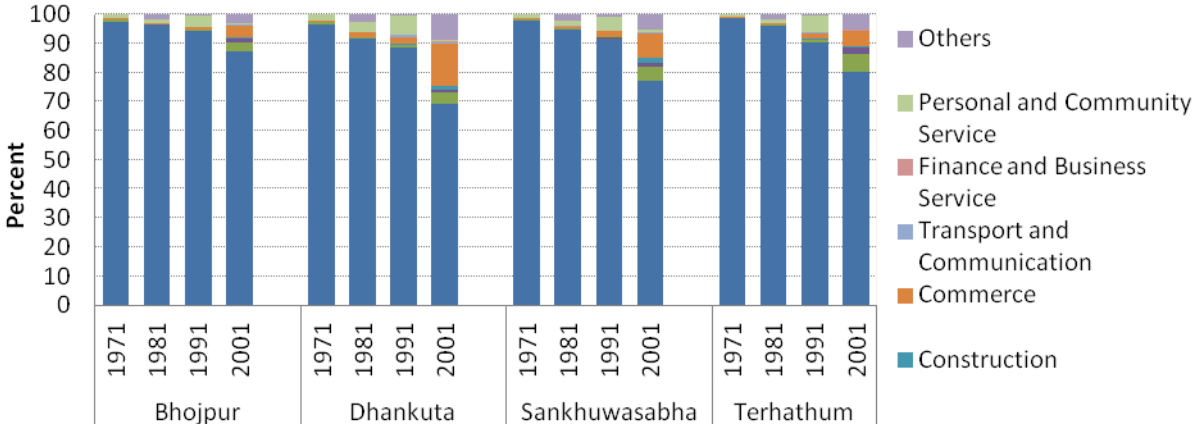


Figure 83: Distribution of Economically Active Population by Major Industries, Nepal



The major industries considered in the censuses of Nepal are aagriculture including forestry and fishing, mining/quarrying, manufacturing, electricity/gas/water, construction, commerce, transport/communication, finance/business service, and personal/community service. The sharing of economically active population as shown in Figure 83 shows that agriculture as major occupation has decreased from about 94% in 1971 to 66% in 2001. On the other hands, there has been a gradual increase in the proportion of the industries such as manufacturing, commerce, construction, personal and community services.

Figure 84: Distribution of Economically Active Population by Major Industries, Koshi Hills

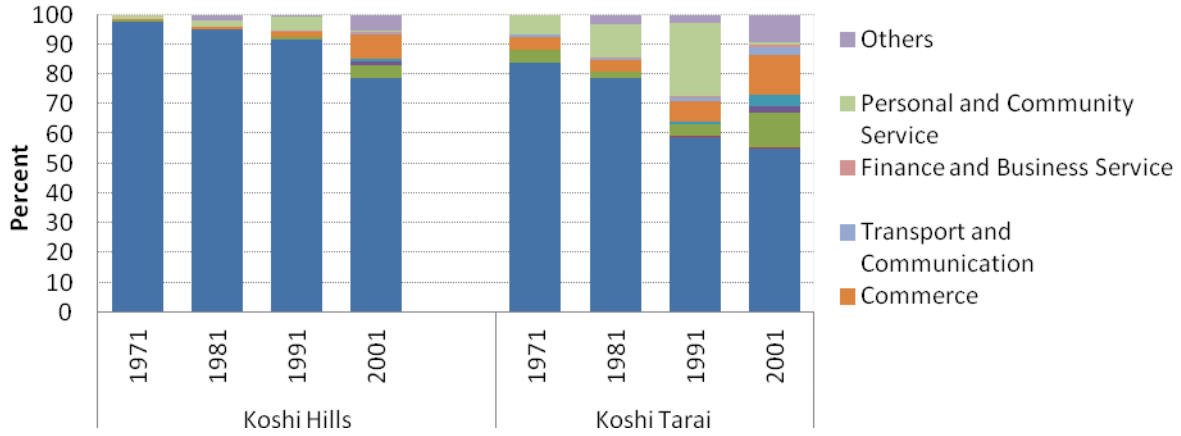


Like the country, the Koshi Hills districts, too have a similar situation and trend. Only relatively greater decrease in sharing of the economically active population employed in agriculture sector is noticed in Dhankuta than other three districts (Figure 84;

Table 84), while Bhojpur district has not yet gained significant reduction in the importance of agriculture.

Figure 85 depicts that relatively significant reduction in the economically active population occupied by agriculture is found in the Koshi Tarai than in the Koshi Hills.

Figure 85: Growth in Economically Active Population by Major Industries, KH and KT



There is relatively better situation (i.e. decreasing proportion) of the economically active population being engaged in agriculture in Ilam than in Khotang (Figure 86).

Figure 86: Trend in Economically Active Population by Major Industries in Ilam and Khotang

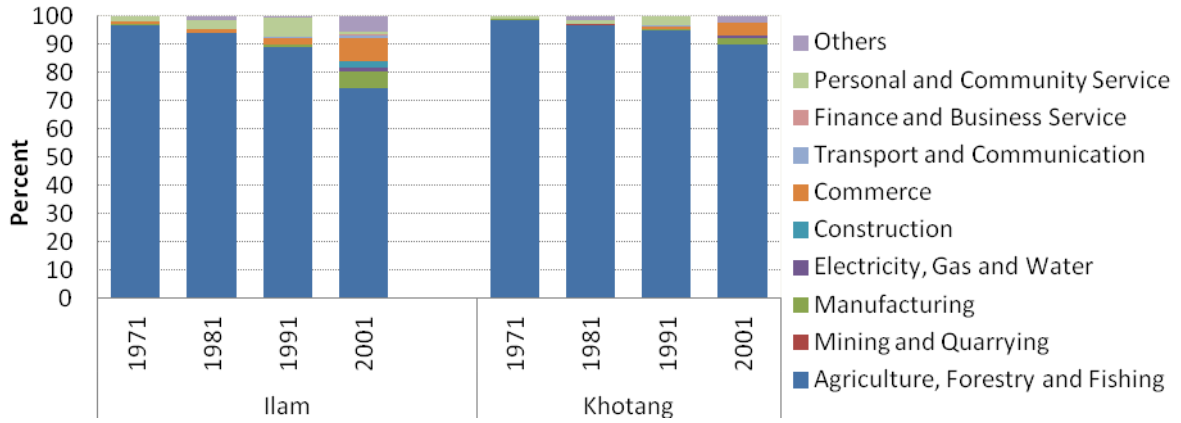


Table 83: Trend in Economically Active Population (%) by Major Occupations, 1971-2001

Koshi districts and neighbour districts	Census years	Agriculture	Professional and technical	Administrative and related	Clerical	Sales	Service	Production Labour	Others
Bhojpur	1971	98.0	0.3	0.0	0.5	0.3	0.1	1.1	0.0
	1981	97.0	0.8	0.0	0.1	0.2	0.1	0.4	1.3
	1991	94.0	1.4	0.0	0.5	0.7	0.8	1.3	1.0
	2001	86.0	2.1	0.5	0.4	3.2	1.2	0.2	6.2

Koshi districts and neighbour districts	Census years	Agriculture	Professional and technical	Administrative and related	Clerical	Sales	Service	Production Labour	Others
Dhankuta	1971	97.0	0.6	0.0	0.8	0.6	0.4	0.9	0.0
	1981	92.0	1.2	0.0	0.2	1.0	0.1	1.9	3.4
	1991	89.0	1.8	0.3	1.3	2.0	2.3	2.6	1.2
	2001	66.0	4.8	0.5	2.7	4.2	7.0	0.3	14.3
Sankhuwasabha	1971	98.0	0.3	0.0	0.4	0.3	0.2	1.1	0.0
	1981	96.0	0.9	0.0	0.2	0.3	0.2	0.8	1.6
	1991	92.0	1.9	0.1	0.7	1.4	1.6	1.4	1.1
	2001	74.0	3.4	0.2	1.0	5.3	4.5	0.3	11.5
Terhathum	1971	99.0	0.4	0.0	0.3	0.1	0.2	0.3	0.0
	1981	97.0	0.8	0.0	0.2	0.2	0.1	0.4	1.4
	1991	90.0	2.1	0.1	0.9	1.4	1.8	2.4	1.1
	2001	78.0	3.0	0.1	1.4	6.5	2.8	0.5	7.8
Koshi Hills	1971	98.0	0.4	0.0	0.5	0.3	0.2	0.9	0.0
	1981	96.0	0.9	0.0	0.2	0.4	0.1	0.8	1.8
	1991	92.0	1.7	0.1	0.8	1.3	1.5	1.9	1.1
	2001	77.0	3.3	0.3	1.3	4.5	3.8	0.3	9.9
Koshi Tarai	1971	84.0	0.8	0.1	1.9	3.8	1.9	7.6	0.0
	1981	78.0	1.0	0.1	0.8	3.4	0.3	10.3	5.8
	1991	59.0	1.9	0.4	1.4	5.9	20.1	6.6	5.0
	2001	43.0	4.1	0.6	2.1	10.8	9.5	2.1	28.2
Ilam	1971	97.0	0.5	0.0	0.6	0.7	0.3	1.3	0.0
	1981	94.0	1.0	0.1	0.9	0.7	0.2	1.2	1.5
	1991	89.0	1.9	0.1	0.9	1.9	2.9	2.2	1.2
	2001	71.0	4.5	0.1	1.6	6.8	5.4	0.6	10.4
Khotang	1971	99.0	0.3	0.0	0.5	0.2	0.2	0.3	0.0
	1981	97.0	0.7	0.0	0.2	0.1	0.1	0.3	1.3
	1991	95.0	1.3	0.0	0.5	0.7	1.0	1.4	0.5
	2001	88.0	1.8	0.0	0.4	2.1	1.3	0.1	6.0
Nepal	1971	94.0	0.5	0.0	1.0	1.2	0.7	2.2	0.0
	1981	91.0	0.9	0.1	0.7	1.3	0.2	3.1	2.3
	1991	81.0	1.8	0.3	1.1	3.0	6.2	4.2	2.4
	2001	60.0	4.2	0.6	2.0	9.3	7.9	1.4	15.0

Table 84: Trend in Economically Active Population (%) by Major Industries, 1971-2001

Districts, region and country	Census years	Agriculture, Forestry and Fishing	Mining & Quarrying	Manufacturing	Electricity, Gas & Water	Construction	Commerce	Transport & Communication	Finance & Business Service	Personal & Community Service	Others
Bhojpur	1971	97.6	0.0	0.8	0.0	0.0	0.3	0.0	0.0	1.2	0.0
	1981	96.4	0.0	0.1	0.0	0.0	0.4	0.0	0.0	1.2	1.9
	1991	94.3	0.0	0.5	0.0	0.0	0.7	0.1	0.1	3.6	0.5
	2001	87.3	0.0	3.1	1.2	0.3	4.4	0.2	0.2	0.4	3.0
Dhankuta	1971	96.8	0.0	0.5	0.0	0.0	0.6	0.0	0.0	2.0	0.0
	1981	91.7	0.0	0.4	0.1	0.3	1.6	0.1	0.1	3.5	2.4
	1991	88.8	0.0	0.9	0.0	0.4	2.1	0.8	0.1	6.4	0.5
	2001	69.1	0.0	3.9	1.3	1.2	14.4	0.5	0.4	0.6	8.6
Sankhuwasabha	1971	97.8	0.0	0.8	0.0	0.0	0.3	0.0	0.0	1.2	0.0
	1981	94.8	0.0	0.4	0.0	0.0	0.5	0.0	0.1	2.1	2.0
	1991	91.9	0.0	0.8	0.0	0.0	1.4	0.2	0.0	5.0	0.6
	2001	77.2	0.2	4.8	1.1	1.8	8.3	0.4	0.2	0.9	5.1
Terhathum	1971	98.7	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.9	0.0
	1981	96.2	0.0	0.2	0.0	0.0	0.4	0.0	0.0	1.6	1.5
	1991	90.5	0.0	0.9	0.0	0.1	1.9	0.4	0.1	5.6	0.5
	2001	80.2	0.0	6.5	2.0	0.5	5.1	0.4	0.2	0.1	5.0
Koshi Hills	1971	97.7	0.0	0.6	0.0	0.0	0.3	0.0	0.0	1.3	0.0
	1981	94.9	0.0	0.3	0.0	0.1	0.7	0.0	0.1	2.0	2.0
	1991	91.7	0.0	0.7	0.0	0.2	1.4	0.4	0.1	5.0	0.5
	2001	78.8	0.1	4.3	1.3	0.9	8.1	0.4	0.3	0.5	5.3
Koshi Tarai	1971	84.0	0.0	4.1	0.1	0.2	4.1	0.8	0.1	6.6	0.0
	1981	78.6	0.0	2.3	0.1	0.1	3.9	0.4	0.3	11.0	3.4
	1991	59.1	0.0	3.9	0.3	0.8	6.7	1.4	0.4	24.5	2.8
	2001	55.2	0.3	11.7	2.0	3.7	13.5	2.6	0.9	0.9	9.2
Ilam	1971	96.6	0.0	0.5	0.0	0.0	0.7	0.1	0.0	2.1	0.0
	1981	93.8	0.0	0.2	0.0	0.0	1.3	0.1	0.1	3.0	1.6
	1991	88.9	0.0	0.8	0.1	0.3	2.2	0.4	0.2	6.8	0.5
	2001	74.5	0.1	5.7	1.2	2.2	8.6	0.7	0.7	0.7	5.7
Khotang	1971	98.5	0.0	0.2	0.0	0.0	0.2	0.0	0.0	1.1	0.0
	1981	96.8	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.3	1.5
	1991	94.7	0.0	0.7	0.0	0.0	0.8	0.1	0.1	3.1	0.4
	2001	89.8	0.0	2.0	1.2	0.1	4.1	0.2	0.1	0.1	2.3

Districts, region and country	Census years	Agriculture, Forestry and Fishing	Mining & Quarrying	Manufacturing	Electricity, Gas & Water	Construction	Commerce	Transport & Communication	Finance & Business Service	Personal & Community Service	Others
Nepal	1971	94.4	0.0	1.1	0.0	0.1	1.3	0.2	0.1	2.8	0.0
	1981	91.1	0.0	0.5	0.0	0.0	1.6	0.1	0.1	4.6	1.9
	1991	81.2	0.0	2.0	0.2	0.5	3.5	0.7	0.3	10.2	1.3
	2001	65.7	0.2	8.8	1.5	2.9	9.9	1.6	0.8	0.7	7.8

3.4 Changes in Physical Assets

3.4.1 Types of House/Housing Unit

The figures in 1991 and 2001 show that the majority of the population of the Koshi Hills continues to live in the Semi-Pakki (50.5%) and Kachchi (39.3%) houses. With only a small number residing in Pakhi houses (8.8%). Compared to 4.9% in 1991, this however presents a small increased; thereby indicating that a small minority of inhabitants are slowly becoming better-off. One reason for this can be attributed towards the rise in remittances in the Koshi Hills, which have been used for improvement in housing (Nepal Migrant Survey, 2009). According to the report, as much as 4.5% of the earnings were being used for constructing houses (WB, 2009).

Amongst the four study districts, the highest changes towards Pakhi houses were seen in Terhathum (change from 5.5 -18.5%) followed by Dhankuta (10.4-12.5%). However, within the eastern hills, the highest number of Pakhi houses was seen in Ilam (28.7% in 2001).

Figure 87: Household by Type of House (%), Nepal

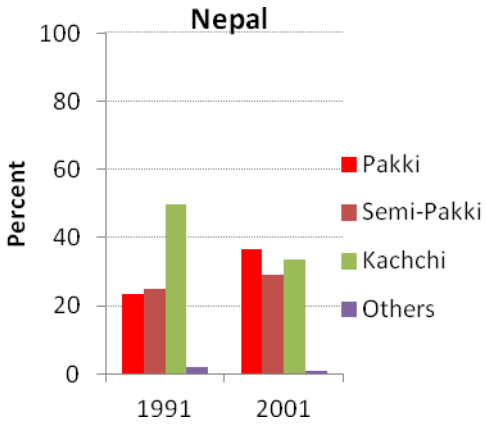


Figure 88: Household by Type of House (%), Koshi Hills and Tarai

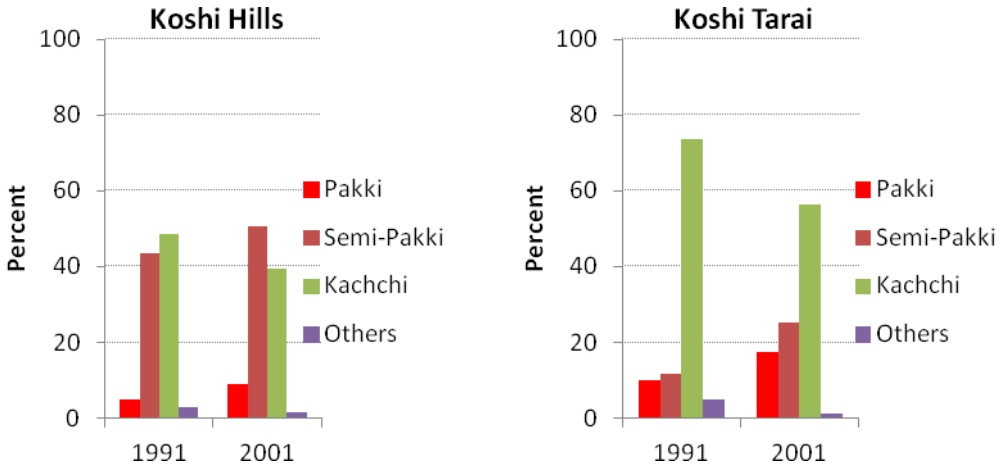


Figure 89: Household by Type of House (%), Koshi Hills Districts

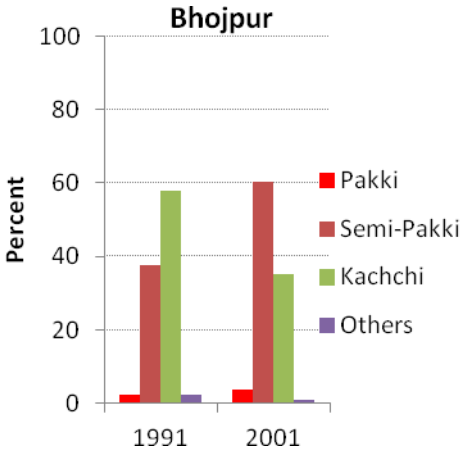
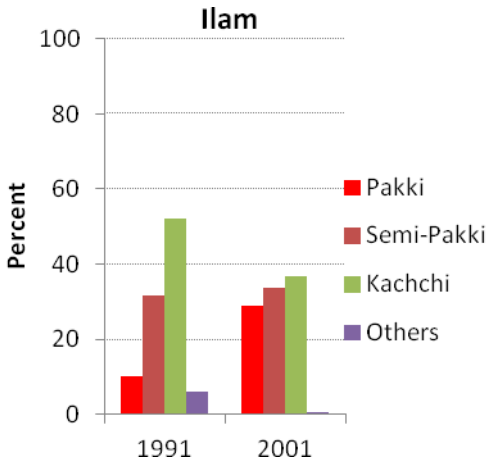


Figure 90: Household by Type of House (%), Ilam and Khotang



3.4.2 Ownership of House

An overwhelming number still continue to own their houses at Nepal (88.3%), Koshi Hills (90.4%) and in the Koshi Tarai (83.8%). But, data between 1991 and 2001 shows that this is slowly changing; as ownership declines and rent-in increases. This is a pattern that is seen across the country and also for

the Koshi Hills. Generally, it has been well documented that people who live in rural areas, own their own houses; while others who migrate to urban areas tend to rent (CBS, 2003). In light of this phenomenon, coupled with the growing rural-urban migration and the rise in urban population (12% in 2001), it is not wholly surprising to see that ownership of houses has decreased from 93.4% to 90%.

The highest ownership figures in 2001 were seen in Bhojpur (93.1%) and Khotang (95.5%); which are incidentally also the districts with the highest rural populations. Within the Koshi Hills, the largest decrease in ownership was recorded for Dhankuta (4% decrease) followed by Sankhuwasabha (3.3% decrease), Terhathum (2.4% decrease) and Bhojpur (2% decrease).

Figure 91: Household by Ownership of House (%), Nepal

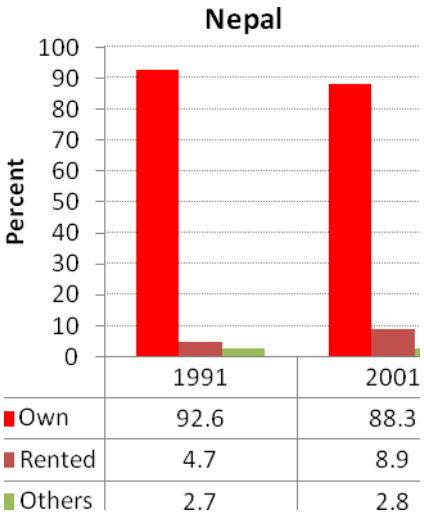
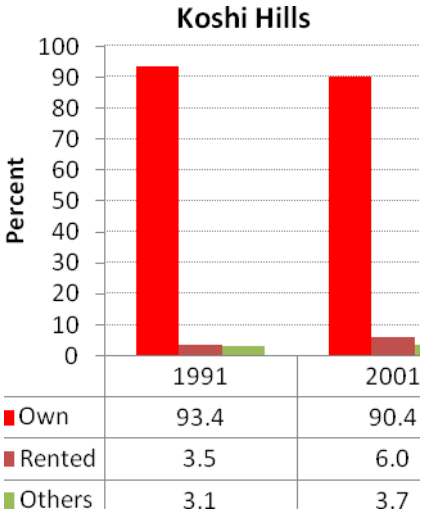


Figure 92: Household by Ownership of House (%), Koshi Hills and Koshi Tarai



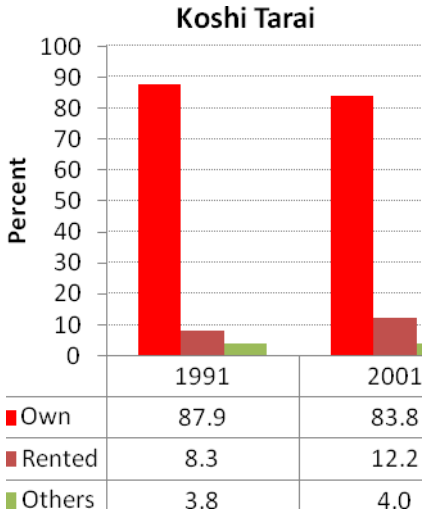


Figure 93: Household by Ownership of House (%), Koshi Hills Districts

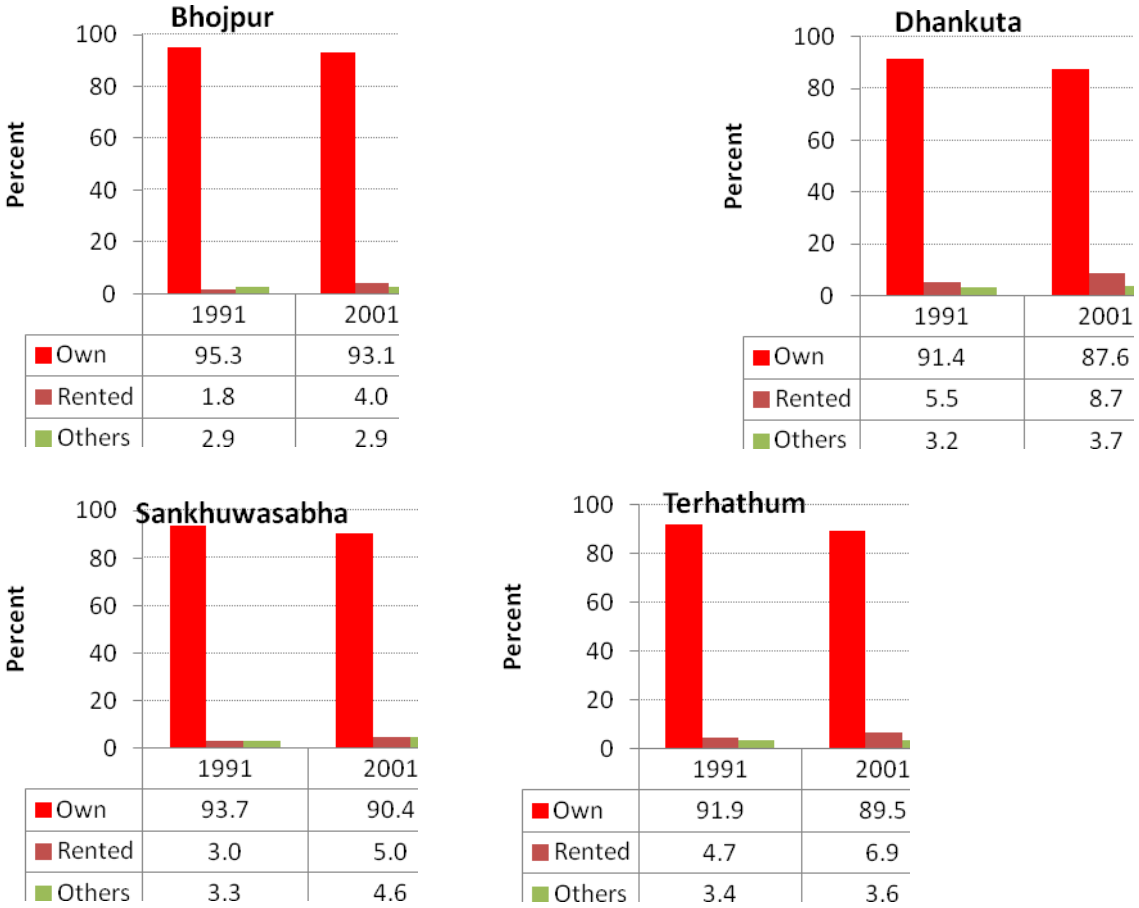
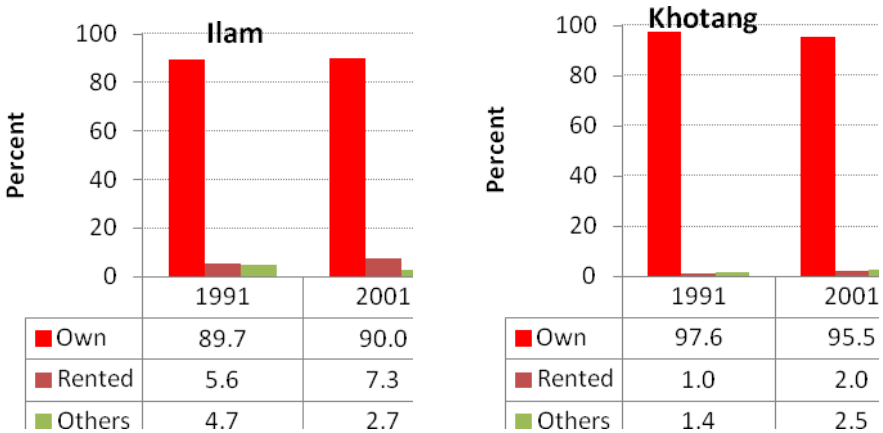


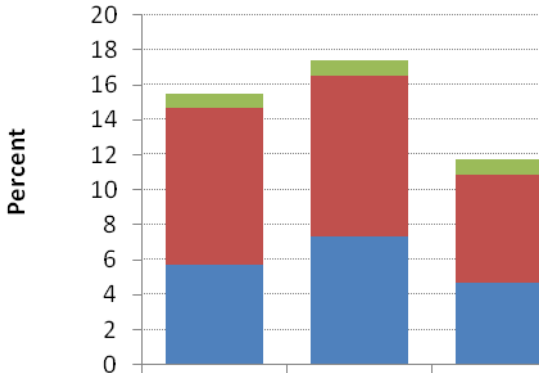
Figure 94: Household by Ownership of House (%), Ilam and Khotang



3.4.3 Female Ownership of House, Land and Livestock

The population census 2001 has provided data on female ownership of house, land and livestock. In Nepal, less than 1% of households are owned by females while 6.2% of households have land with female ownership. In totality, about 4.6% households have either land or house in female ownership. Comparatively, the percentage of households with female ownership of house or land is higher in Koshi Tarai (i.e., 7.3) than Koshi Hills (i.e., 5.7) and both are above the national figure (Figure 95). Within the study districts, Terhathum has the highest percentage of female ownership of land (12.1%), followed by Sankhuwasabha (10%), Bhojpur (7.7%) and Dhankuta (7.6%).

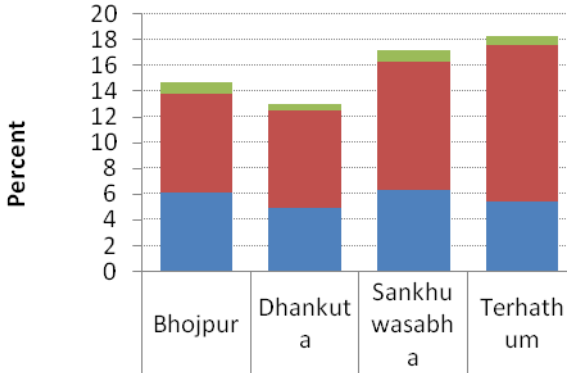
Figure 95: Household with Female Ownership of House and Land (%), 2001, Nepal, Koshi Hills, Koshi Tarai



	Koshi Hills	Koshi Tarai	Nepal
House only	0.8	0.9	0.9
Land only	9.0	9.2	6.2
Both	5.7	7.3	4.6

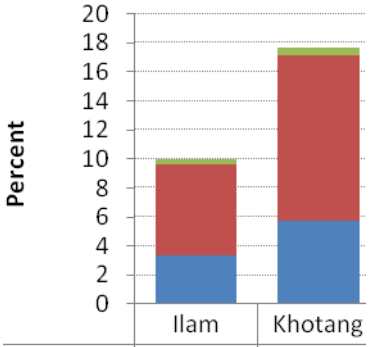
Similarly, female ownership of other types of assets, such as livestock, also shows that this is the higher in the Koshi Hills (10.3%) than national figure (7.2%).

Figure 96: Household with Female Ownership of House and Land (%), 2001, Koshi Hills Districts



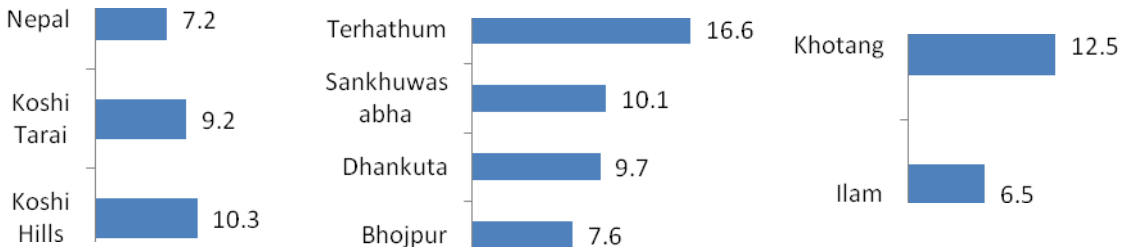
	Bhojpur	Dhankuta	Sankhuwasabha	Terhathum
House only	0.8	0.5	0.9	0.8
Land only	7.7	7.6	10.0	12.1
Both	6.1	4.9	6.4	5.4

Figure 97: Household with Female Ownership of House and Land (%), 2001, Ilam and Khotang



	Ilam	Khotang
House only	0.4	0.6
Land only	6.3	11.4
Both	3.4	5.8

Figure 98: Household with Female Ownership of Livestock (%), 2001, Nepal, Koshi Hills, Koshi Tarai, Koshi Hills Districts, Ilam and Khotang



3.4.4 Cooking Fuel

The major source of fuel for cooking in Nepal is wood. Nearly 66% of households are dependent on it; followed by kerosene (10%). Within the Koshi Hills, an even larger percentage of inhabitants, 91.1%, were recorded to be using firewood; followed by kerosene (1.9%), and bio-gas (0.6%). The picture in the Koshi Terai is however slightly different, as though a 51.1% were found to be using wood, the utilisation of cow dung (25.1%) was also significant along with LPG gas (7%).

Costs and availability are two of the most significant factors associated with the type of fuel used. In rural areas, it is therefore not surprising that many families continue using wood compared to other available fuels such as kerosene. The health costs associated are however high, as the smoke released from burning solid fuels causes respiratory problems. It has been reported that this is one of the common causes of respiratory illness amongst women and children. LPG provides a cleaner alternative. However, the higher costs make it prohibitive to poor families and as a result are mostly only seen in urban areas. In the Dhankuta its utilisation has however increased to 7.1% along with Ilam (4.1%).

Figure 99: Household by Type of Main Fuel of Cooking (%), 2001, Nepal

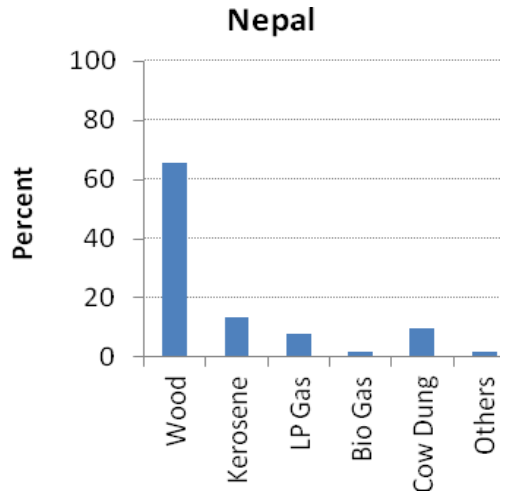


Figure 100: Household by Type of Main Fuel of Cooking (%), 2001, Koshi Hills and Koshi Tarai

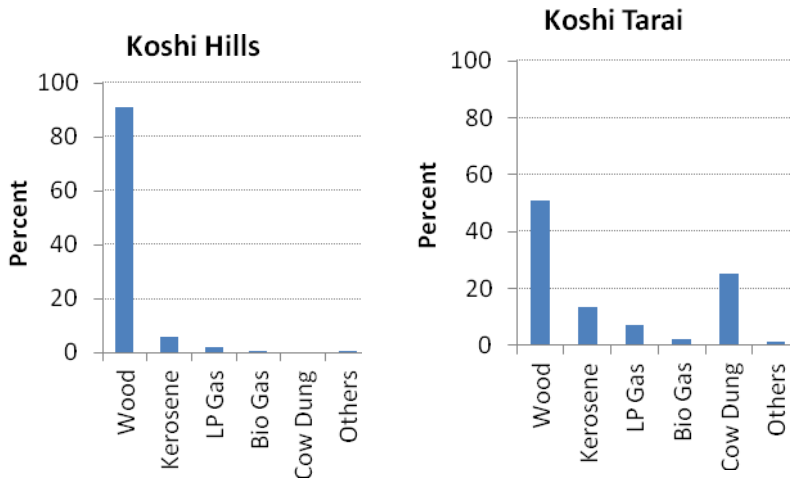


Figure 101: Household by Type of Main Fuel of Cooking (%), 2001, Koshi Hills Districts

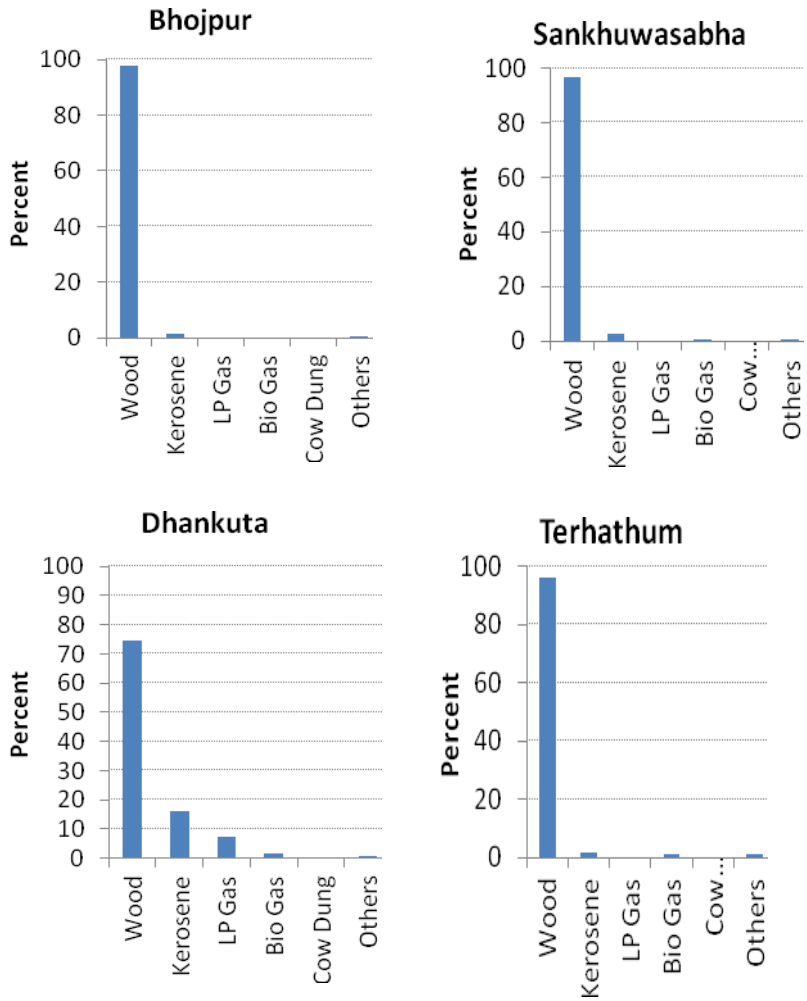
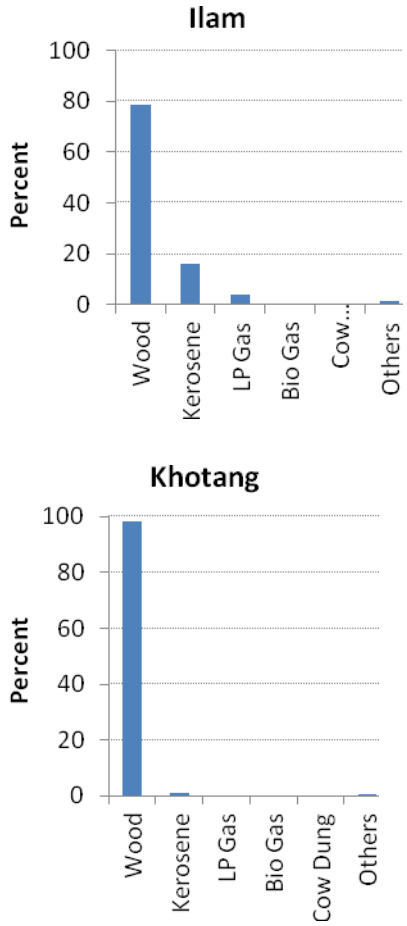


Figure 102: Household by Type of Main Fuel of Cooking (%), 2001, Ilam and Khotang

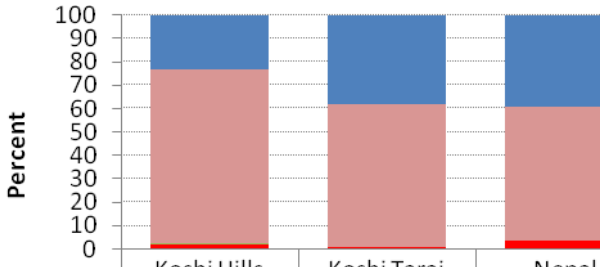


3.4.5 Lighting Facility

Based on the data provided by population census 2001, only 39% households have electricity facility for lighting in Nepal. The majority of households (57%) are dependent on kerosene. Similar patterns are seen in the Koshi Hills and Koshi Tarai, where kerosene accounts for 74.3% and 60.7%, respectively.

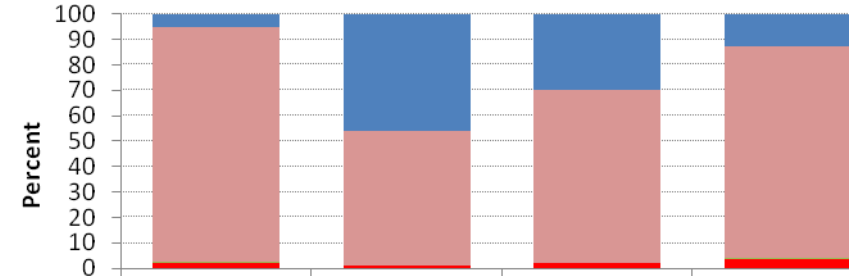
Generally the coverage of electricity is higher in urban areas, due to the coverage of the Nepal Electricity Corporation. But, in recent years small- and micro-hydro plants have also been built in rural areas. Within the study area, the Figure 3 below shows that besides Dhankuta (46.0%) and Sankhuwasabha (30.0%) the other districts have very low levels of electricity coverage. The situation is similar in Khotang with the majority (92.2%) dependent on kerosene and only 3.9% using electricity. But in Ilam, 43% have access to electricity.

Figure 103: Household by Type of Lighting Facility (%), 2001, Nepal, Koshi Hills and Koshi Tarai



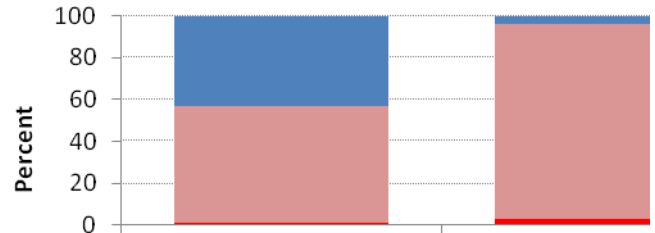
	Koshi Hills	Koshi Tarai	Nepal
Electricity	23.4	38.4	39.4
Kerosene	74.3	60.7	57.2
Bio Gas	0.2	0.2	0.2
Others	2.0	0.7	3.2

Figure 104: Household by Type of Lighting Facility (%), 2001, Koshi Hills Districts



	Bhojpur	Dhankuta	Sankhuwasabha	Terhathum
Electricity	5.4	46.0	30.0	12.5
Kerosene	92.2	52.9	68.1	83.3
Bio Gas	0.2	0.2	0.1	0.6
Others	2.2	0.9	1.8	3.6

Figure 105: Household by Type of Lighting Facility (%), 2001, Ilam and Khotang



	Ilam	Khotang
Electricity	43.0	3.9
Kerosene	56.0	92.9
Bio Gas	0.1	0.0
Others	0.8	3.1

3.4.6 Toilet Facility

Households having toilet facilities is an important indicator of living standards in Nepal. In 2001, the figures showed that only 46% had toilets, of which only 23% were modern/flush toilets. Not surprisingly, the majority of the households that had toilets were in urban areas (78.1%) as compared to merely 40.8% in rural areas.

Within the Koshi Hills, the percentage of households with toilet was found to be higher than the national average at 56%. While that of the Koshi Tarai was 46%. Across the different study districts, the largest percentage of households with toilets was in Dhankuta and lowest in Bhojpur (Table 85).

Table 85: Households by Toilet Facility 2001

Districts	% Households having toilets	Type of toilet facilities	
		Modern/flush	Ordinary
Koshi Hills			
Bhojpur	49	3	49
Dhankuta	64	25	39
Terhathum	53	10	43
Sankhuwasabha	59	54	5
Neighbouring districts			
Ilam	76	50	26
Khotang	35	34	2

3.4.7 Drinking Water Sources

The major drinking water sources are tap/pipe, well, tube well, spout, and river/stream. Nationally, more than 50% of households are using tap water. In the Koshi Hills, 67% households were using tap water, whereas in the Koshi Tarai, tube wells constituted the major sources (78.5%). Within the Koshi Hills tap/piped water remained the mains sources at Dhankuta (80.7%), Terhathum (72.7%), Sankhuwasabha (62.4%) and Bhojpur (57.3%). Spout water was also an important source (Table 86).

Table 86: Type of Drinking Water in the Kosh Hills

Type of water source	Bhojpur	Dhankuta	Sankhuwasabha	Terhathum
Tap/pipe	57.3	80.7	62.4	72.7
Well	20.8	13.4	13.1	14.4
Tube well	0.0	0.1	0.0	0.0
Spout water	20.0	3.3	21.9	10.9
Rivers/streams	1.5	1.1	2.0	0.8
Others	0.4	1.3	0.6	1.3

3.4.8 Household with Radio

The Population Censuses 1981 and 1991 have provided data on number of households using radio. Based on these data, the percentage of households using radio has drastically increased from 1981 to 1991 in Nepal (6.8-26.0), Koshi Hills (6.1 to 25.3%), and Koshi Tarai (9.6-25.6).

These increases were seen across the study as well as the neighbouring districts of Ilam (30.8%) and Khotang (23.2%).

Figure 106: Household with Radio in Use, Nepal, Koshi Hills and Koshi Tarai

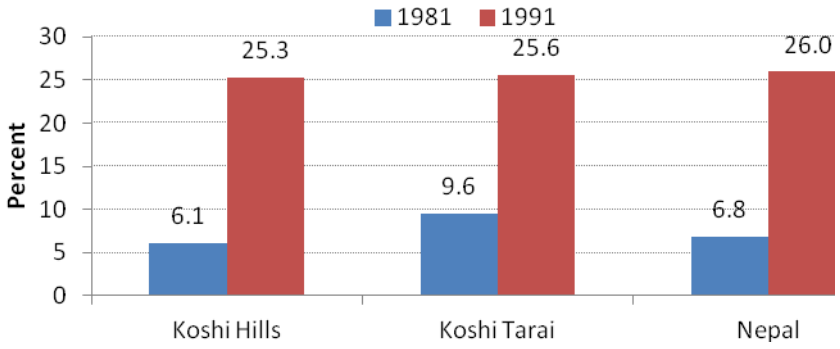


Figure 107: Household with Radio in Use, Koshi Hills Districts

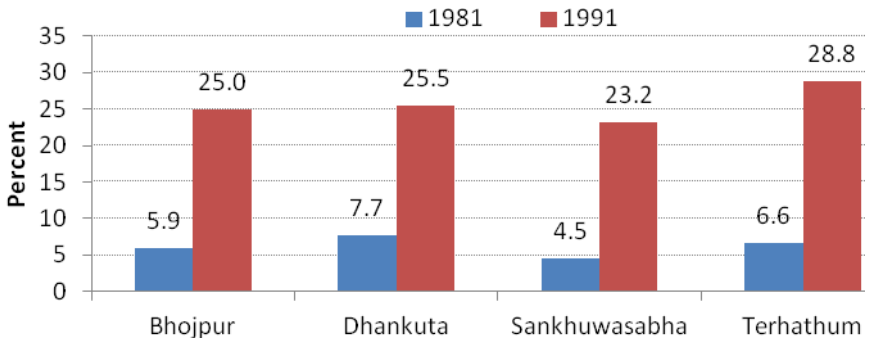
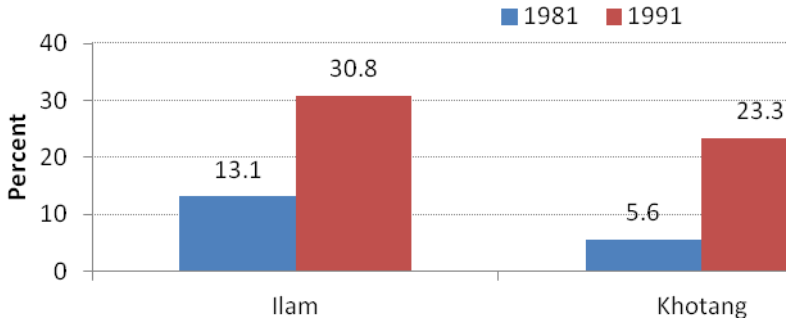


Figure 108: Household with Radio in Use, Ilam and Khotang



3.5 Changes in Health Services

3.5.1 Data Sources and Definition

The Department of Health Services of the Government of Nepal (GoN) defines 'health services' to include hospitals, primary health care centres (PHCC) (or health centres in short), Health Posts (HP), and Sub Health Posts (SHP). The data for health services in the country have been available at district level regularly from 1996/97 to 2009/10 after the establishment of the Health Management Information System (HMIS) in 1994. The HMIS dataset deals with only government health service units and do not include those set up by private sector and traditional health service facilities. This chapter contains an overview of changes in selected health services and changes in nutritional conditions of children over the last one and half decades in the Koshi Hills and other districts since 1996/97.

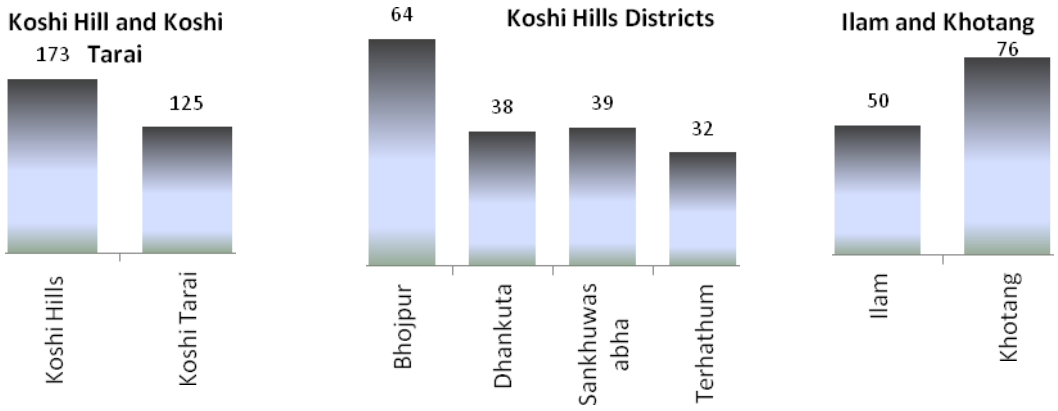
3.5.2 Trend in Health Services

In Nepal, health care facilities in the past were provided by traditional faith healers (dhami, jhakris), and traditional birth attendants. The chapter on the review health services provides a brief overview on the evolution of health programming in Nepal. While planned development of health services began

with the First Five Year development plan in 1956, it was the National Health Policy (1991) provided a policy framework that emphasised preventive and promotion health services that were to be provided in an integrated manner through local level health centres. Thus the government initiated a phase wise establishment of health posts and sub health posts as the main service providers at local levels with at least one SHP at each VDC, and hospitals to be established on a district, zone and regional levels throughout the country (WHO, 2007; Niraula, 1994).

BY the 1970s, health services in Nepal included nearly 70 hospitals, and 550 health posts throughout the 75 districts. According to the Annual Report of Health Services, 2009/10, there were a total of 4,127 health service centres throughout the country that included all kinds of government service centres. In the four Koshi Hills districts there were a total of 173 different health services centres (including 4 hospitals, 9 PHCCs, 40 health posts and 120 sub-health posts) that provided services to the population in the 162 VDCs and 3 municipalities of the four districts[341]. Over the years between 1996 and 2009 the total number of service centres has fluctuated slightly due to the fact that most of the mission hospitals and health centres previously operated and assisted by the foreign aid have been merged into the government hospitals or centres (Dixit, 1999). Refer to Annex 51-Annex 56 for details. Figure 109 below shows the distribution of health services in the Koshi Hills, the Koshi Tarai and Ilam and Khotang districts as of 2009/10.

Figure 109: Distribution of Health Services, 2009/10



3.5.3 Accessibility of Health Services

Access to health services have improved somewhat throughout the country and in the Koshi Hills by the 2000s compared to the early 1990s. Niraula (1994) stated that in the early 1990s each health post on average provided services to an estimated population of 24,000. By 2009/10 however each health service unit (HSU) catered to an average of 6,450 people at the national level as can be seen in Table 1 below. Similarly, health service accessibility, combining all types of health services, for the Koshi Hills was an average of 3,523 persons per health service unit for a total population of 0.61 million in 2011 (Table 87). Of the four KH districts, Bhojpur had relatively better health accessibility (2,874 individuals per HSU). Compared to the KHs, the health accessibility ratio was much higher at 13,727 persons per HSU for the Koshi Tarai districts (i.e. Morang and Sunsari) due to the high population. Finally, the neighbouring hill districts of Khotang and Ilam had a wider variance in the coverage of the HSUs compared to the KH and KT districts.

[341] There are a total of 162 VDCs and 3 municipalities in the four Koshi Hills districts. Terhathum has 31 VDCs and one municipality; Sankhuwasabha has 33 VDCs and one municipality; Bhojpur has 63 VDCs; and Dhankuta has 35 VDCs and one municipality.

Table 87: Health Service Accessibility by Area and Population

Areas	HSU (2009)	Area km²	Population (2011)	No. of HSU/ 100km²	Persons/HSU
Bhojpur	64	1,507	183,918	4.2	2,874
Dhankuta	38	891	164,133	4.3	4,319
Sankhuwasabha	39	3,480	159,649	1.1	4,094
Terhathum	32	679	101,709	4.7	3,178
Koshi Hills	173	6,557	609,409	2.6	3,523
Morang	72	1,855	964,709	3.9	13,399
Sunsari	53	1,257	751,125	4.2	14,172
Koshi Tarai	125	3,112	1,715,834	4.0	13,727
Ilam	50	1,703	295,824	2.9	5,916
Khotang	76	1,591	209,130	4.8	2,752
Nepal	4,127	147,181	26,620,809	2.8	6,450

Note: HSU = Health Service Unit

In terms of coverage of the geographic spread of the health services, the mountain district of Sankhuwasabha had the least accessibility (at only 1.1 health services per 100km²) compared to the other three KH districts which all had more that 4 health services per a 100km² radiuses (Table 87).

3.5.4 Innovations in Outreach Programming - Female Community Health Volunteers

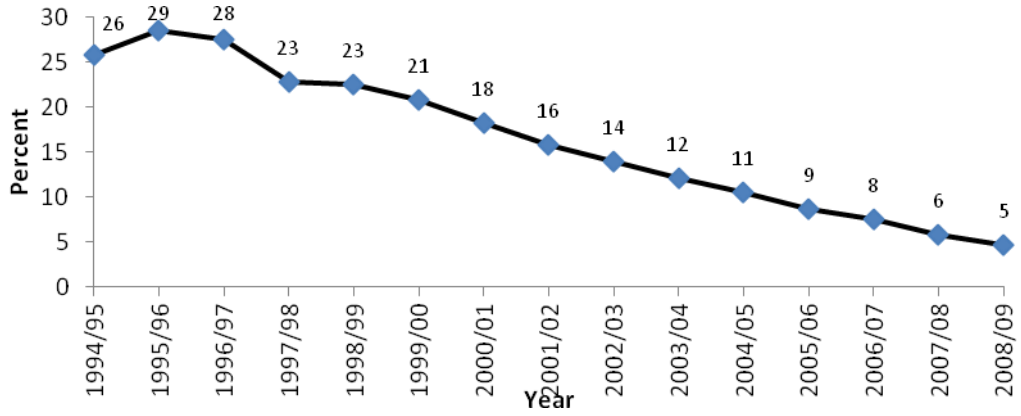
The Female Community Health Volunteers (FCHVs) Programme was started in 1988 under the Family Health Division of the Ministry of Health to enhance its primary health care network through community participation and expanded outreach through the voluntary work of a cadre of local women across all districts of Nepal, including the Koshi Hills. As frontline local heath workers, the initial plan was for the selection of FCHVs per ward in the rural areas. The FCHV programme was implemented in 27 districts (of the Central Region and Mid-Western Region) and later expanded to 56 districts in 1990 and to all 75 districts by 1995. In the mid 1990s additional FCHVs were recruited according to a 'population based' ratio and the programme was also expanded to urban areas (WHO, 2007).The number of FCHVs in the country had reached over 48,000 by 2009/10. In the Koshi Hills, there were nearly 1,600 FCHVs in 2009/10 (Annex 55).

Along with providing community-based health education and services in rural areas, the FCHVs focus on maternal and child health and family planning services and offer services of distribution of Vitamin A and immunisation of children under five. The FCHVs also work for providing community-based treatment of acute respiratory infection (ARI) cases and referral to health facilities in some districts, as well as provide all basic health information to women, including information regarding pregnancy. They are also engaged actively to contribute to women's leadership and empowerment at the Village Development Committee (VDC) level, and several FCHVs have also worked as VDC members (WHO, 2007).

3.5.5 Child Nutrition – Changes Over the Years

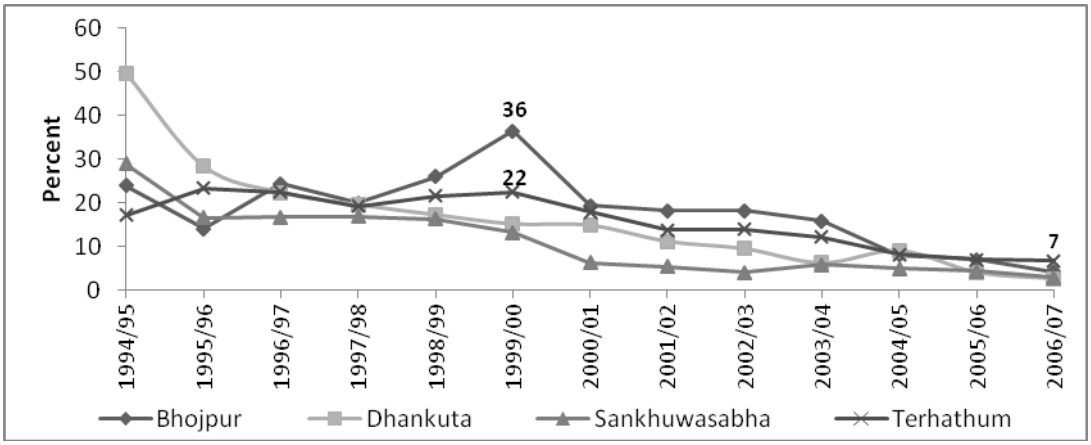
Malnutrition remains one of the most serious obstacles to child survival, growth and development in Nepal. The data on proportion of malnourished children of age below three years based on low weight have been collected from the Annual Health Report of the Department of Health Services since 1994/95 to 2008/09. For the country, the proportion of malnourished children of age below three years has declined considerably from over 25% in 1994/95 to about 5% in 2008/09. It is encouraging to note that the proportion declined continuously even during the height of the political conflict of the country between 2001 and 2006.

Figure 110: Trend in Proportion of Malnourished Children (<3 years age), Nepal, 1994-2009



In the Koshi Hills, the trends are quite similar to the national trends. The proportion of malnourished children below 3 years of age declined considerably from under 30% in 1994/95 to below 7% in 2008/09 for three out of the four KH districts.[342] It is interesting to note that Dhankuta district had the highest proportion of children (50%) who were malnourished in 1996 (Figure 111). There is also an interesting spike in 1999/2000 in Bhojpur (36%) and slightly smaller one in Terhathum, after which the trend in decline continues, and the reasons for this rise is not known at present.

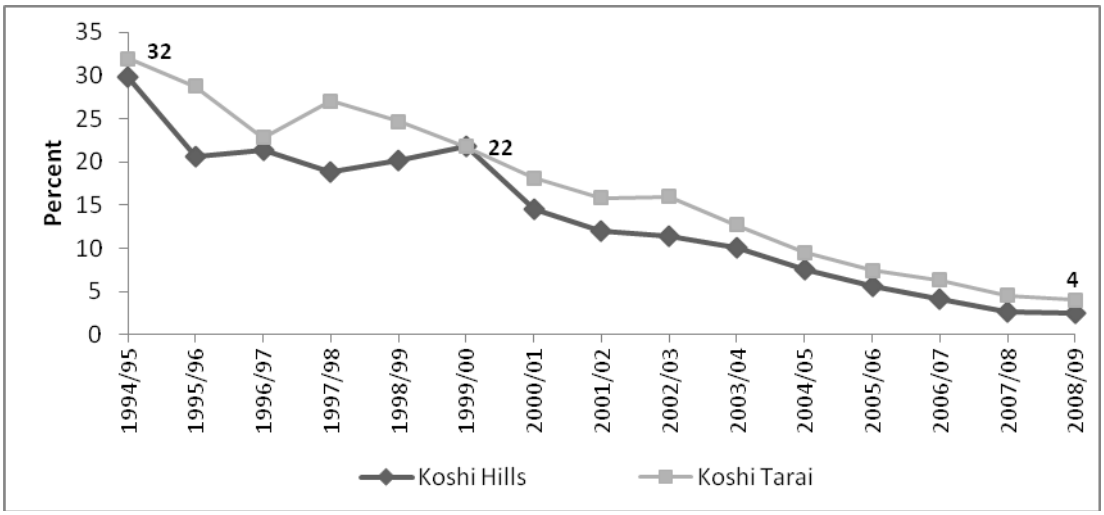
Figure 111: Trends in Malnourished Children (<3 years age), Koshi Hills Districts



The proportion of malnourished children under three years has been slightly higher in the Koshi Tarai districts compared to the KHs. But like the trends in the country national and in the KH, the proportion of malnourished children under three years has also been declining in the Koshi Tarai with the gap between the Hills and the Tarai continuing to remain the same throughout the period (Figure 112).

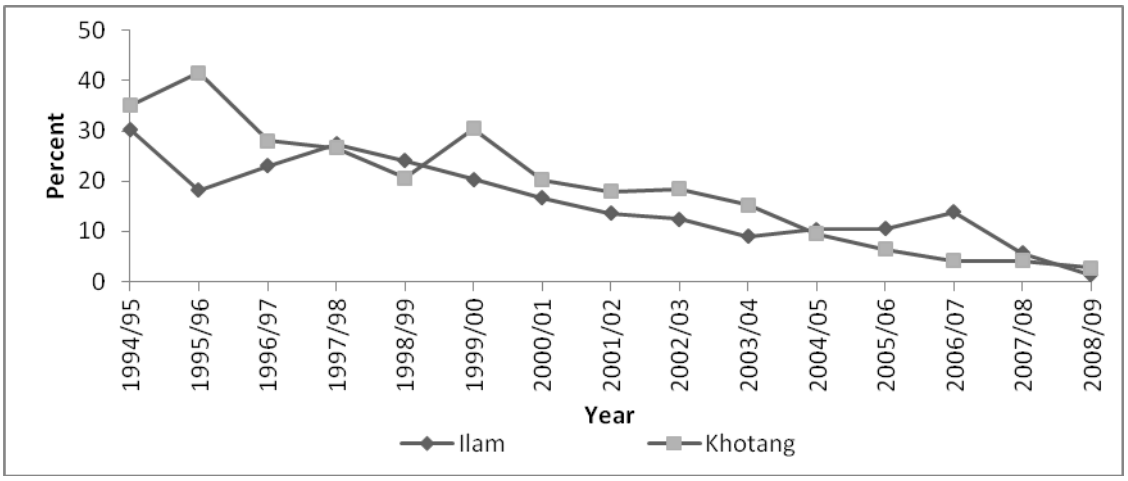
[342] Terhathum actually saw a slight rise between 1994 and 1995 which could possibly be due to an increase in the reporting of cases.

Figure 112: Trends in Malnourished Children (<3 years age), Koshi Hills and Koshi Tarai



Finally both Ilam and Khotang have also shown declining trends in the proportion of the malnourished children during the same years though there is more variability in the decline in both districts compared to that in the KH districts (Figure 113).

Figure 113: Trends in Proportion of Malnourished Children (<3 years age), Ilam & Khotang



Thus, overall the Koshi Hills have achieved improved situation in the health sector, as has other regions and the country. This is evidenced by the declining trend in the proportion of malnourished children of age below 3 years and provision of at least one Female Community Health Volunteer (FCHVs) in every ward within a VDC across the country. The FCHVs have been instrumental in providing important outreach particular in the case of maternal and child health in the rural areas of the country, including the Koshi Hills.

3.6 Changes in Educational Services

3.6.1 Data Sources

Two important sources of the data on education are the Department of Education and the Statistical Year Books of the Central Bureau of Statistics (CBS). Data available on education include number of schools by level, number of students enrolled and number of teachers by level of education from 1976/97 to 2007/08. Data on the literacy status has been collected from CBS for the last four census periods. The levels of education in Nepal include primary (grades 1 to 5), lower secondary (grades 6 to 7), and secondary (grades 8 to 10). Students are expected to begin grade one at six years of age.

3.6.2 Changes in Literacy Rates

The literacy rate is increasing over 40 years in Nepal from an average of 14% in 1971 to 54% in 2001 (Figure 114). The most recent figures for 2011 state that the adult literacy rate in the country, for population aged 15 and above, is 59.1% (UNDP, 2011).

In the Koshi Hills, there are linear increments in literacy rates in Bhojpur and Dhankuta over the four census periods, whereas there is actually a decrease in the literacy rates for males in 2001 compared to 1991 in Sankhuwasabha and Terhathum. Even with this decline, the literacy rates for both males and female in all four KH districts are higher than the overall national rates. As mentioned in the chapter on the review of the education sector in this report, while the increase in literacy rates for both males and females have increased, the gap between male and female rates have continued over the years in the KHs as well as throughout the country.

Figure 114: Changes in Literacy Rates Among Population Aged 6 Years and Above, Nepal, 1971-2001

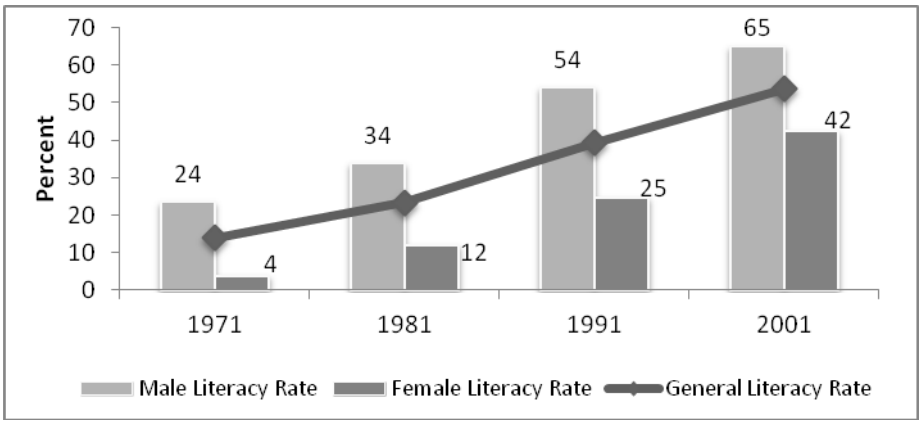
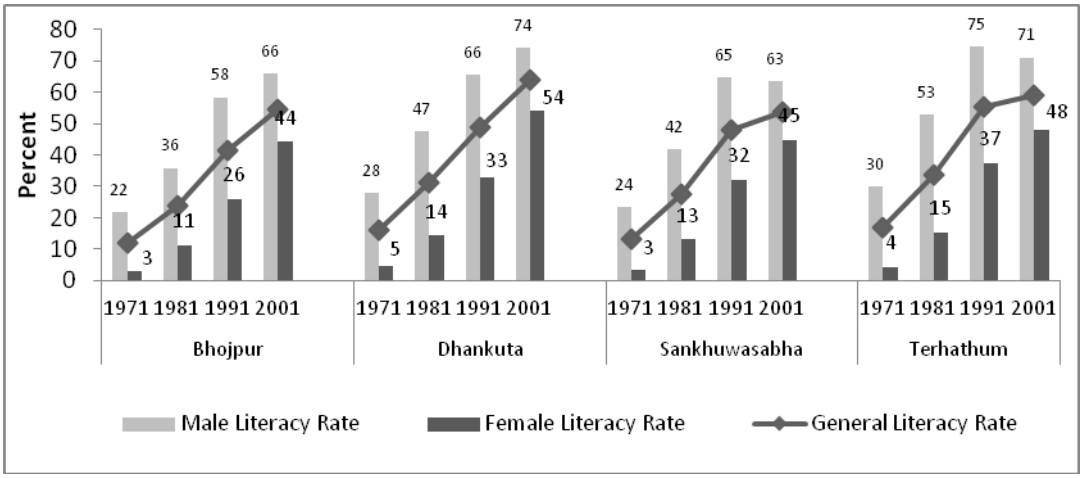


Figure 115: Changes in Literacy Rates, Koshi Hills Districts, 1971-2001



Comparing the literacy rates of the KH and the KT districts (Figure 116), it can be seen that though in 1971 literacy rates were higher for males and females in the KT districts, the rates quickly became on par as the number of schools in the hill districts increased and the number of student enrolment also increased over the years.

The comparative picture of the Ilam and Khotang, with the KH districts is, on the other hand, a little different. While literacy rates in Ilam has increased at par over the years with the four KH districts, the rates in Khotang have been much lower for all the years, and in comparison to all the other districts (Figure 117). This low rate is reflective of the lower number of student enrolment through this timeframe in Khotang district as is discussed later in this section.

Figure 116: Change in Literacy Rates, Koshi Hills and Koshi Tarai

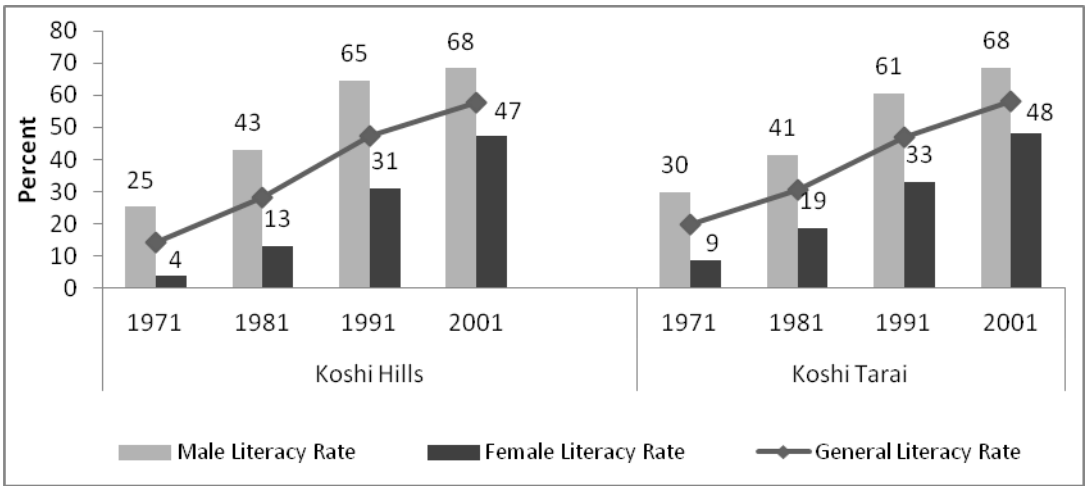
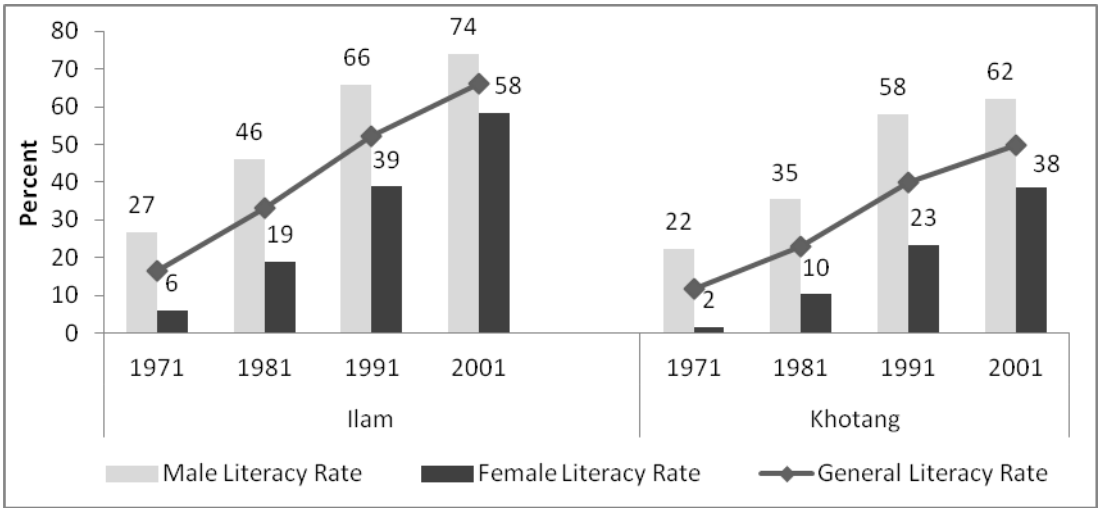


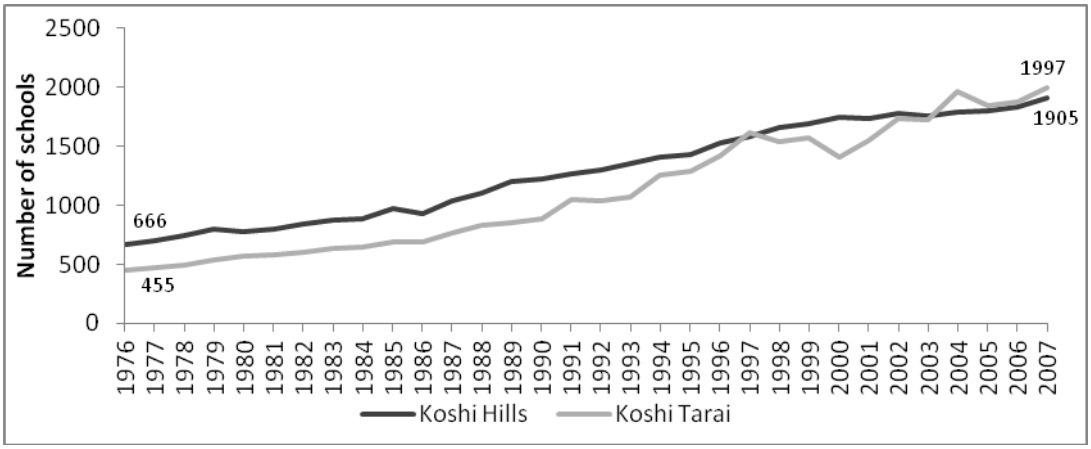
Figure 117: Changes in Literacy Rates, Ilam and Khotang, 1971-2001



3.6.3 Growth in the Number of Schools

The growth in the number of schools over the years, increase in school enrolment and the increase in the number of school teachers in Nepal over the last 40 years, have all contributed towards the increase in literacy rates. The total number of schools in Nepal has increased fourfold from over 12,000 in 1976 to over 48,000 in 2007.

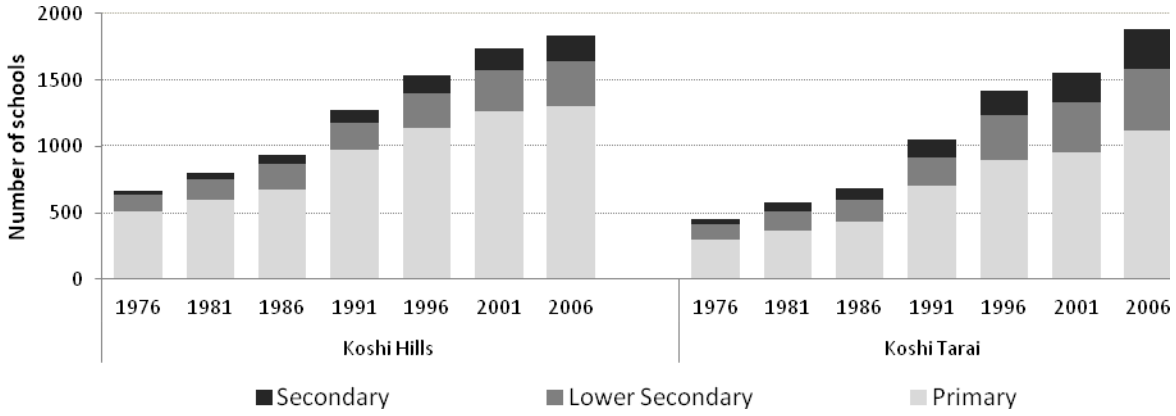
Figure 118: Growth in Number of Schools in the Koshi Hills and Koshi Tarai, 1976-2007



The trend in the growth of different levels of schools (primary, lower secondary and secondary) nationally, in the KHs, the KT and in Ilam and Khotang all show some similarity in terms of a greater focus on growth of primary schools until the 2000s. It is only from the 1990s that increases in the number of lower secondary and secondary schools can be seen.

Looking at the trends in the growth of the three types of schools in the four Koshi Hills districts and the two Koshi Tarai districts, it can be seen that despite the larger population in the Tarai districts, the number of schools have been lower in the Tarai districts especially at the primary levels (Figure 118). This had led to a relatively higher student-school ratio as well as student teacher ratio in the Koshi Tarai compared to the KHs.

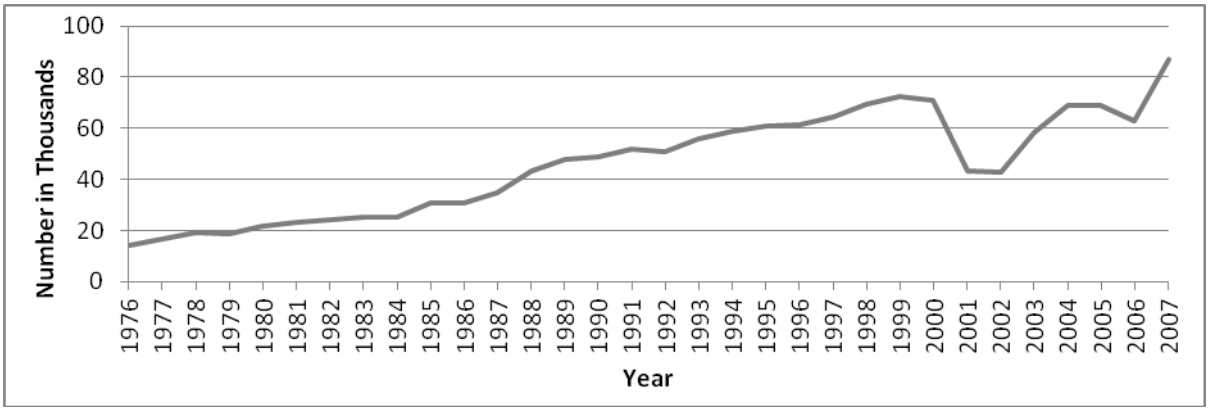
Figure 119: Growth in Number of Schools by Level of Education, Koshi Hills and Koshi Tarai, 1976-2006



3.6.4 Enrolment by Level of Education

The number of enrolled students by level of education has shown a growing trend over the last 40 years. The escalation of political armed conflict in the country in 2001 led to a sharp decrease in overall enrolment which then picked up again gradually after 2002 as can be seen in Figure 120 Nationwide the enrolment of students has been highest at the primary levels throughout this period and it is only from the mid 1990s that a gradual increase in enrolment at lower secondary and secondary levels can be seen, though still not at the levels of primary school enrolment.

Figure 120: Growth in Student Enrolments, Nepal



The growth in overall student enrolment in the KH districts also shows an increasingly steady upward trend until the 2000s with a higher number of students being enrolled consistently in Bhojpur since the mid 1970s. A sharp decrease in enrolments during the peak of the political conflict can be seen only in Dhankuta, whereas Terhathum actually shows an increase during that period. The enrolment at different levels of schools in the KHs shows a pattern similar to that of the national picture (Figure 12). It is only in the 1990s, there is an increase in enrolment at the lower secondary and secondary levels though not at the levels of primary school enrolment.

Figure 121: Changes in Student Enrolments, Koshi Hills Districts, 1976-2006

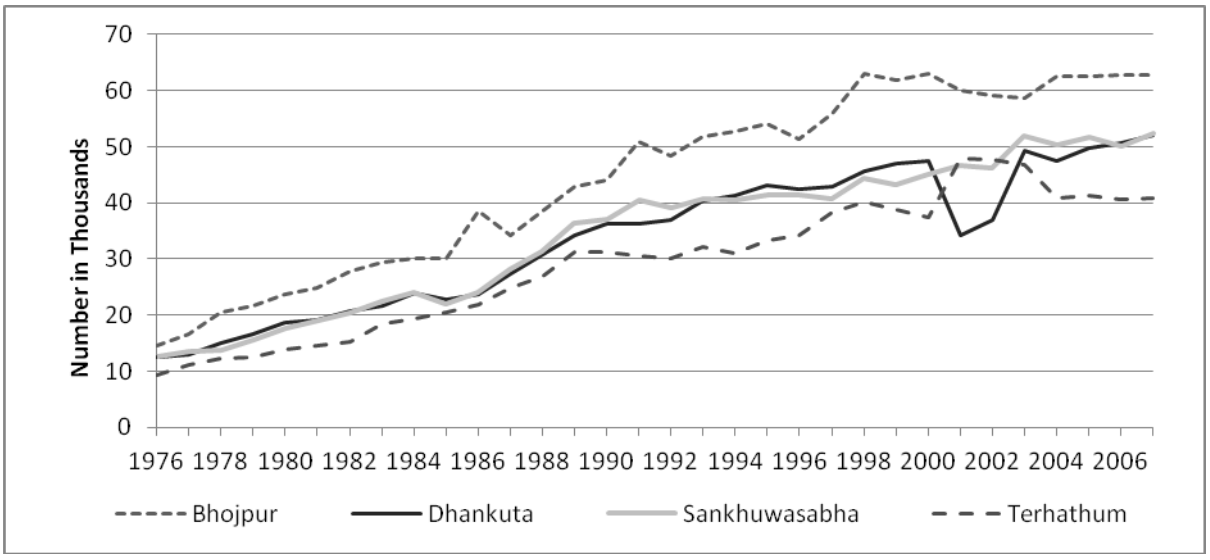


Figure 122: Changes in Student Enrolments in Different Levels of Schools, Koshi Hills Districts, 1976-2006

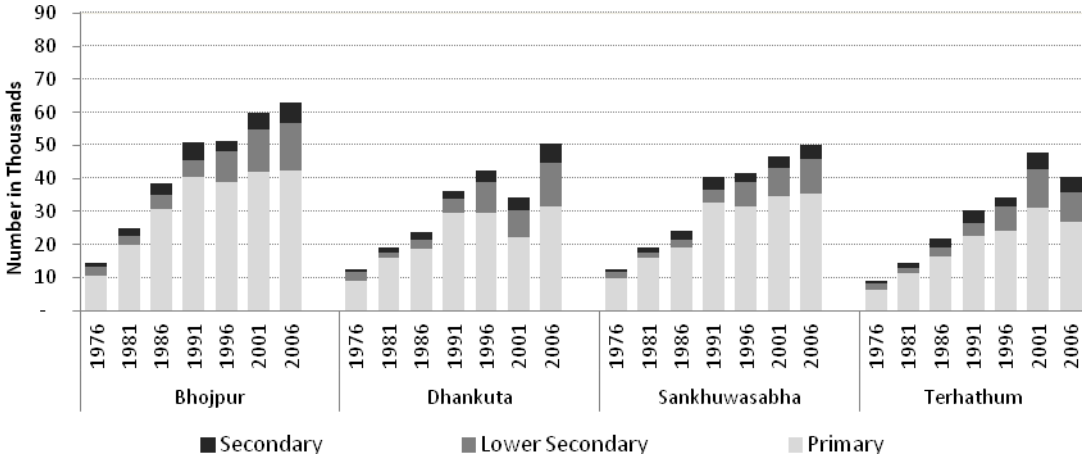


Figure 123 and Figure 124 present a picture of the changing ratio of enrolled students and number of schools in the KH districts in selected years between 1970s and 2000s. It can be seen how for all four districts the ratio of enrolled students at the primary levels was the highest in 1991. Though the ratio has dropped for all four districts in 2001 it is still above 100 enrolled students per primary school.

Figure 123

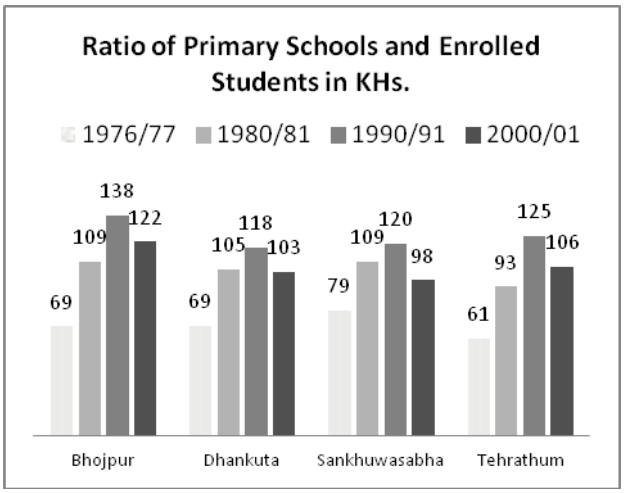
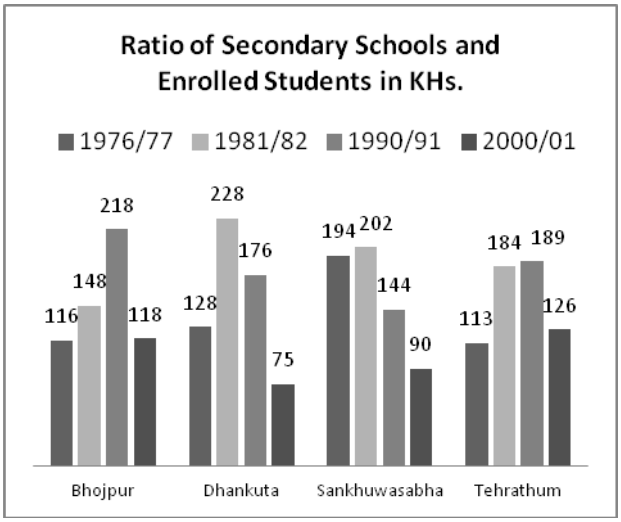


Figure 124



Though the number of schools has been was higher in the KH districts, the growth in student enrolment has been consistently higher in the Koshi Tarai districts with a sharp peak in the mid 2000s (Figure 125).

Figure 125: Growth in Student Enrolments, Koshi Hills and Koshi Tarai

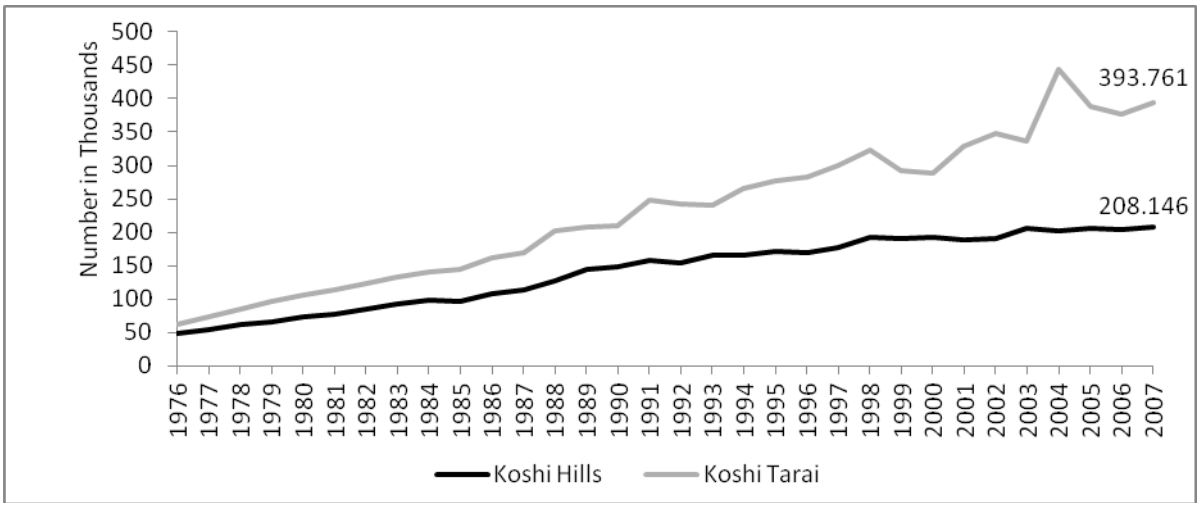


Figure 126 below shows the changing trends in overall enrolment rates in Ilam and Khotang districts where the rates have been consistently low in Khotang throughout this period. The low enrolment rates are also indicative of the lower literacy rates in the district as shown in Figure 117 above. The low rates of enrolment in Khotang can also been seen across all levels of schools in Figure 127.

Figure 126: Changes in Student Enrolment, Ilam and Khotang, 1976-2007

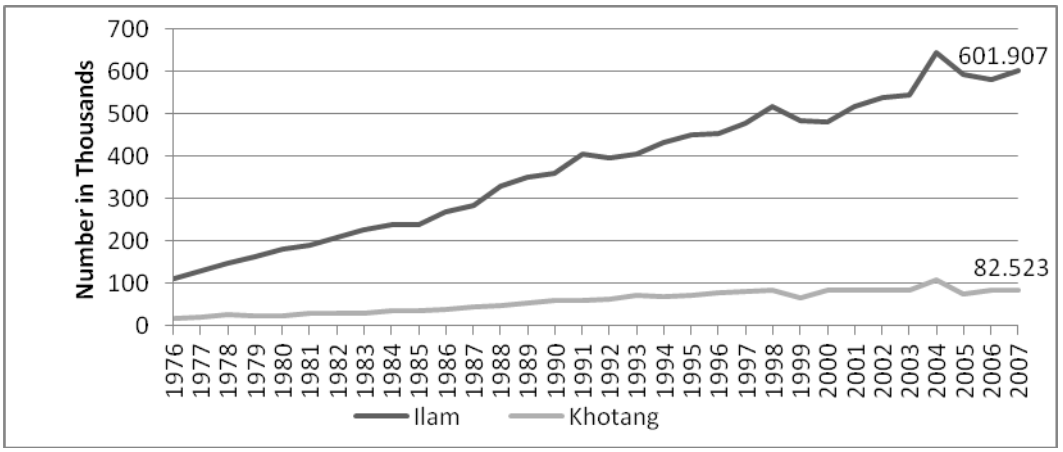
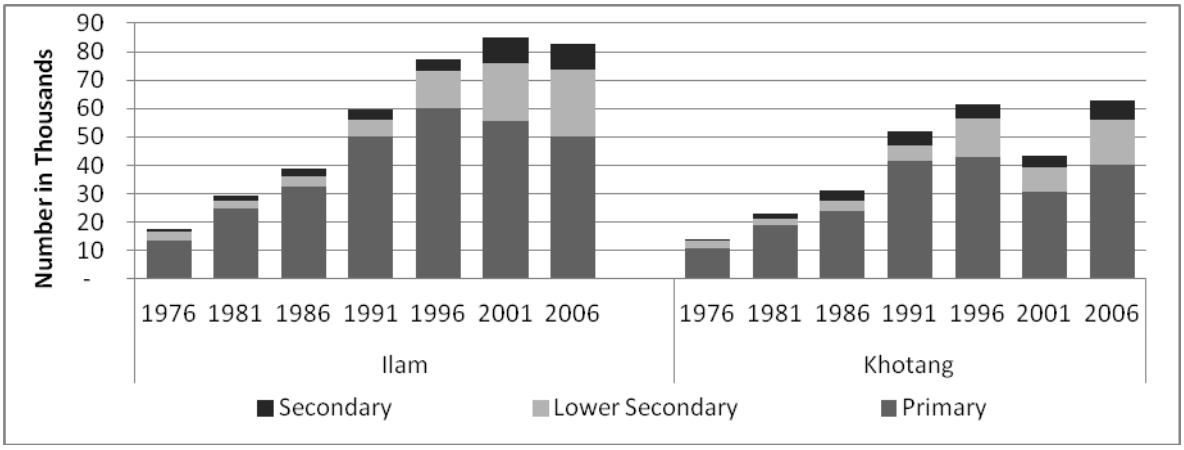


Figure 127: Changes in Student Enrolment in Different Levels of Schools, Ilam and Khotang, 1976-2006



3.6.5 Growth in the Number of School Teachers by Level of Education

Along with the increase in the number of schools and the number of students, the number of teachers has also increased overall in Nepal. The numbers have also increased in all the KHs districts (Figure 128) as well as in each of the three levels of schools (Figure 129).

Figure 128: Growth in Number of School Teachers, Koshi Hills Districts, 1976-2002

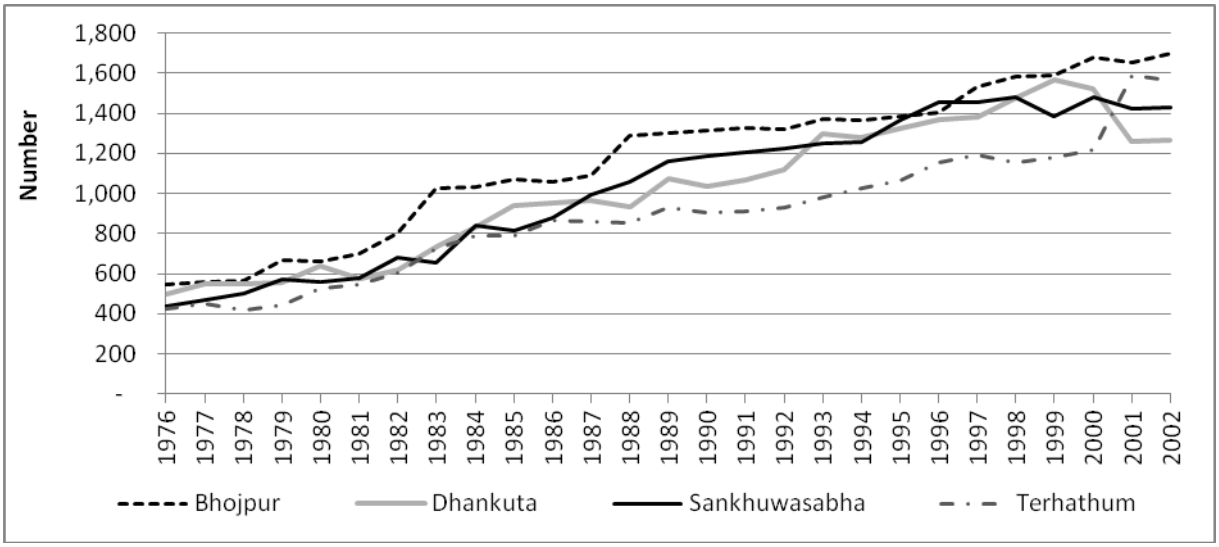
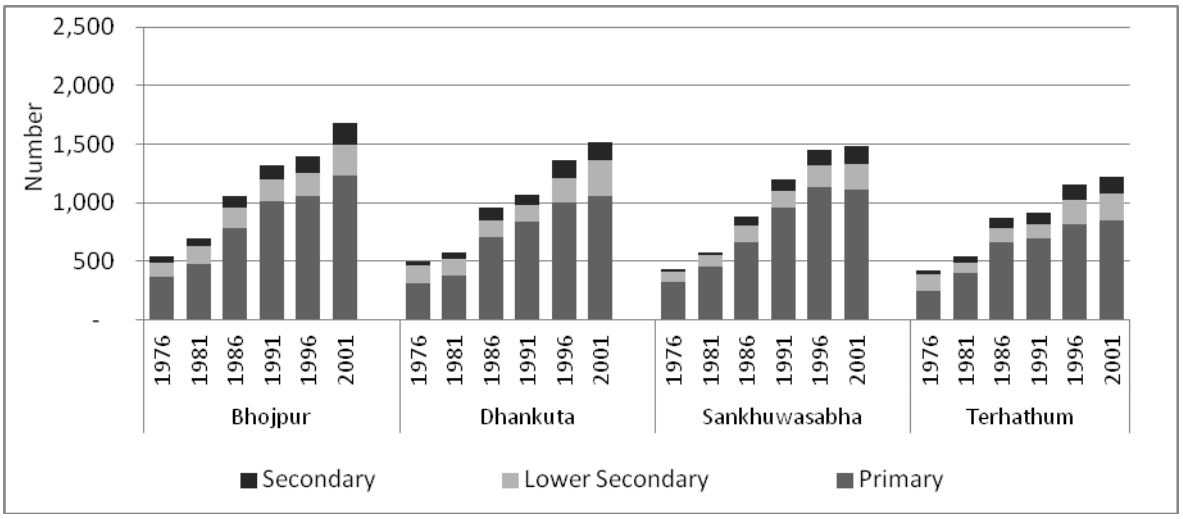
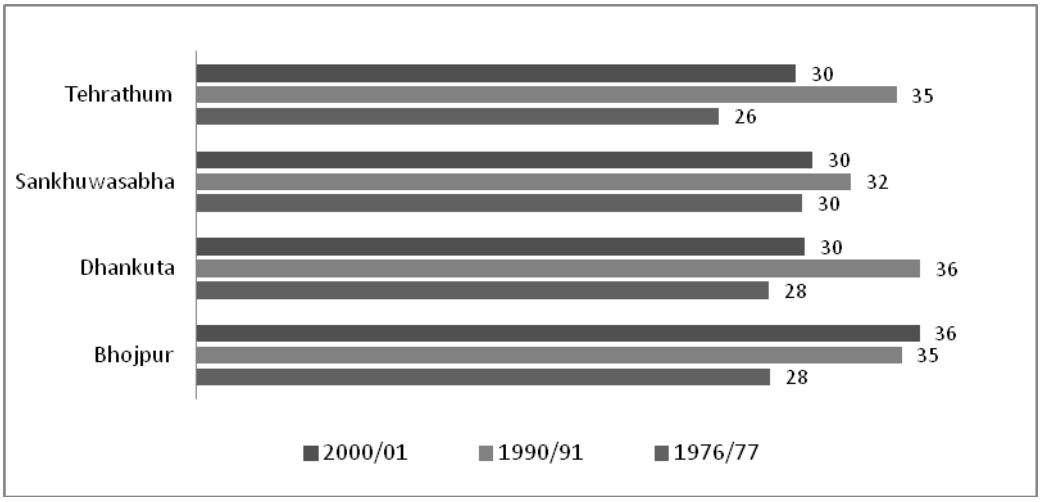


Figure 129: Changes in Number of School Teachers by Level of Schools, Nepal, 1976-2001



Yet the ratio to enrolled students and teachers in primary schools in the KHs (Figure 130) shows that it is higher than the average for South Asia at 26.4 (UNESCO, 2008). The student/teacher ratio is one of the indicators of education quality since crowded classrooms with high student/teacher ratios affects the ability of teachers to give adequate attention to each student. The student/teacher ratio at secondary schools in the KHs is relatively better ranging from 22 in Sankhuwasabha to 29 in Bhojpur in 2001.

Figure 130: Ratio of Enrolled Students and Teachers in Primary Schools in the KHs, 1976-2000



The rest of the graphs below (Figure 131 - Figure 134) give a picture of the changing number of teachers in the KHs and KT, as well as in Ilam and Khotang districts to provide a comparative picture with the KH districts.

Figure 131: Changes in Number of School Teachers, Koshi Hills and Koshi Tarai, 1976-2002

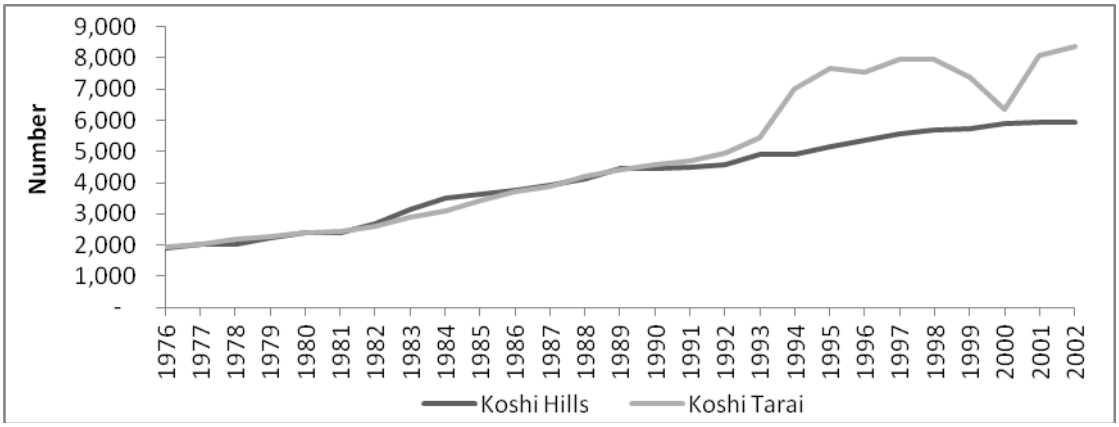


Figure 132: Changes in Number of School Teachers by Level of Schools, Koshi Hills and Koshi Tarai, 1976-2001

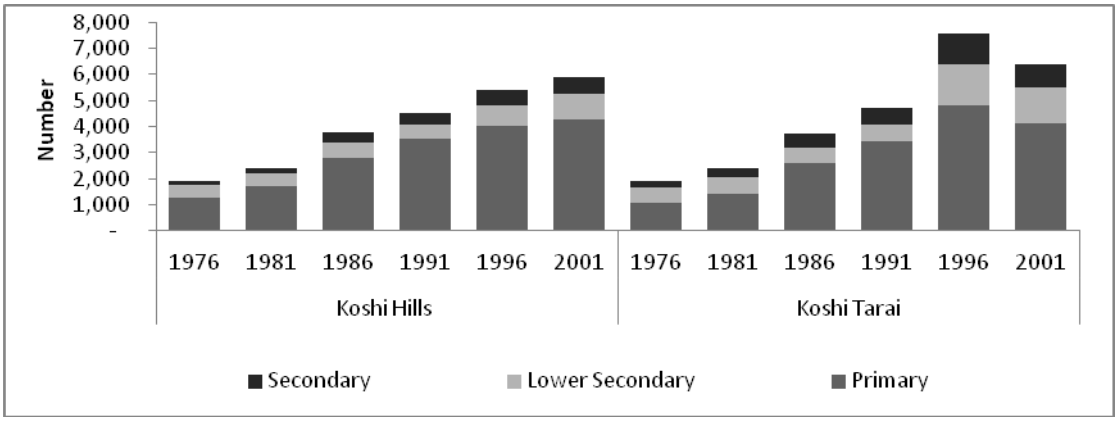


Figure 133: Changes in Number of School Teachers by Levels of Schools, Ilam and Khotang, 1976-2002

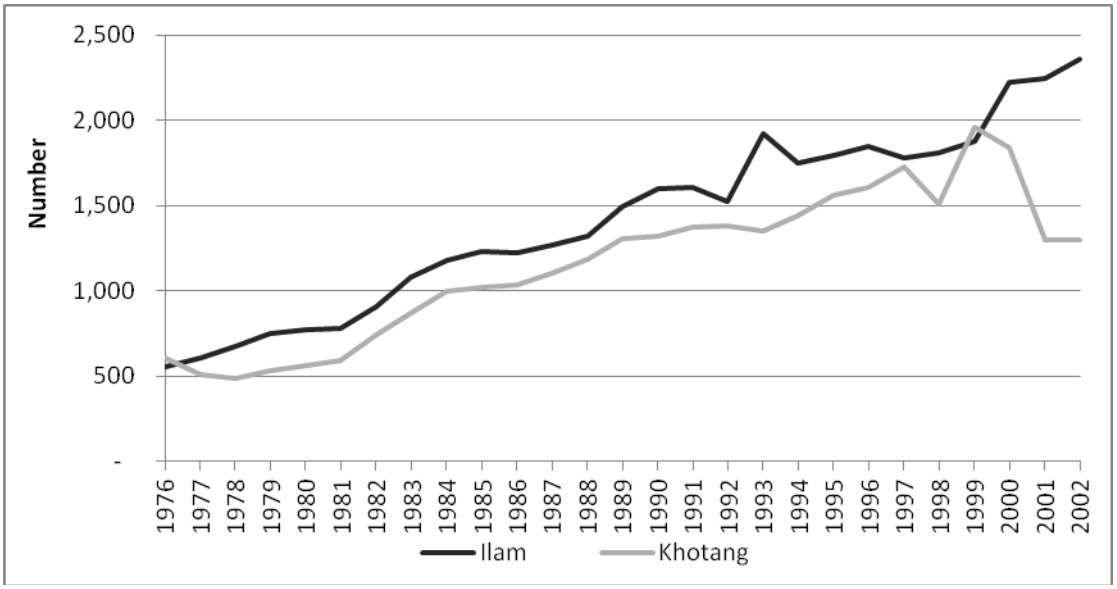
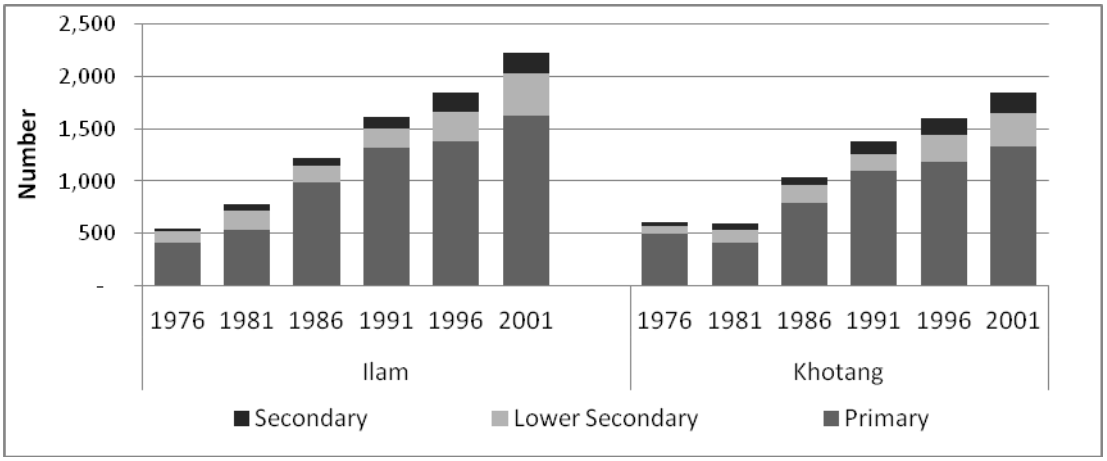


Figure 134: Changes in Number of School Teachers by Levels of Schools, Ilam and Khotang, 1976-2001



3.7 Changes in Agriculture Production, Livestock Holdings and Food Sufficiency

3.7.1 Land Holdings

Nationally, the number of land holdings has increased since 1971 while the area of holdings has increased from 1981 1991, but remained constant since then. This shows that land area has been fragmented into number of parcel in last two decades in Nepal (Figure 135). The growth of number and area of holdings in Koshi Hills, Koshi Tarai, Koshi Hills Districts and neighboring districts Ilam and Khotang are shown in Figure 136-Figure 138.

Figure 135: Growth in Number and Area of Land Holdings, Nepal

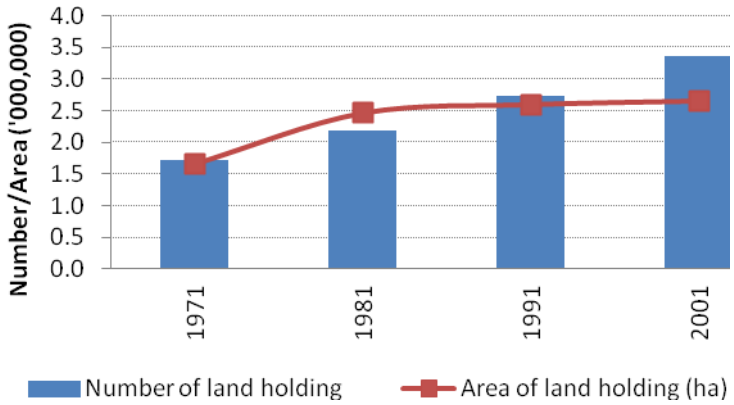


Figure 136: Growth in Number and Area of Land Holdings, Koshi Hills and Koshi Tarai

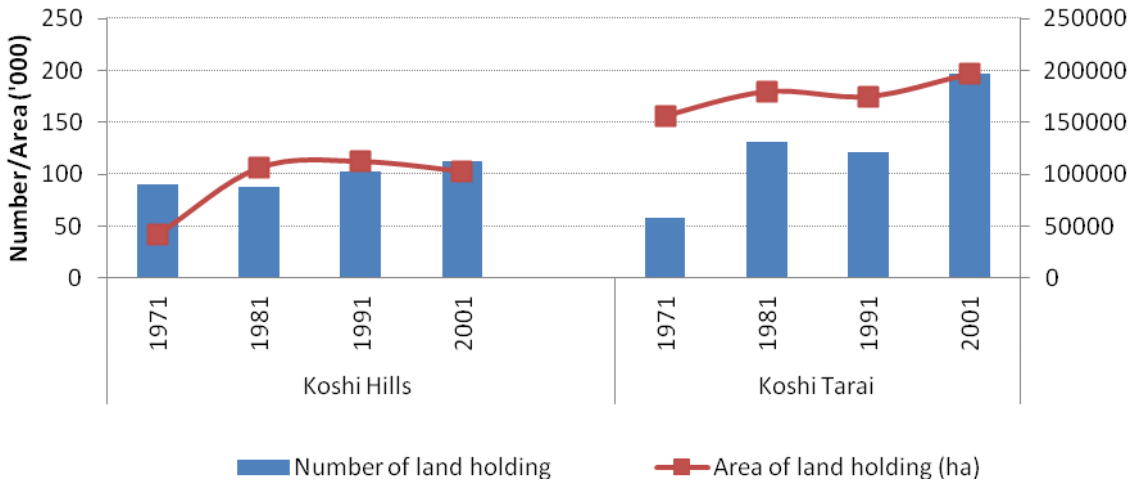


Figure 137: Growth in Number and Area of Land Holdings, Koshi Hills Districts

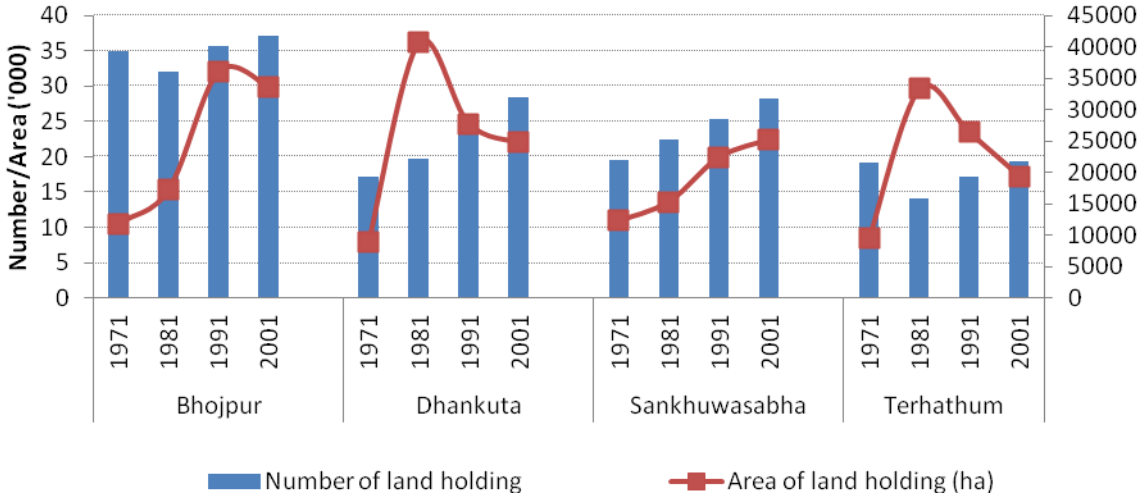
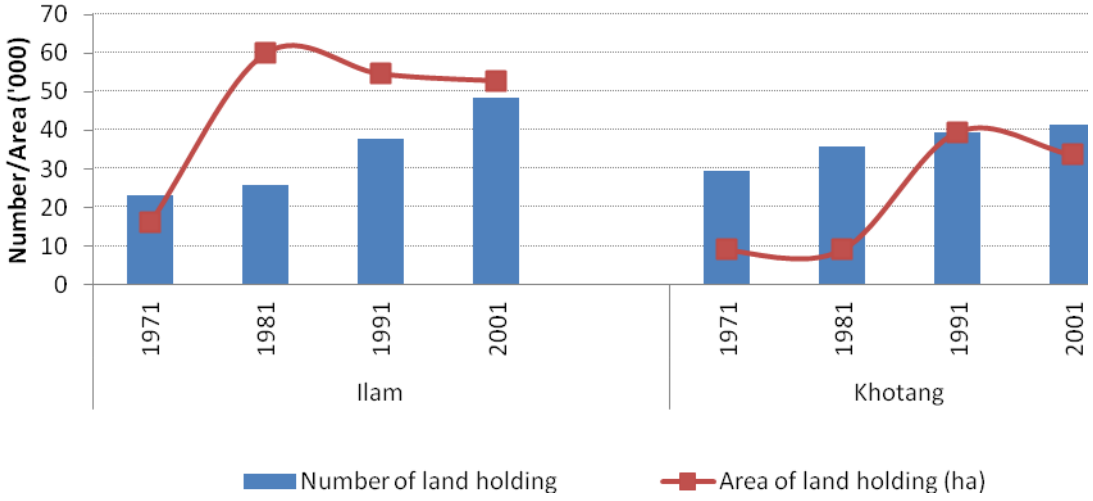


Figure 138: Growth in Number and Area of Land Holdings, Ilam and Khotang



3.7.2 Area of Holdings by Tenure

Looking at the tenure of land holdings, the owned land area is increasing while the rented and other type of land area is decreasing nationally (Figure 139-Figure 142). However, within the Koshi Hills, there has been a reversal of trends from 1991 onwards, whereby rented land has increased while self-owned land has slow declined.

Figure 139: Area of Holdings by Tenure, Nepal

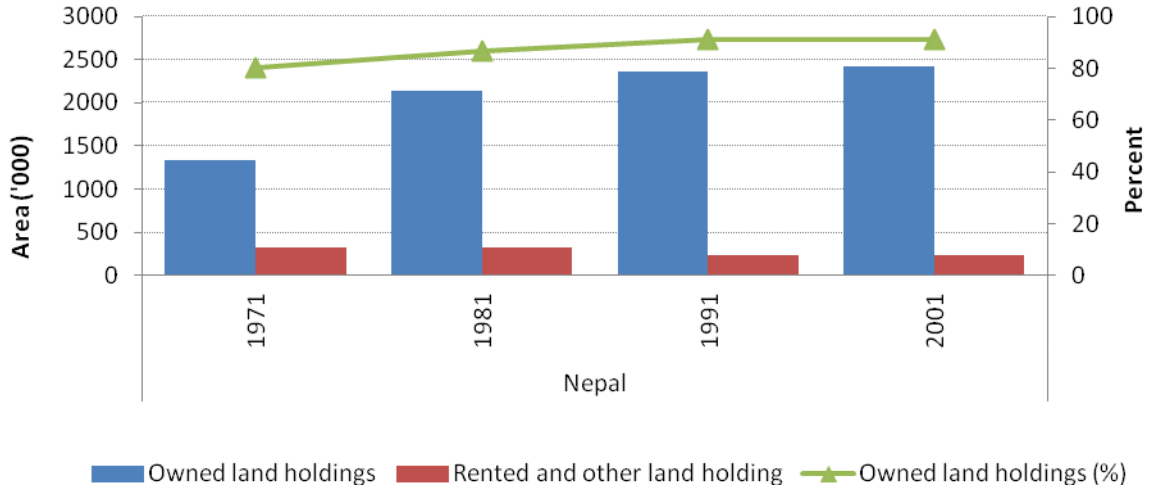


Figure 140: Area of Holdings by Tenure, Koshi Hills and Koshi Tarai

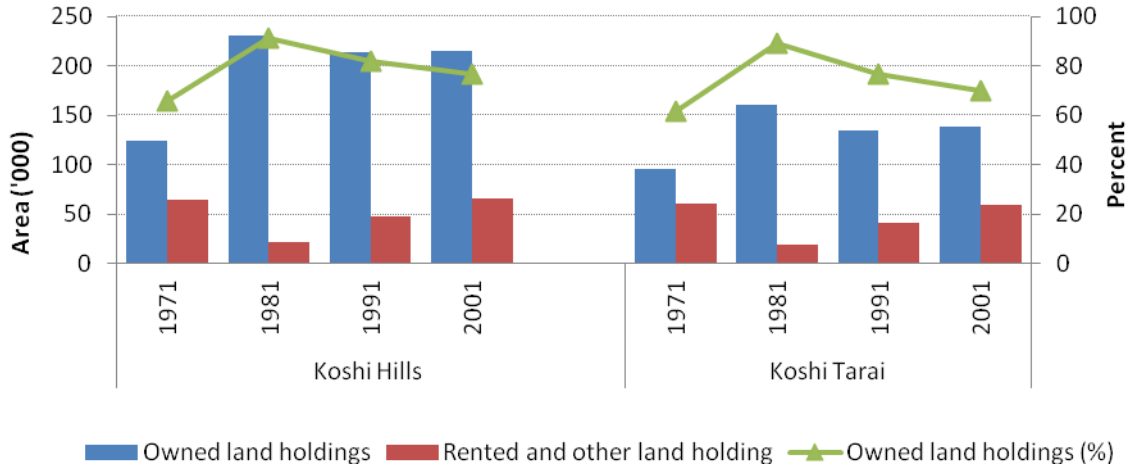


Figure 141: Area of Holdings by Tenure, Koshi Hills Districts

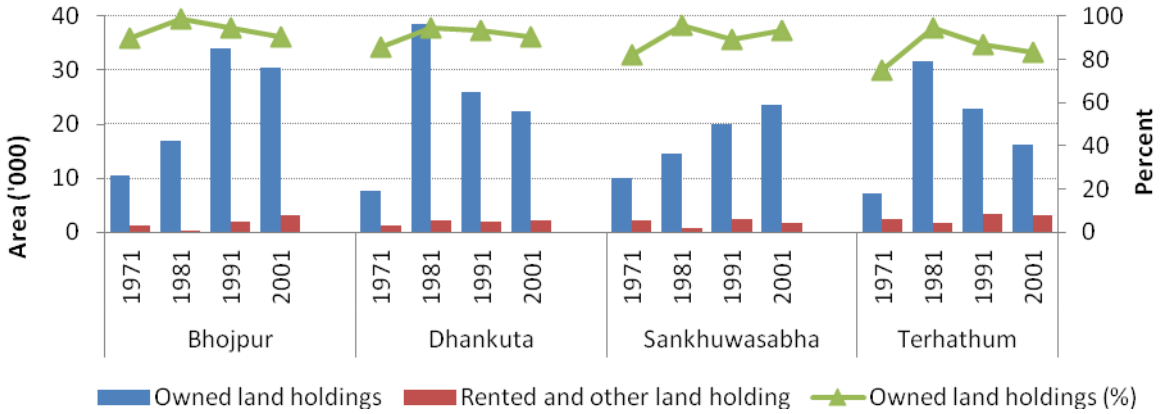


Figure 142: Area of Holdings by Tenure, Ilam and Khotang

3.7.3 Type of Land Use

The land use area has been classified as agriculture land, forest and woodland, and other land in the National Sample Census of Agriculture. According to the census data, agriculture land in the country has remained constant from 1981 to 2001 (Figure 143). In case of the Koshi Hills and the Koshi Tarai, the agriculture land has been increased during two periods: between 1971 and 1981 and 1991 and 2001 (Figure 144). While looking at individual districts of the Koshi Hills and neighbouring districts, different patterns are observed (Figure 145-Figure 146). In Dhankuta and Terhathum there was a dramatic increase in proportion of agricultural land between 1971 and 1981, while a much slower rise seen in two neighbouring districts. The proportion of wood and forest lands has shown a rising trend from 1991 onwards, especially for Dhankuta and Terhathum.

Figure 143: Type of Land use, Nepal

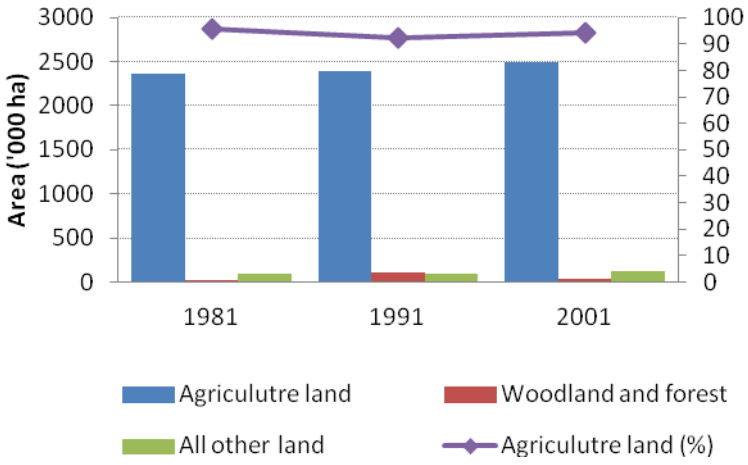


Figure 144: Type of Land use, Koshi Hills and Koshi Tarai

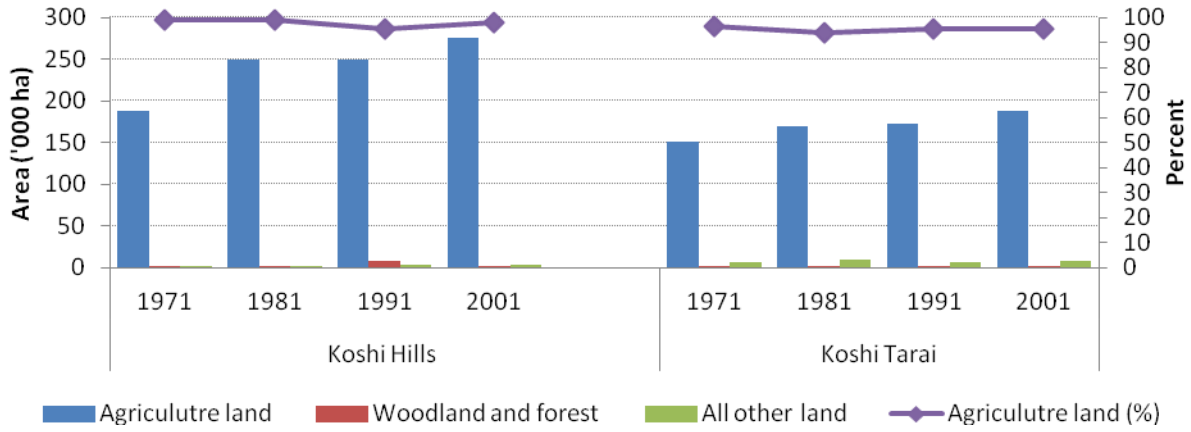


Figure 145: Type of Land use, Koshi Hills Districts

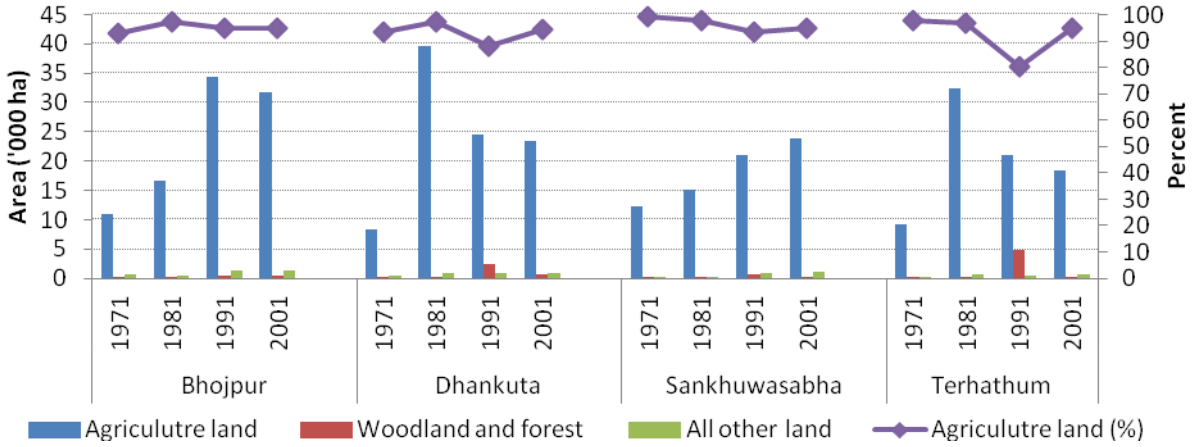
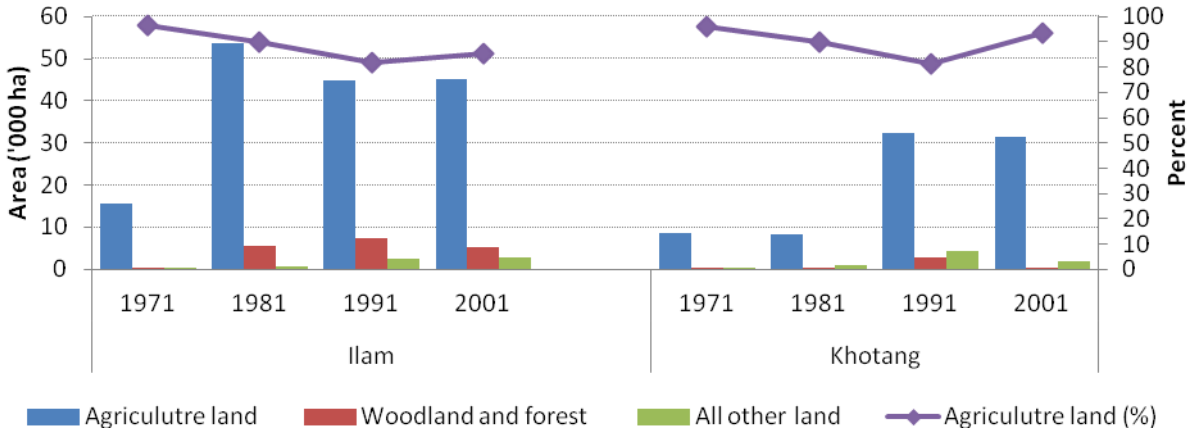


Figure 146: Type of Land use, Ilam and Khotang



3.7.4 Use of Improved Seeds by Crops

Based on the data provided by 1991 and 2001 censuses, there is more area using both local and improved seeds than improved seeds alone under major crops – paddy, maize, and wheat (Figure 147). Comparison between the Koshi Hills and Koshi Terai show that farmers in the Terai are using higher amounts of both improved and a combination of both local and improved seeds (Figure 148). Usage of improved seeds for different crops also differed. This is not surprising as maize is the staple crop in the Hills while Paddy is mostly grown in the Terai. Within the study districts, Dhankuta, Terhathum and Sankhuwasabha recorded a rise in the usage of improved seeds for Paddy, Maize and

Wheat, while in Bhojpur there was a rise in the usage of the combination of both local and improved varieties (Figure 149). In the neighboring districts of Ilam and Khotang, there has been an increase in the usage of improved variety of seeds.

Figure 147: Growth of Improved and Local Seeds by Crops, Nepal

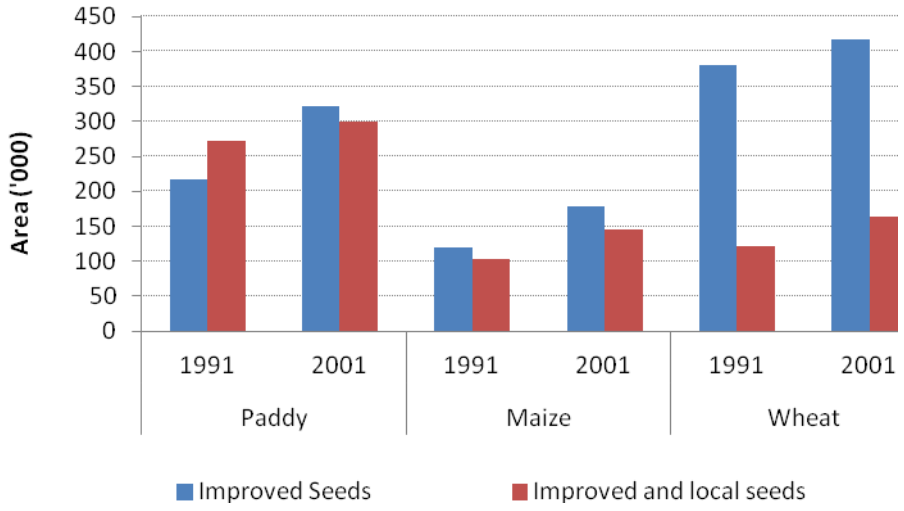


Figure 148: Growth of Improved and Local Seeds by Crops, Koshi Hills and Koshi Tarai

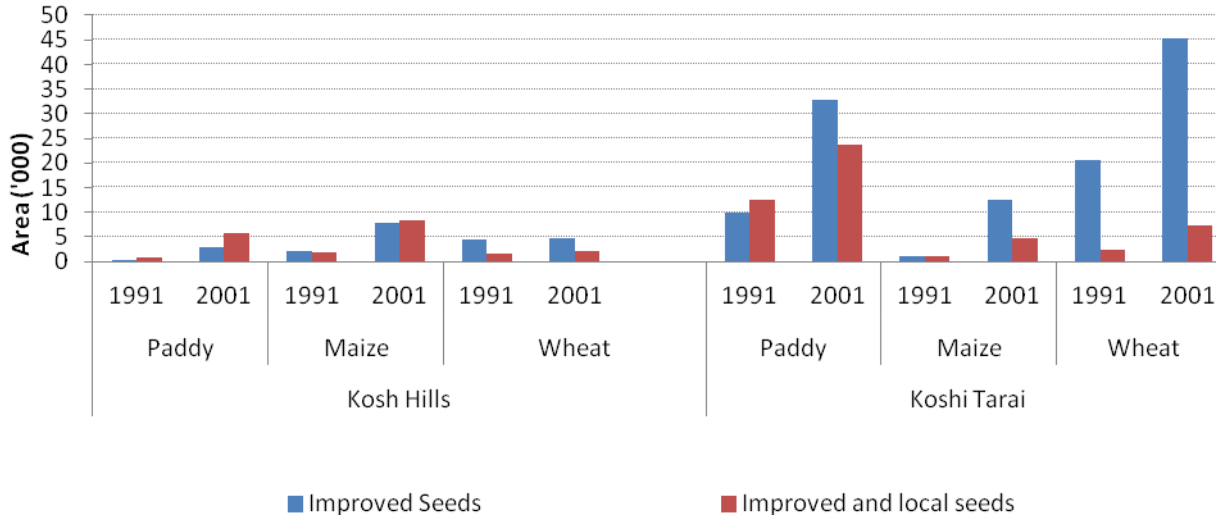
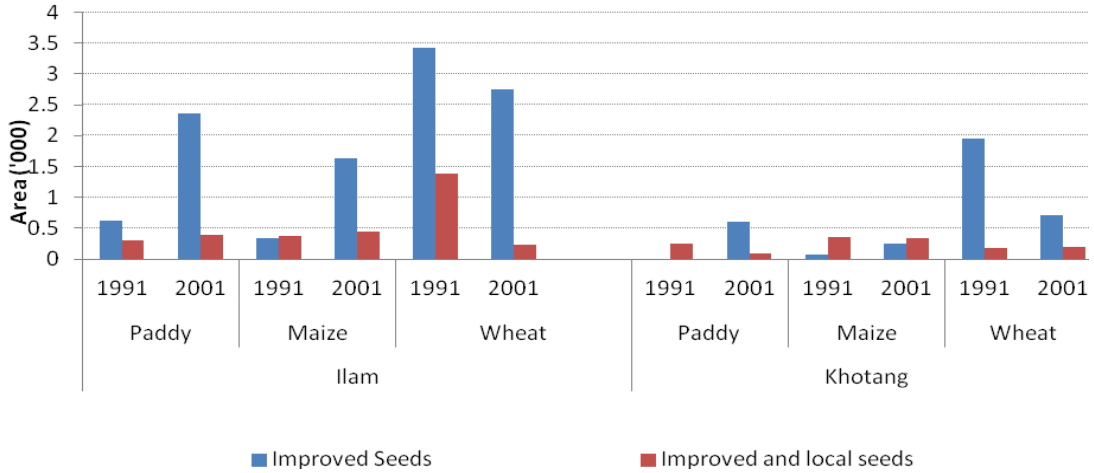


Figure 149: Growth of Improved and Local Seeds by Crops, Ilam and Khotang



3.7.5 Use of Fertilizers by Crops

The use of fertilizer in paddy, maize and wheat has been on the rise between 1981 and 2001 in Nepal, Koshi Hills, Koshi Tarai, and Koshi Hills Districts. Within the study districts, the greatest usage and rise has been in recorded for Maize production followed by Paddy, across all the four districts (Figure 152). There is a rising trend in the use of fertilizers in both neighboring districts (Figure 153).

Figure 150: Growth in Use of Fertilizers by Crops, Nepal

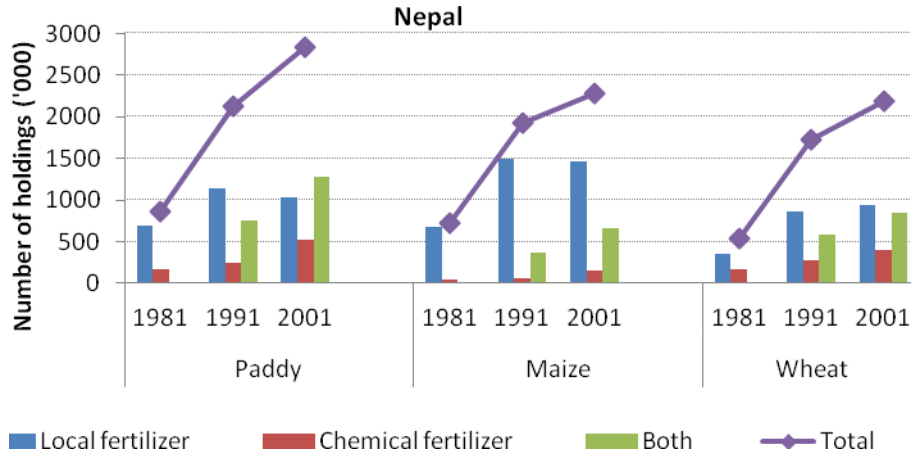


Figure 151: Growth in Use of Fertilizers by Crops, Koshi Hills and Koshi Tarai

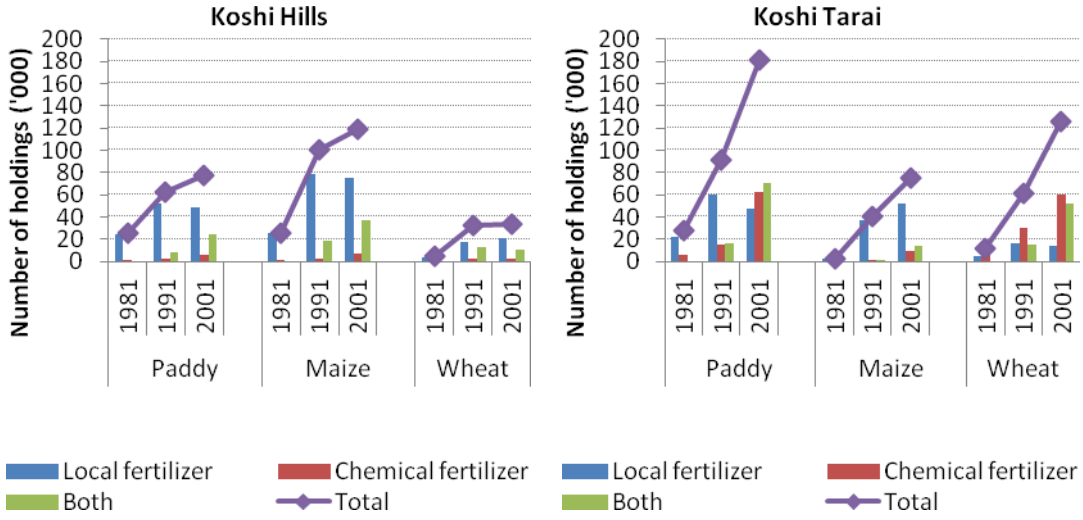


Figure 152: Growth in Use of Fertilizers by Crops, Koshi Hills Districts

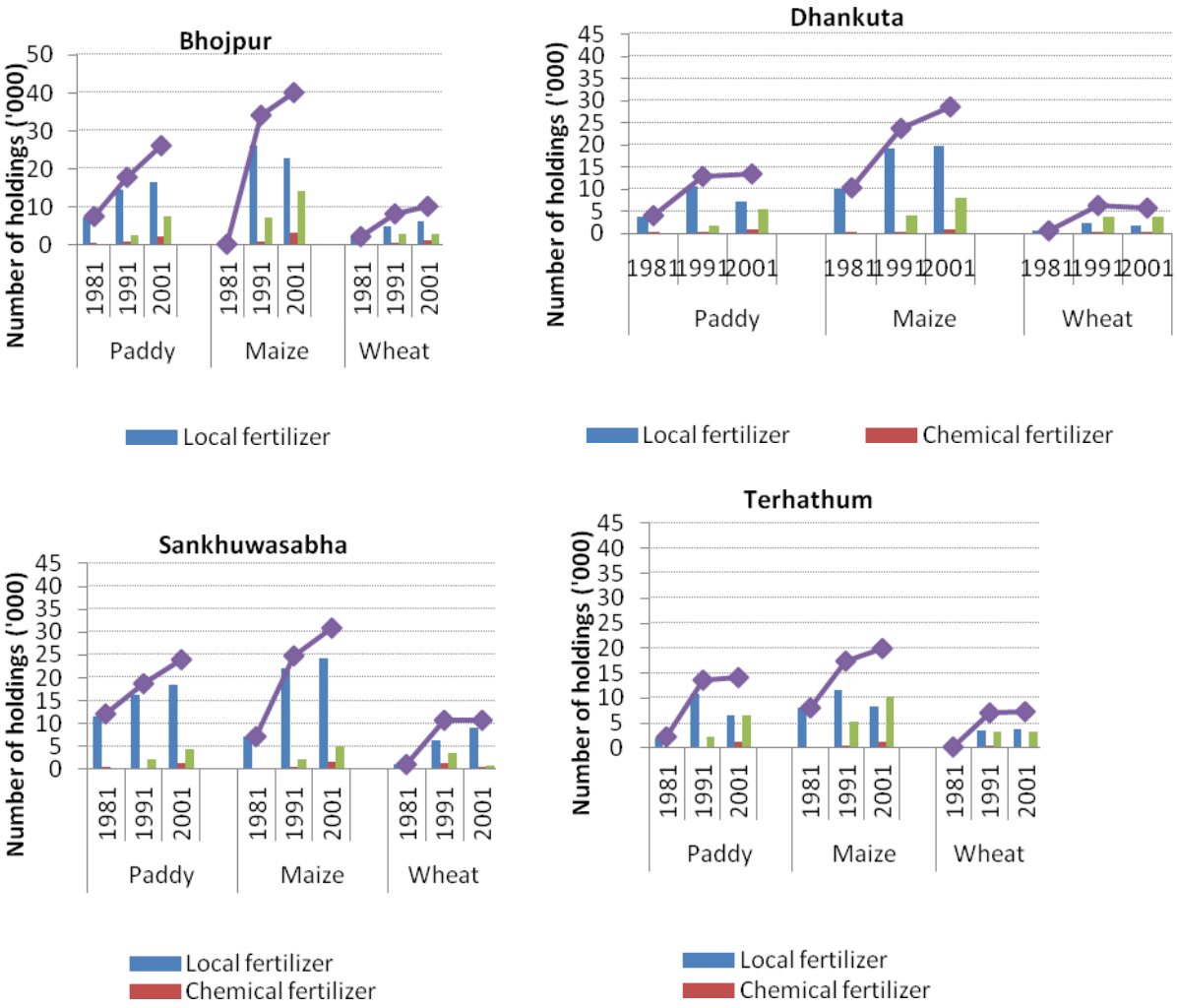
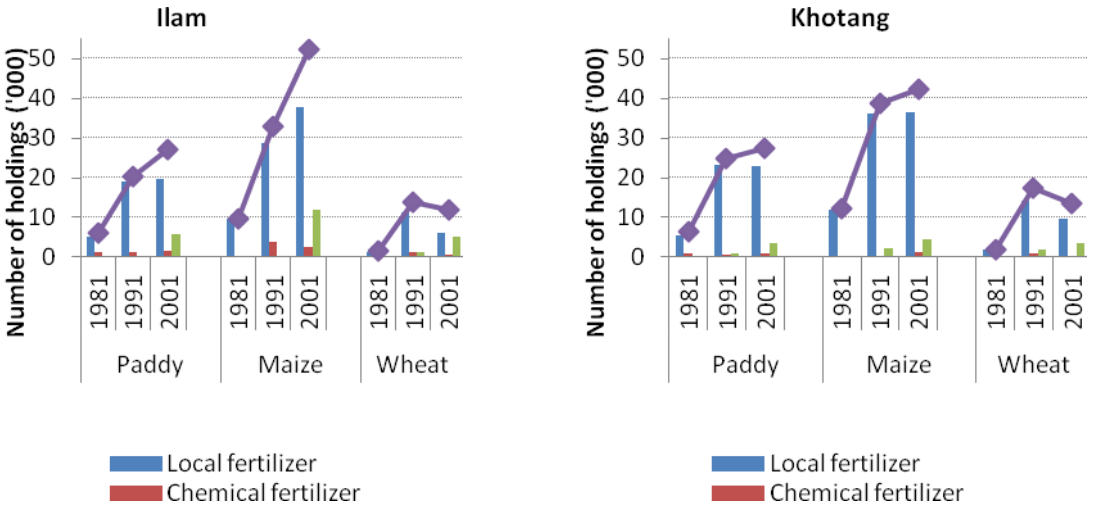


Figure 153: Growth in Use of Fertilizers by Crops, Ilam and Khotang



3.7.6 Agriculture Implements and Facilities

The agriculture implements and facilities considered here are Iron ploughs, Power tillers, Shallow tube well, Deep tube well, Rower pump, Tractor, Thresher, Pumping set, Animal drawn cart, and Sprayer. The number of households with such facilities increased from 1991 to 2001 in Nepal, Koshi Hills, Koshi Tarai, Koshi Hills Districts and the neighboring districts –Ilam and Khotang (Figure 154-Figure 157).

Figure 154: Growth in Holdings with Agriculture Implements and Facilities, Nepal

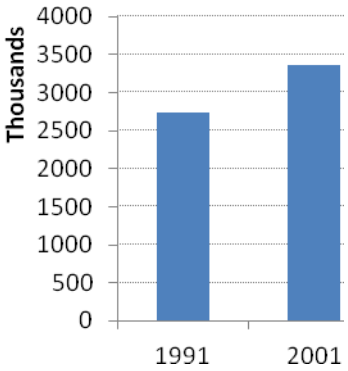


Figure 155: Growth in Holdings with Agriculture Implements and Facilities, Koshi Hills and Koshi Tarai

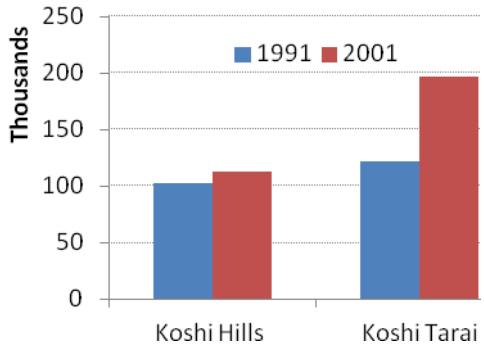


Figure 156: Growth in Holdings with Agriculture Implements and Facilities, Koshi Hills Districts

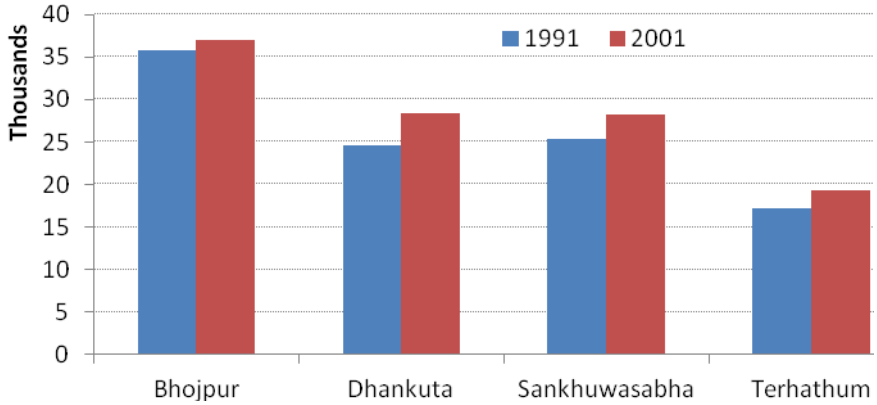
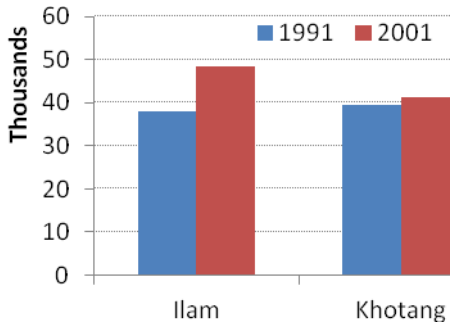


Figure 157: Growth in Holdings with Agriculture Implements and Facilities, Ilam and Khotang



3.7.7 Irrigated Area of Holdings

The irrigated area and number of holdings has been increasing from 1991 to 2001 in Nepal, Koshi Hills, Koshi Tarai, Koshi Hills Districts and neighbouring districts (Figure 158-Figure 161). Within the study districts, Sankhuwasabha has the largest area of irrigated land, followed by Terhathum. The major sources of irrigation are tube well, boring, pond, etc (Annex 93).

Figure 158: Growth in Irrigated Area of Holdings, Nepal

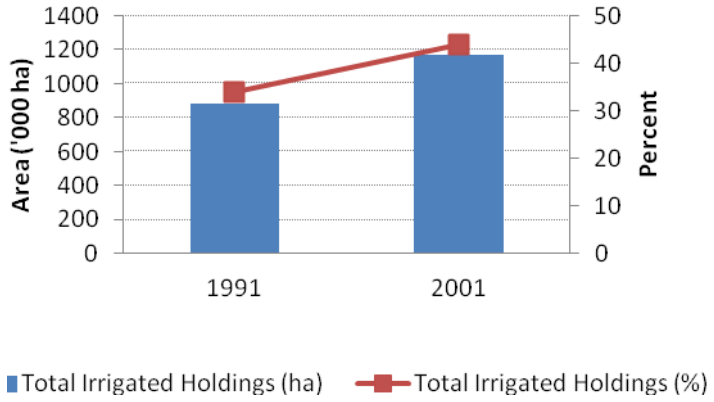


Figure 159: Growth in Irrigated Area of Holdings, Koshi Hills and Koshi Tarai

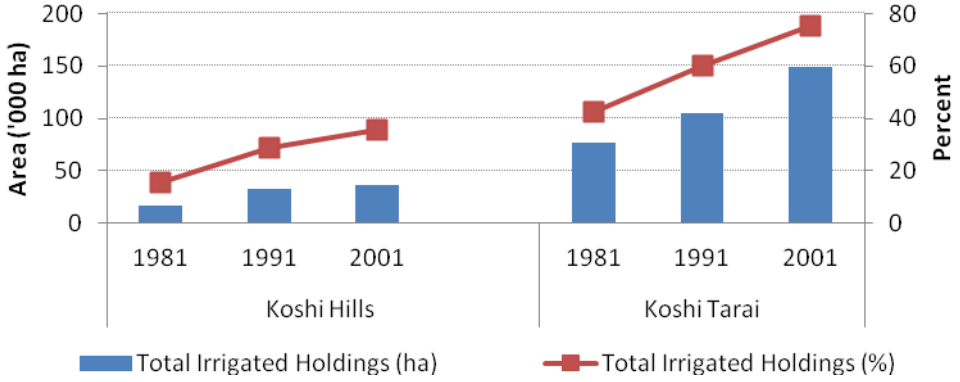


Figure 160: Growth in Irrigated Area of Holdings, Koshi Hills Districts

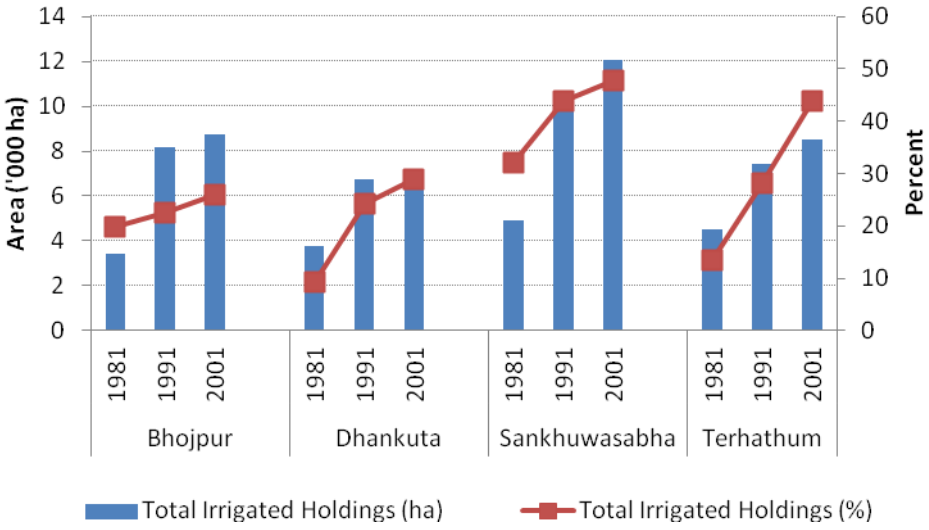
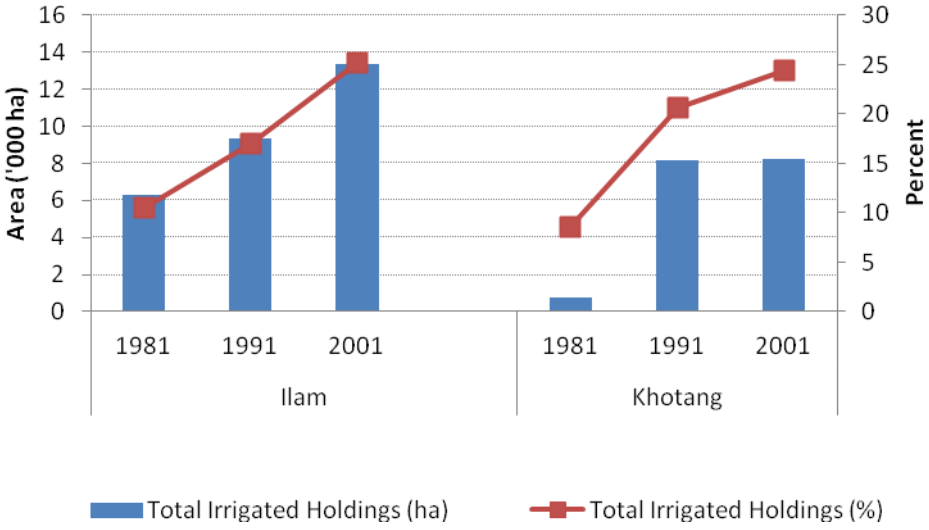


Figure 161: Growth in Irrigated Area of Holdings, Ilam and Khotang

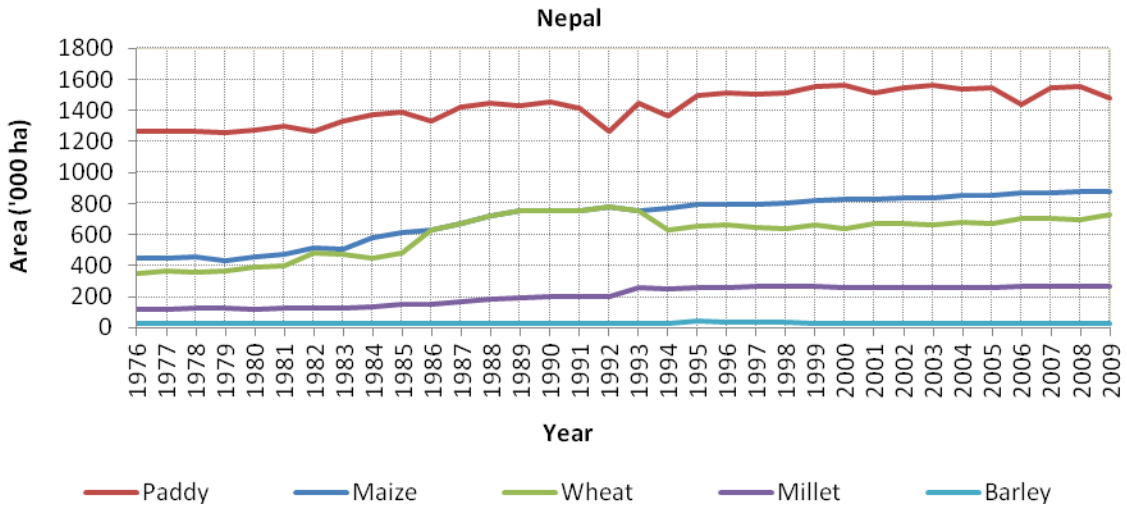


3.7.8 Cereal Crops: Area, Production and Yield

3.7.8.1 Area

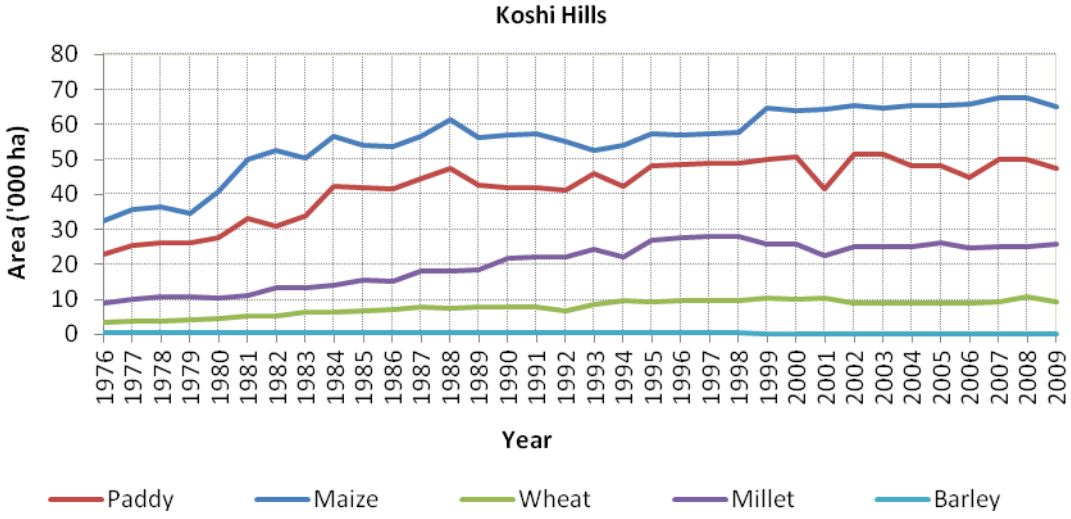
The cropped areas of three cereal crops - rice, wheat and maize have shown a growing trend for the country, whereas the cropped area of millet has a very slow growth and that of barley is constant over the past 34 years (Figure 162).

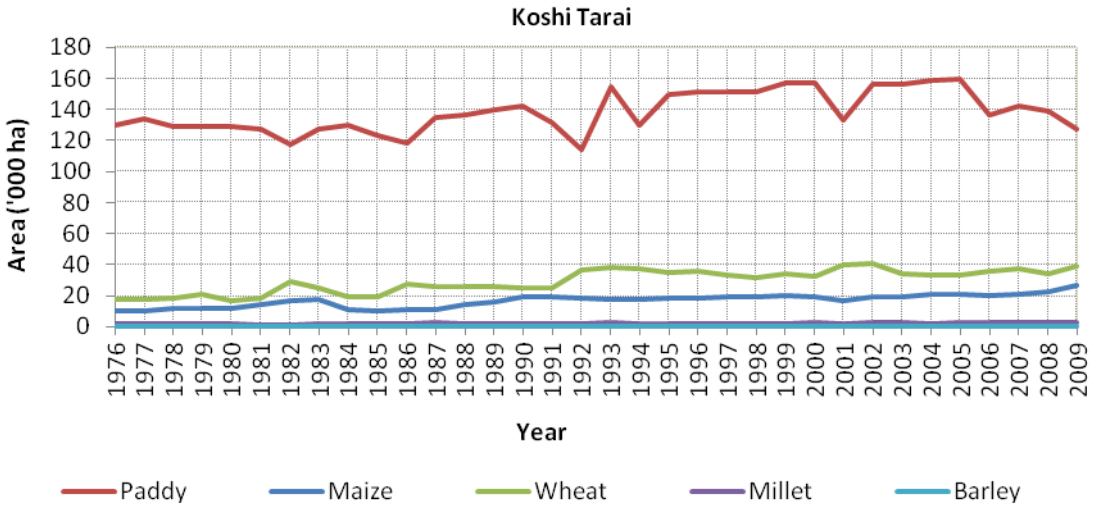
Figure 162: Trend in Area of Cereal Crops, Nepal



Like the nation, the cropped areas of all three cereal crops have also shown a growing trend for the Koshi Hills and Koshi Tarai, as well as for the individual districts of the Koshi Hills and two neighbouring districts (Figure 163-Figure 165). However, unlike the nation, the cropped area of maize is greater than that of rice in the Koshi Hills, while the cropped area of rice is much larger than that of other four crops in the Koshi Tarai. The latter is very much true because it has extensive alluvial arable land for rice cultivation.

Figure 163: Trend in Area of Cereal Crops, Koshi Hills and Koshi Tarai





Among the individual districts, the cropped area of maize is larger than that of rice in all three districts except Sankhuwasabha (Figure 164). This may true due to relatively extensive river valleys, tars and low foot hills in Sankhuwasabha than in other three districts.

Figure 164: Trend in Area of Cereal Crops, Koshi Hills Districts

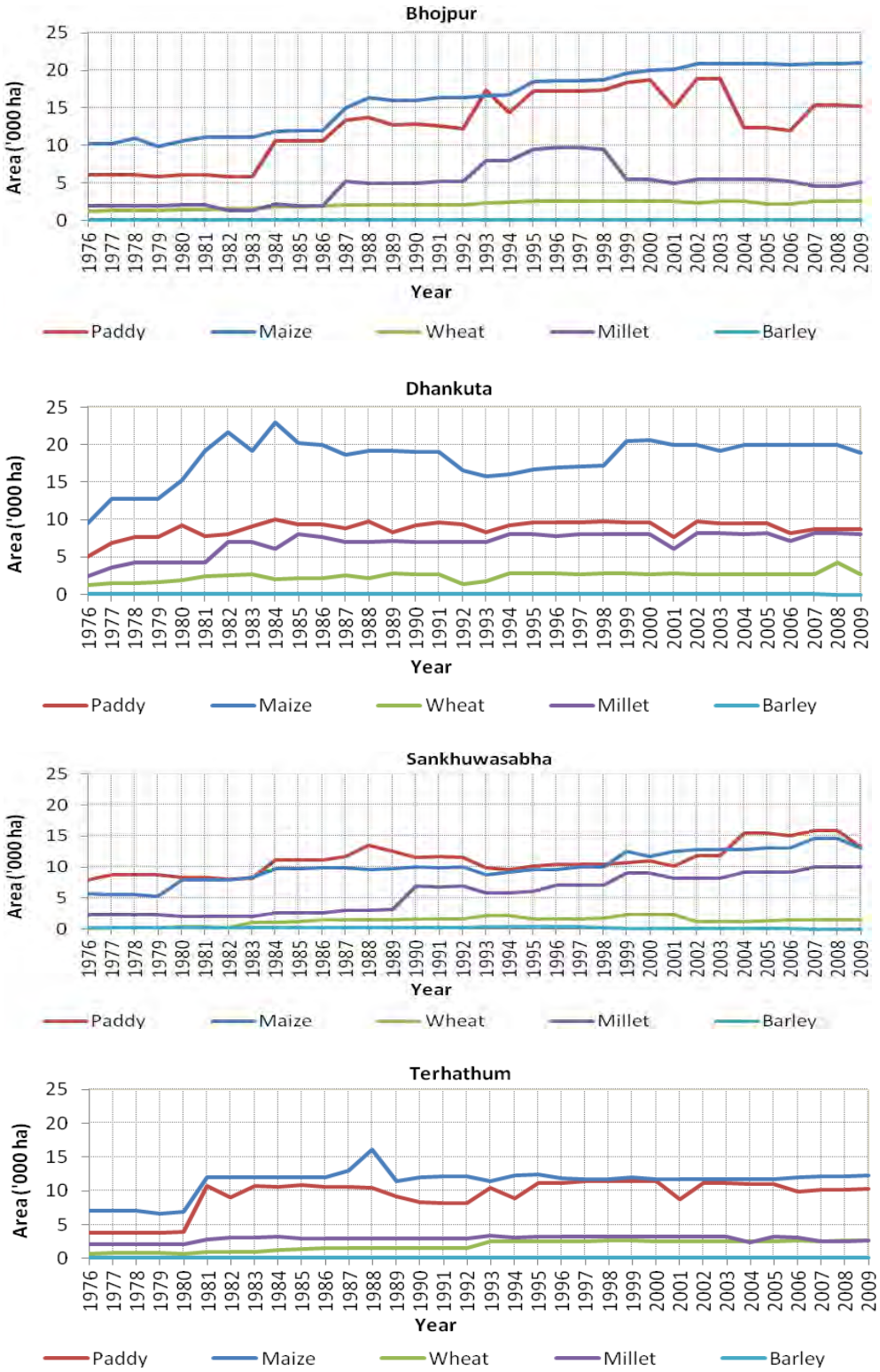
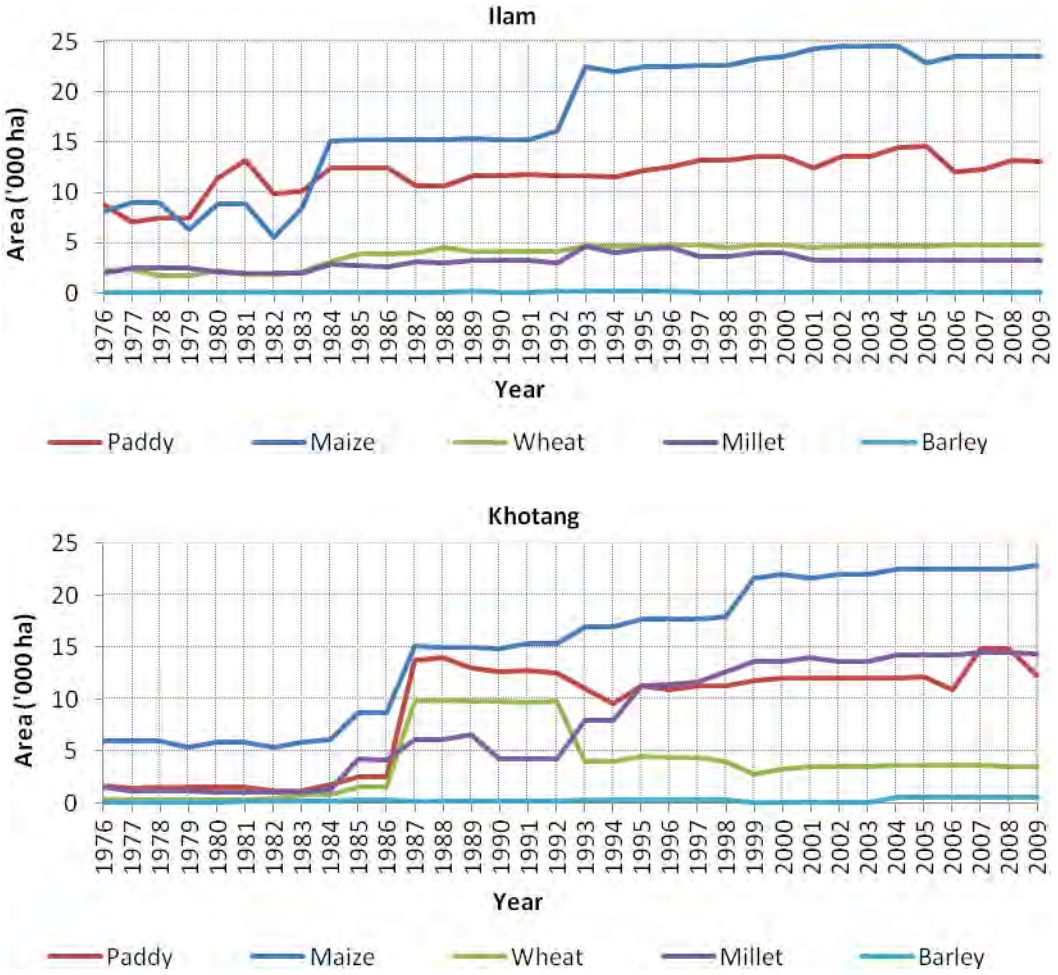


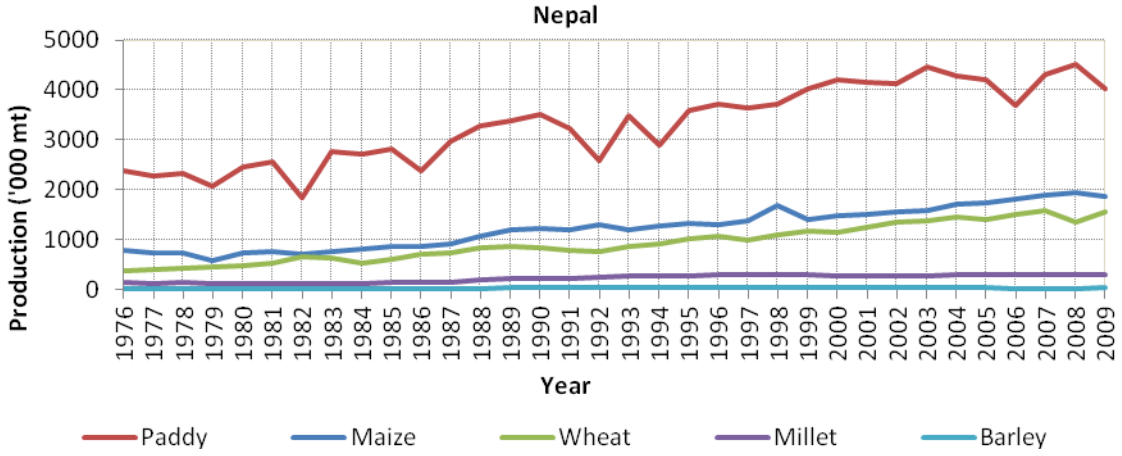
Figure 165: Trend in Area of Cereal Crops, Ilam and Khotang



3.7.8.2 Production

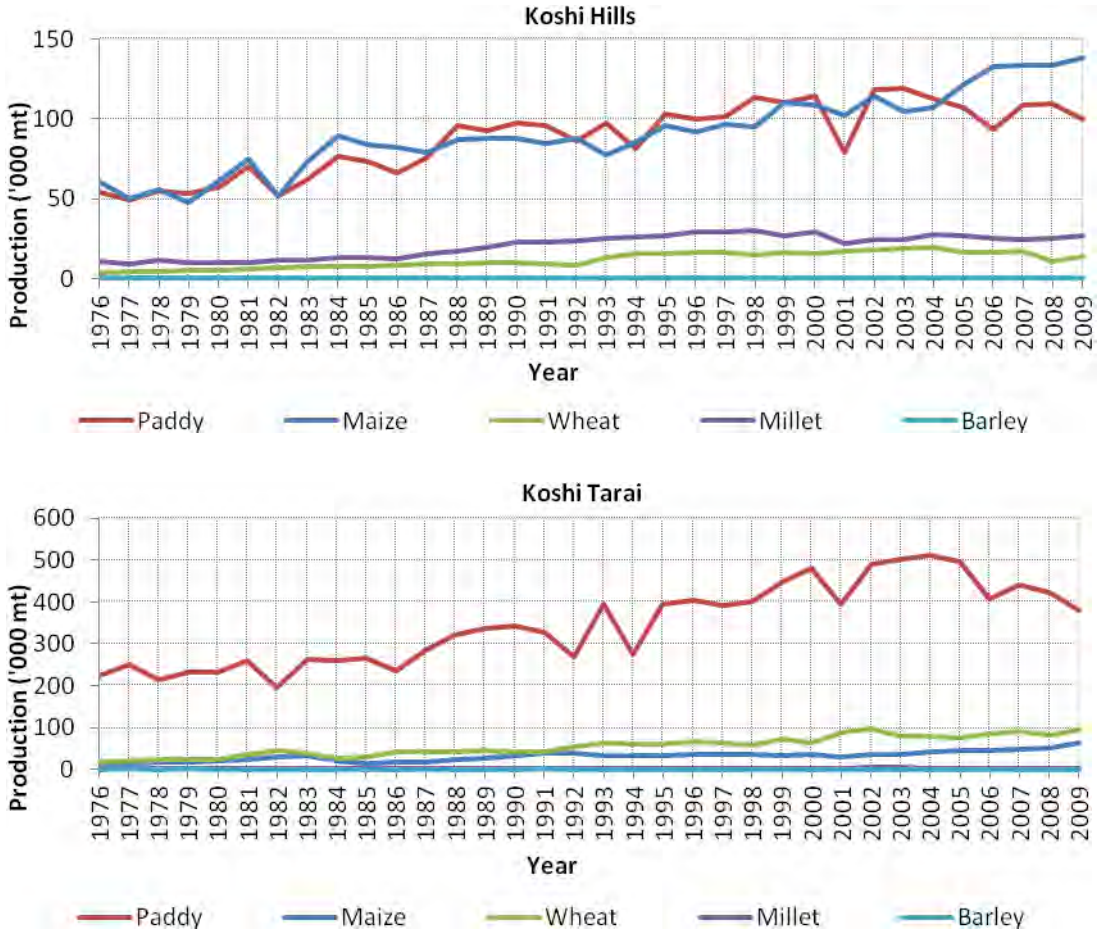
The production of three cereal crops like rice, wheat and maize has also shown a growing trend, whereas that of barley and millet is neither growing nor increasing, with more or less the same production over the 34 years in the country (Figure 166).

Figure 166: Trend in Production of Cereal Crops, Nepal



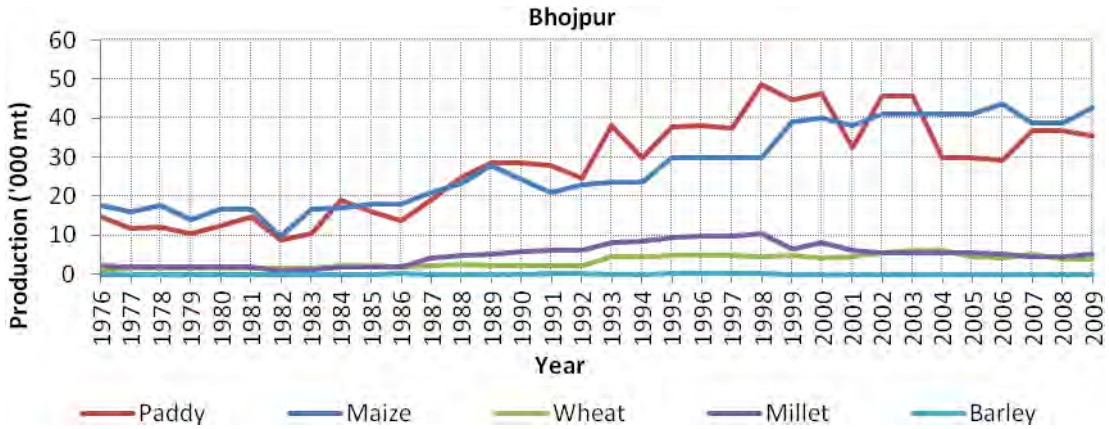
Like the nation, the production of those cereal crops has also shown a growing trend for the Koshi Hills and the Koshi Tarai, as well as for the individual districts (Figure 167, Figure 168 and Figure 169). In the Koshi Hills, the production of paddy and maize has increased tremendously over the past 34 years, whereas in the Koshi Tarai, the production of rice has increased greatly and with far above as compared to that of other four cereal crops.

Figure 167: Trend in Production of the Cereal Crops, Koshi Hills and Koshi Tarai



In all four districts of the Koshi Hills, as well as in the two neighbouring hill districts, the production amount of paddy and maize has shown far above than that of other three cereal crops throughout the past 34 years.

Figure 168: Trend in Production of the Cereal Crops, Koshi Hills Districts



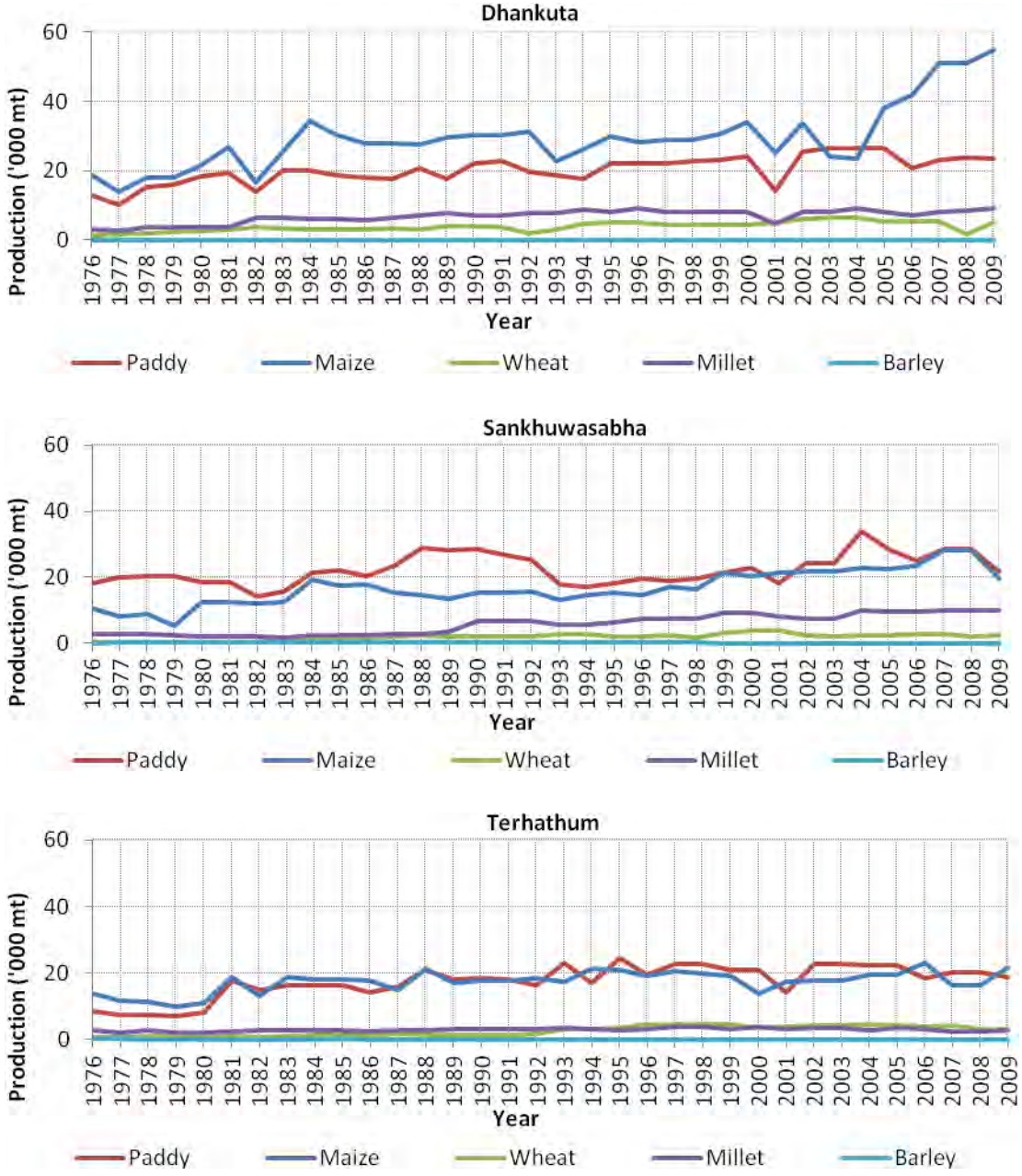
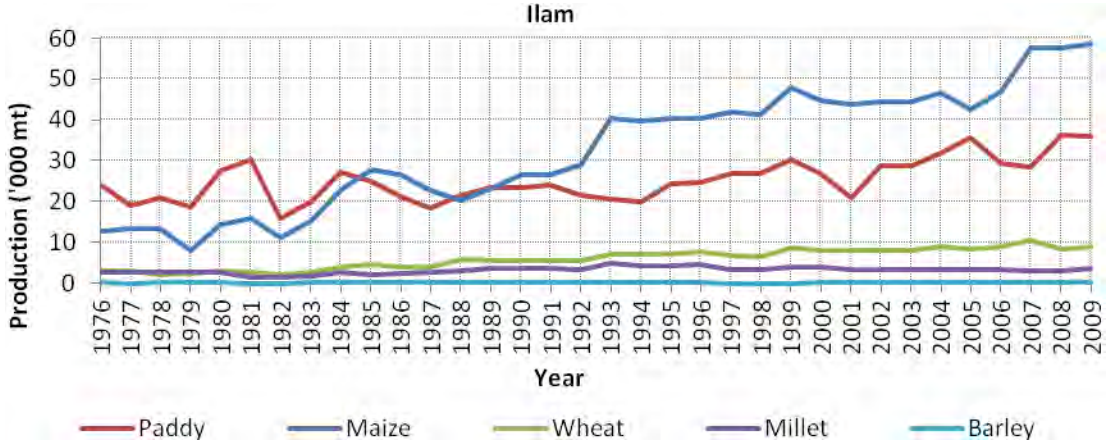
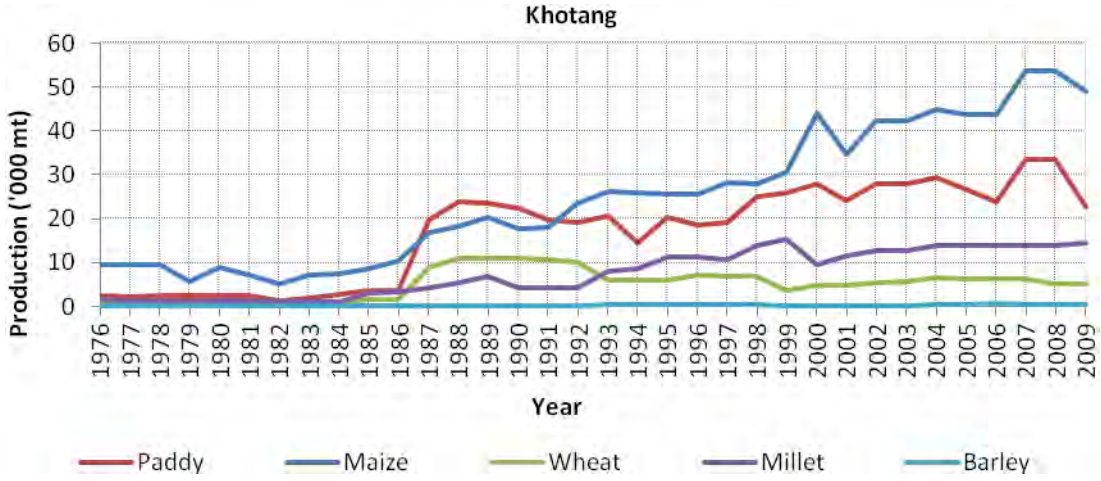


Figure 169: Trend in Production of the Cereal Crops, Ilam and Khotang

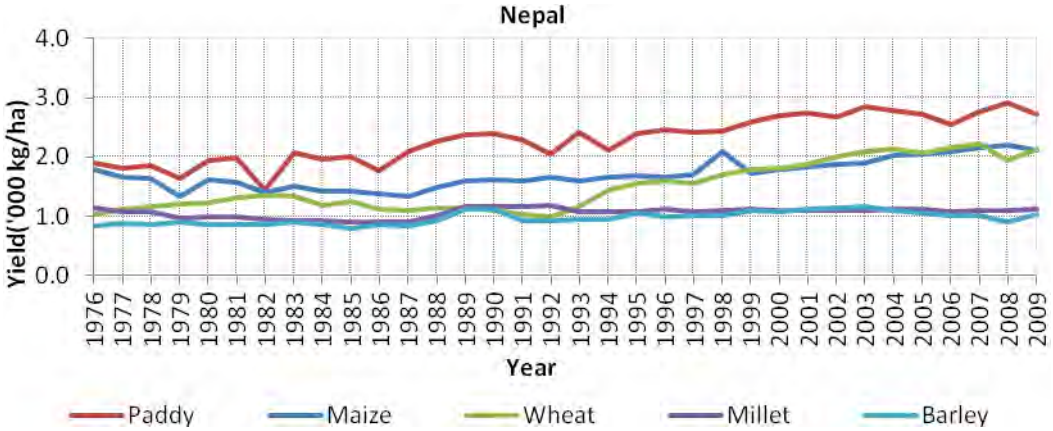




3.7.8.3 Yield

The yields of three cereal crops -paddy, maize and wheat- have shown a growing trend, whereas those of barley and millet have shown more or less the same trend over the past 34 years in the country (Figure 170). For instance, the yields (kg/hectare) of those three cereal crops were 1,891, 1,790 and 1,039 respectively in 1976 and the yields increased to 2,716, 2,119 and 2,129 respectively in 2009.

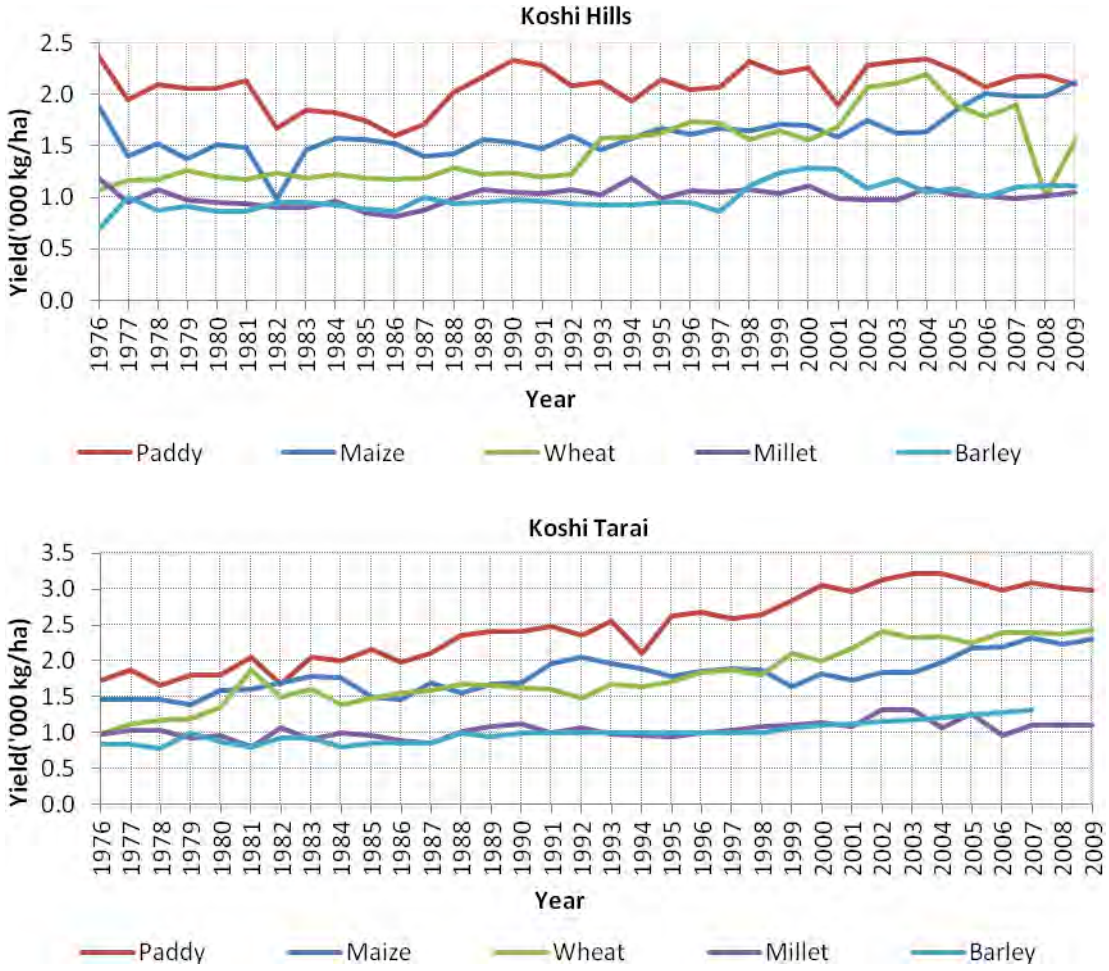
Figure 170: Trend in Yield of Cereal Crops, Nepal



Like the country, more or less the same patterns of trend in yields of those cereal crops found to have occurred in all the Koshi areas – the Koshi Hills, the Koshi Tarai, and the neighbouring hill districts.

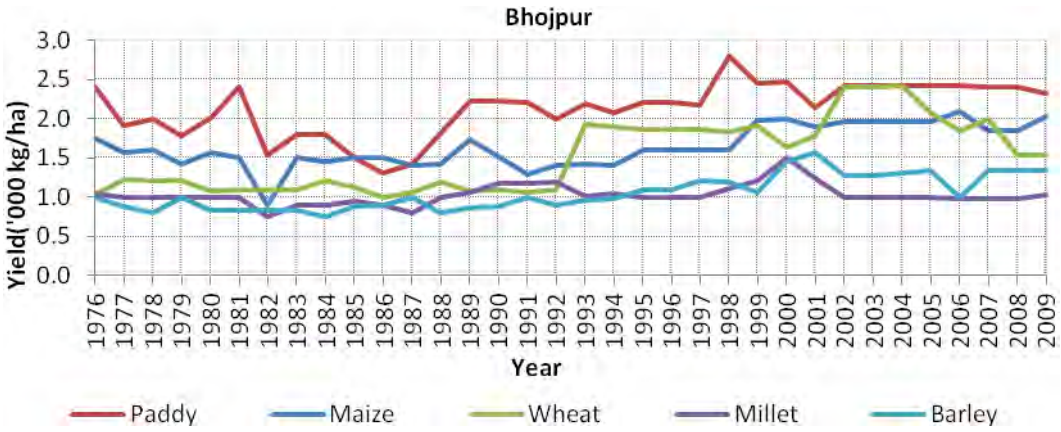
However, the ratios of the yields of the crops vary considerably among the Koshi areas. Compared to the country, the yields of paddy, maize and wheat were larger with 2,375, 1,880 and 1,071 kg per ha respectively for the Koshi Hills in 1976. The yields of those three cereal crops were 2,101, 2,124 and 1,552 respectively in 2009. In other words, the yield of paddy decreased, while that of maize and wheat increased slightly during the past 34 years. In 1976, the yields of all those three cereal crops in the Koshi Hills were higher than those in the country, whereas the yields of paddy and wheat in the Koshi Hills were far less than those in the country in 2009. Like the country, the yields of those three crops in the Koshi Tarai increased with over 1.5 to 2 times during 1976-2009 and the recent yields of those three crops in the Koshi Tarai surpassed the yields of those in the country, as well as in the Koshi Hills. For instance, in the Koshi Tarai the yields of paddy, maize and wheat were 2,977, 2,310, and 2,421 kg per ha respectively in 2009.

Figure 171: Trend in Yield of Cereal Crops, Koshi Hills and Koshi Tarai



Like the country and the Koshi areas, the trends in yields of all cereal crops were more or less similar from 1976 to 2009 in all four individual districts of the Koshi Hills and two neighbouring hill districts. But the pattern of yields of those crops found to be varied among the districts. Ilam has shown highest yield of paddy among the districts.

Figure 172: Trend in Yield of the Cereal Crops, Koshi Hills Districts



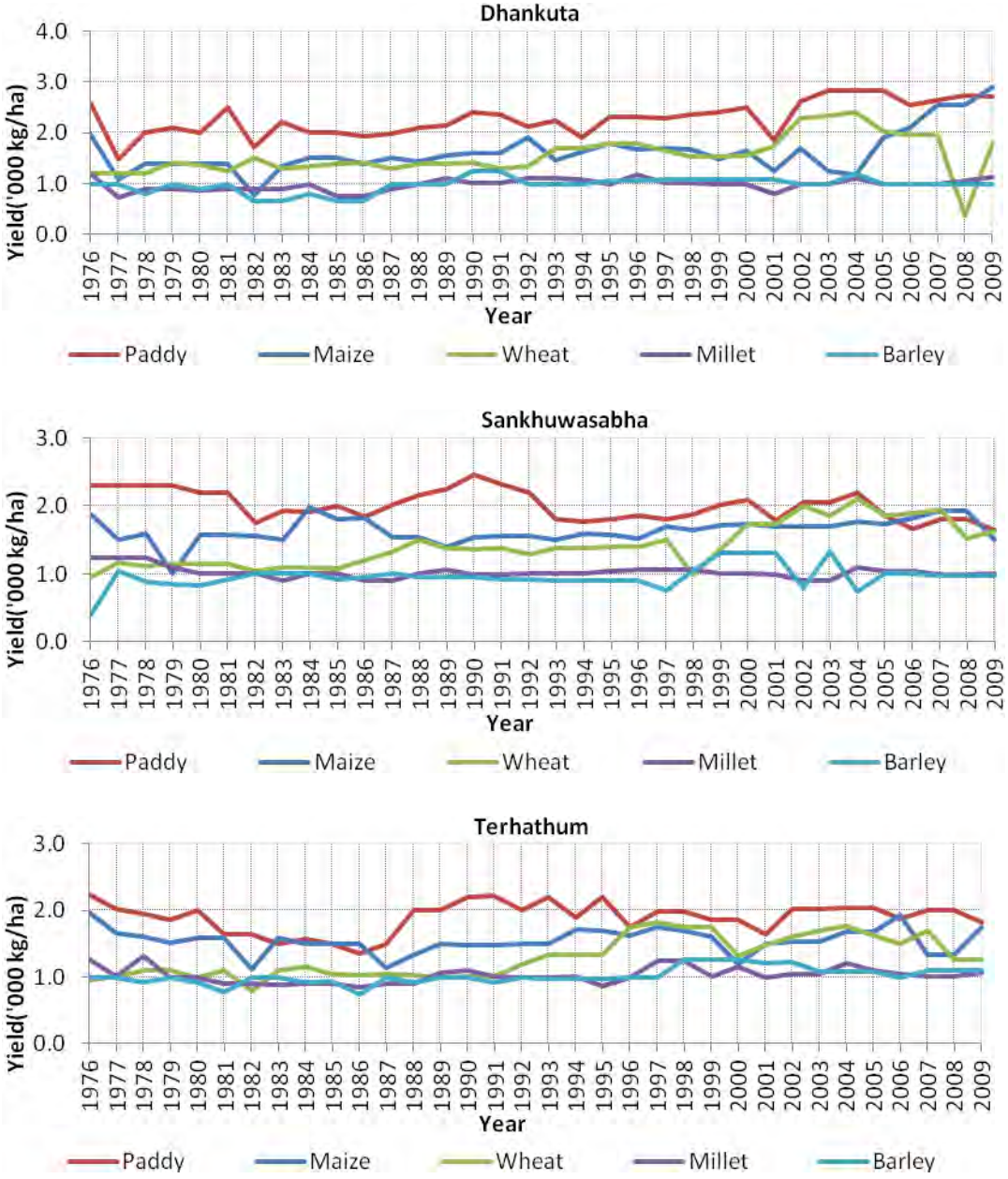
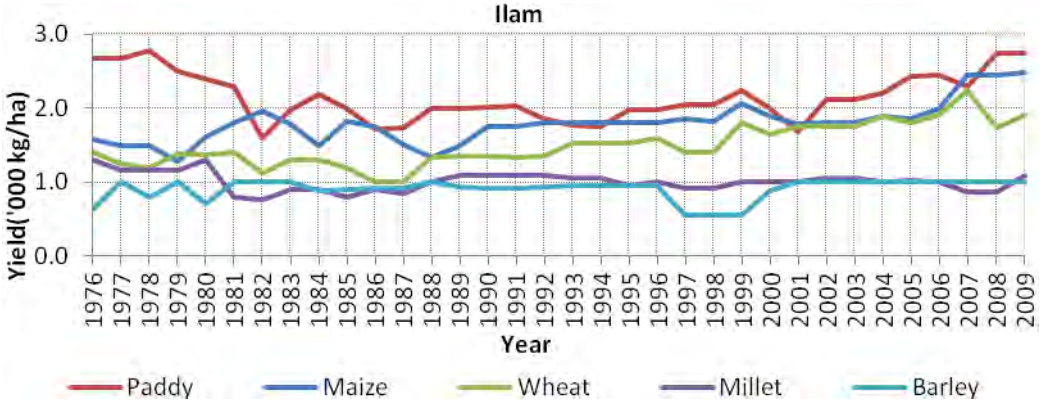
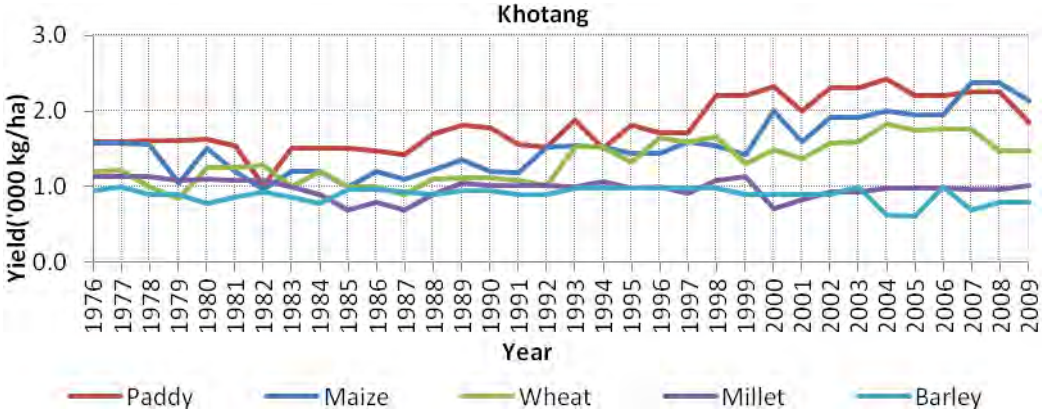


Figure 173: Trend in Yield of Cereal Crops, Ilam and Khotang





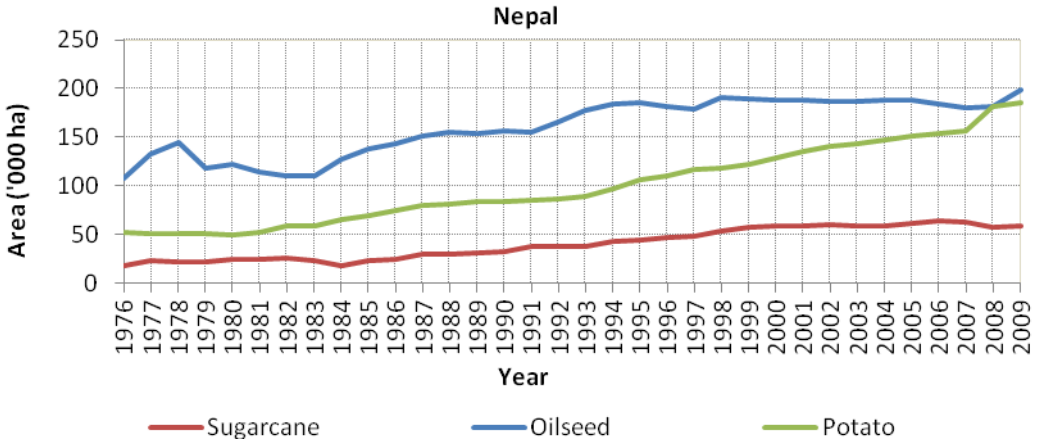
3.7.9 Cash Crops – Area, Production and Yield

3.7.10 Area

Among the three cash crops considered, the nature of sugarcane is different from other two crops, which is almost one year crop, while potato is cultivated and harvested usually once a year and in some cases twice a year, and oilseed (mainly mustard) is grown once a year during the pre-winter season or post summer season. Generally sugarcane is grown in warm river valleys of the Hills and in the Tarai plain; potato is cultivated across all over Tarai, Hills and Mountains; and oilseed is common in the Hills and the Tarai.

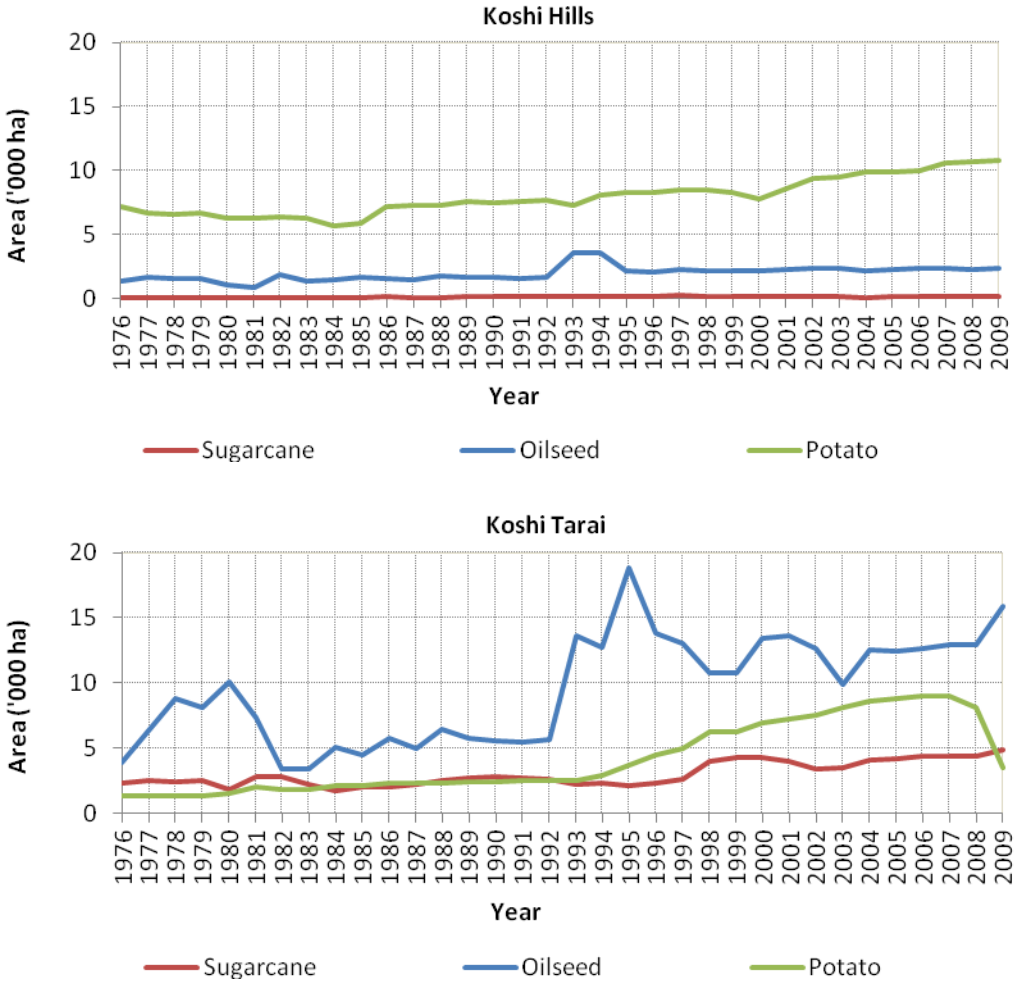
Figure 174 exhibits a variable increasing trend in the cropped area of all three cash crops in the country from 1976 to 2009, but with a far greater rising for oilseed. Next to it is potato. Sugarcane has the lowest cropped area.

Figure 174: Trend in Cropped Area of Cash Crops, Nepal



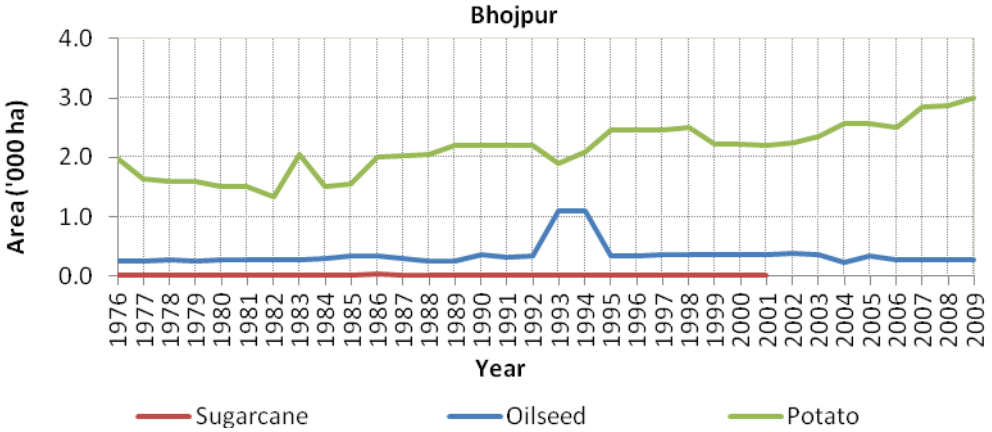
In the Koshi Hills, the cropped area of potato has shown an increasing trend from 1976 to 2009, while that of sugarcane and oilseed has remained approximately the same during the same years (Figure 175). The cropped area of potato is far larger than that of other two crops in the Koshi Hills. In case of the Koshi Tarai, the cropped area of oilseed has shown the most fluctuated rising trend, with highest in 1995 and then declined and again increased. The cropped areas of potato and sugarcane are far less than that of oilseed and the trend in their cropped areas has shown almost the same from 1976 to 1993 and then began to constantly rise in case of sugarcane and abruptly rose in case of potato till 2007 and then declined.

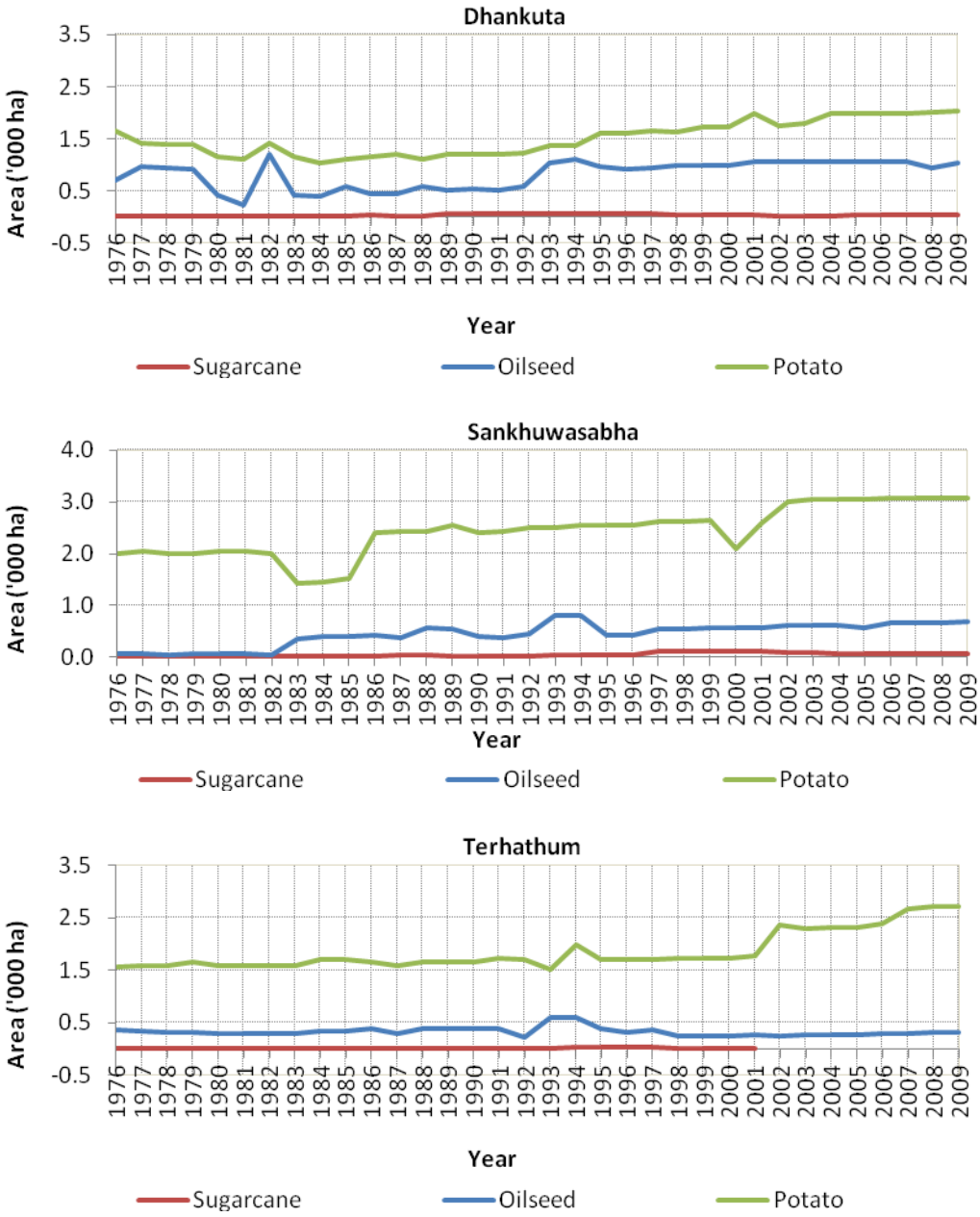
Figure 175: Trend in Cropped Area of Cash Crops, Koshi Hills and Koshi Tarai



In Figure 176 and Figure 177, the cropped area of potato is not only far more extensive than the area is devoted to other two cash crops, but also it has a rising trend in all individual districts of the Koshi Hills. The cropped areas of oilseed and sugarcane are not only less extensive but the growth trend pattern is also slow or constant.

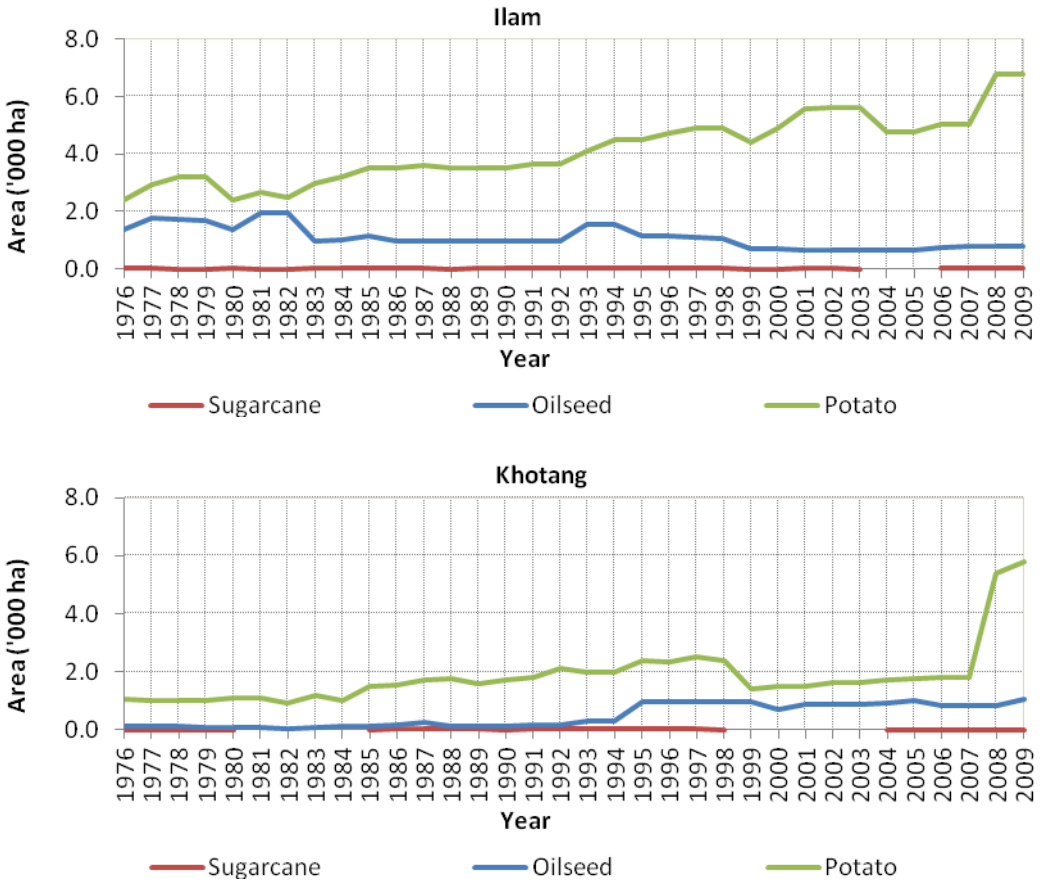
Figure 176: Trend in Cropped Area of Cash Crops, Koshi Hills Districts





In case of neighboring districts, Ilam has an increasing trend in the cropped area of potato, slightly decreasing trend in area of oilseed and constant in area of sugarcane (Figure 177).

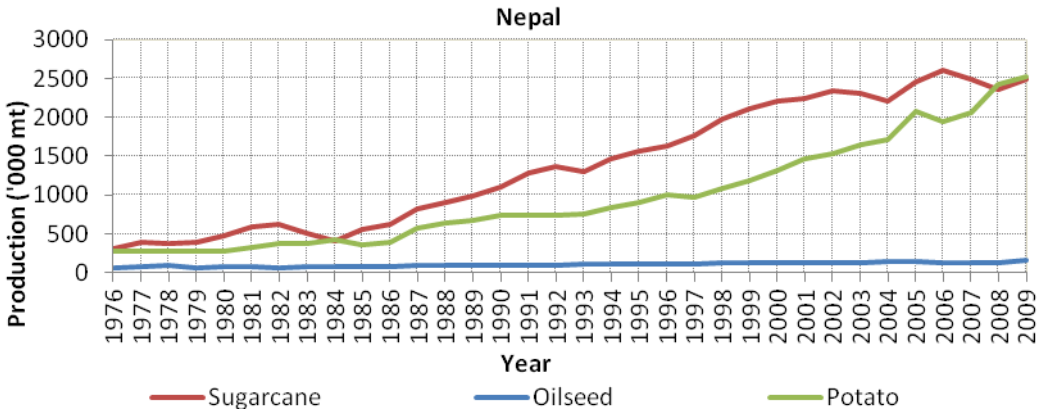
Figure 177: Trend in Cropped Area of Cash Crops, Ilam and Khotang



3.7.10.1 Production

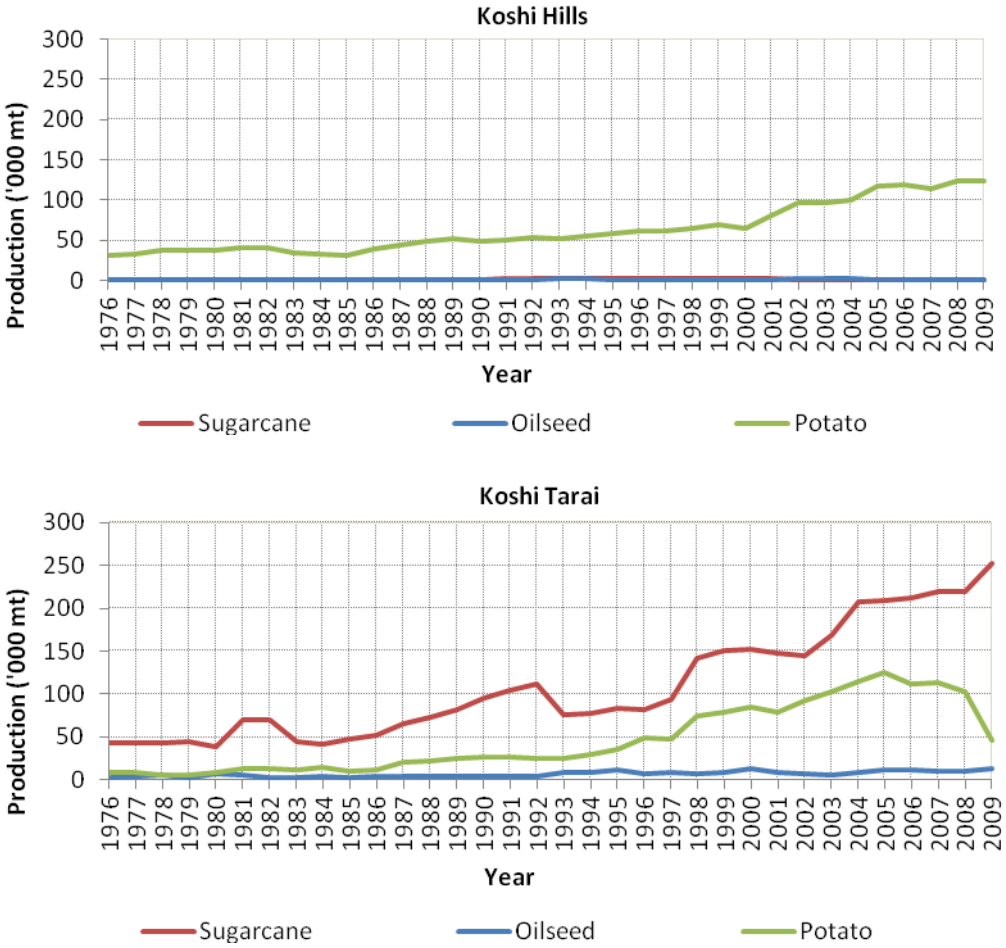
Figure 178 shows a different pattern of trend in production from the area. For instance sugarcane has shown a rising trend in production and higher than other two cash crops, which has the lowest cropped area as noted above. Next to it is potato. Oilseed has shown more or less a constant production over the past 34 years.

Figure 178: Trend in Production of Cash Crops, Nepal



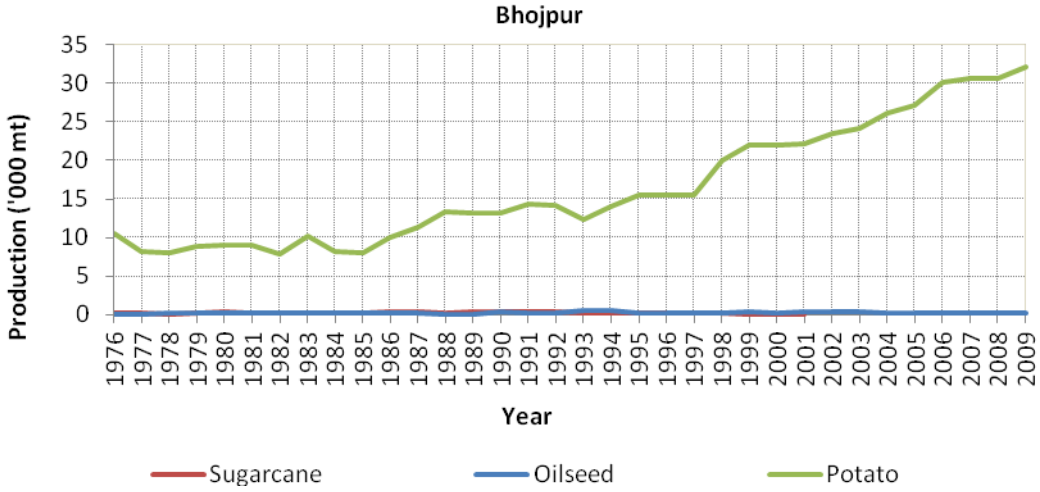
In the Koshi Hills, only the production of potato has shown an increasing trend and it has far greater as compared to that of sugarcane and oilseed. Further, the production trend of the latter two cash crops as depicted in Figure 179 is almost the same all over the period. On the contrary, the Koshi Tarai has depicted a rising trend in the production of sugarcane, followed by potato. It is interesting to note that, the production of oilseed is at the bottom, while it has the largest area as said above. It has a constant production trend over the whole period.

Figure 179: Trend in Production of Cash Crops, Koshi Hills and Koshi Tarai



As shown in Figure 180 and Figure 181, the same pattern of trend in production of the three cash crops exists in all individual districts of the Koshi Hills and neighbouring hill districts – with increasing trend and far more amount for potato and constant trend and very low amount for sugarcane and oilseed. It is to be noted that 2000 or later year has been a remarkable from which the production of potato began to rise suddenly in most of the districts.

Figure 180: Trend in Production of Cash Crops, Koshi Hills Districts



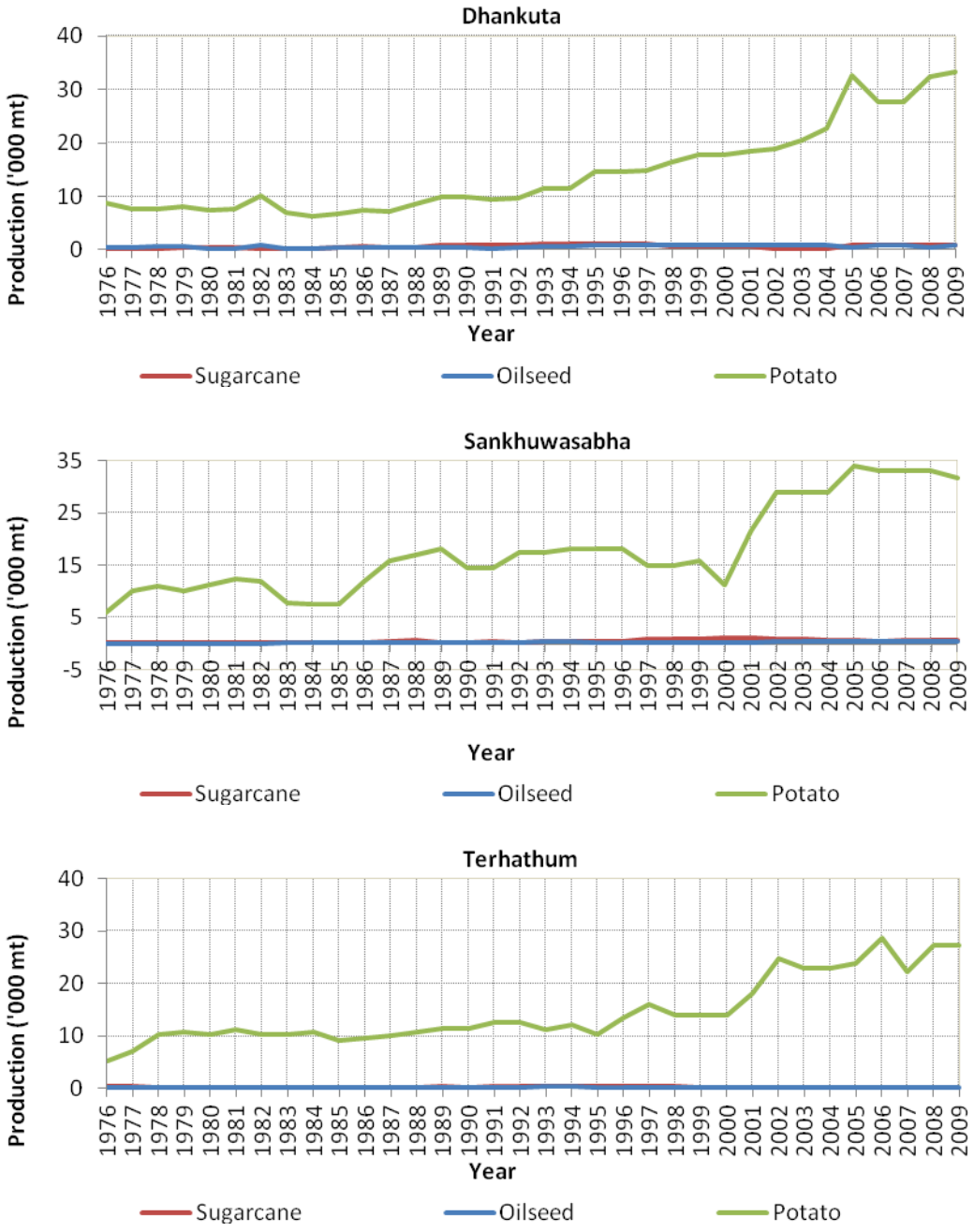
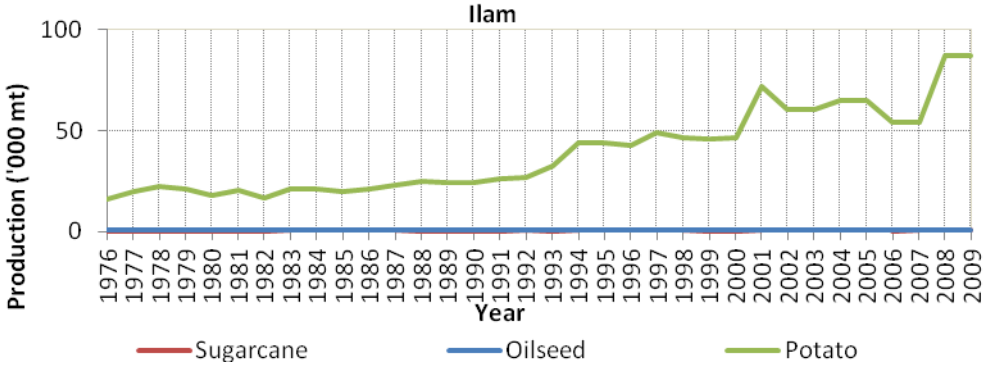
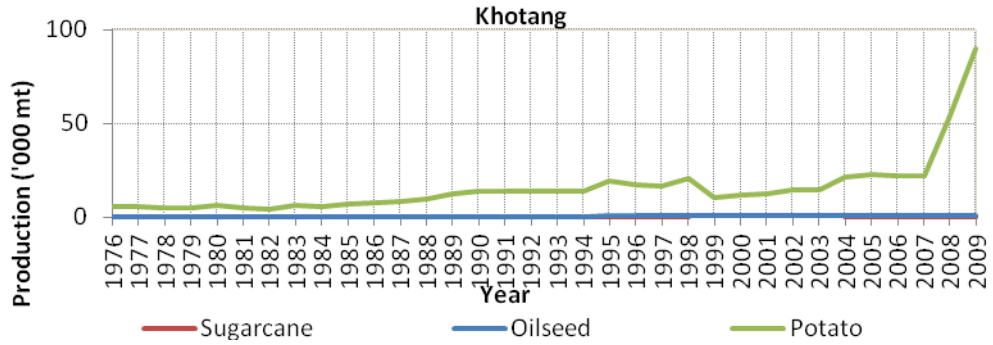


Figure 181: Trend in Production of Cash Crops, Ilam and Khotang

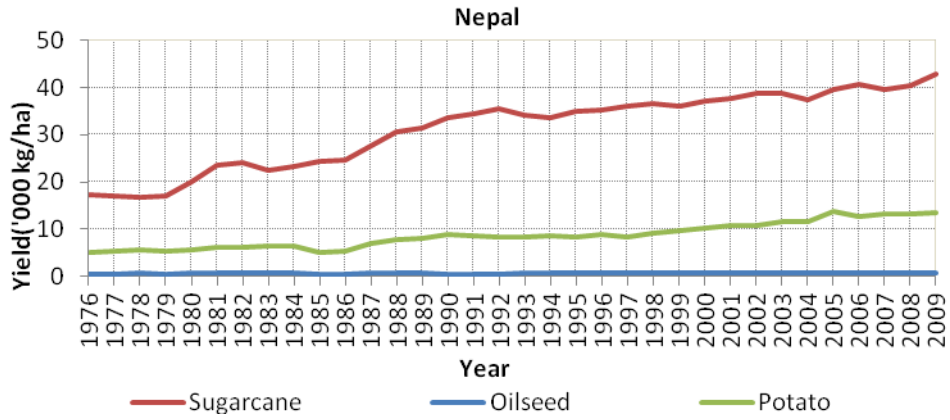




3.7.10.2 Yield

Figure 182 shows a growing trend in the yields of sugarcane and potato in the country from 1976 to 2009, but with a far greater ratio for sugarcane than for potato. For instance, the yields of sugarcane and potato were 17,308 and 5,164 kg per ha in the country in 1976 and grew to 42,790 and 13,584 kg per ha in 2009. In other words, the yields increased by nearly 2.5 times for sugarcane and by over 2.6 times for potato over 34 years. The oilseed has a much lower yield compared to sugarcane and potato and has shown a constant trend in the yield over the entire duration of 34 years.

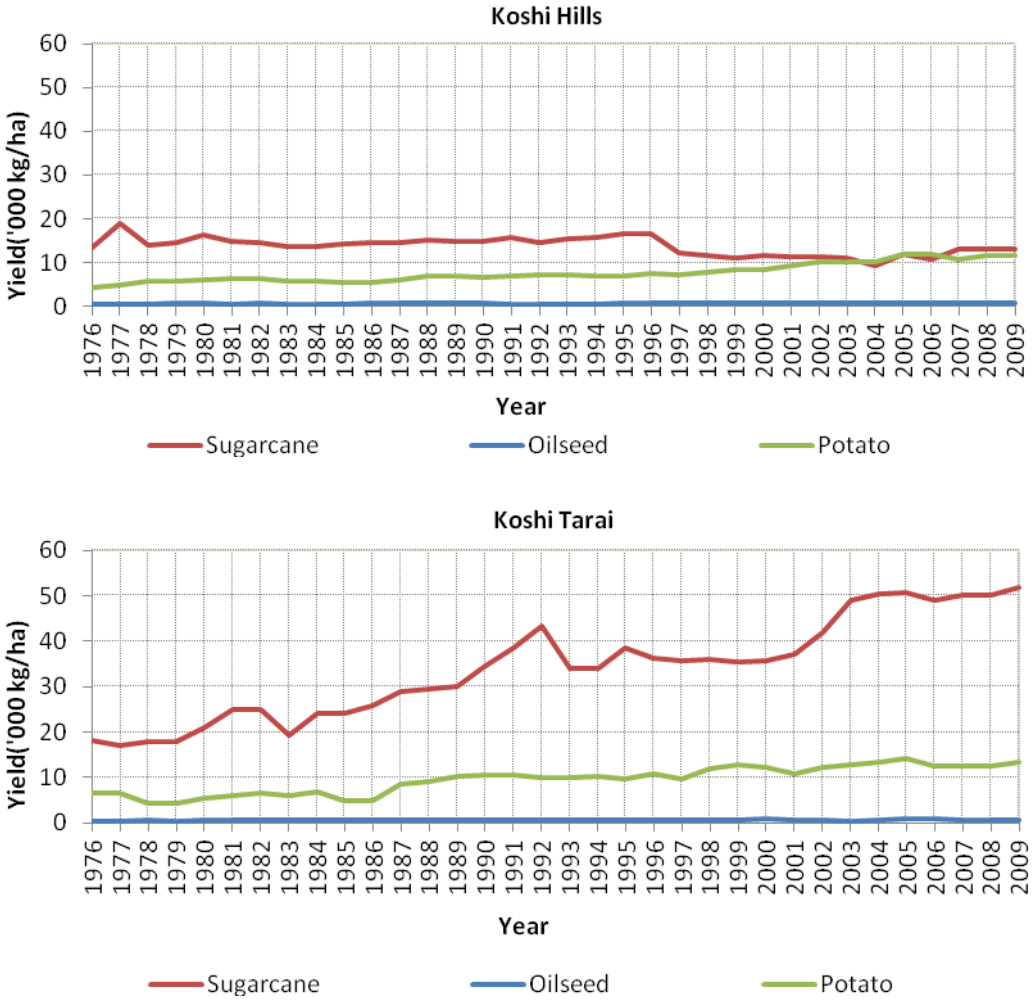
Figure 182: Trend in Yield of Cash Crops, Nepal



Unlike the country, the yield of sugarcane for the Koshi Hills has depicted a slightly declining trend. The yield of potato has shown a slightly increasing trend and the oilseed has shown a constant trend like the country. Over the last 34 years, the yield of sugarcane has slightly declined, while that of potato increased by nearly by 2.7 folds.

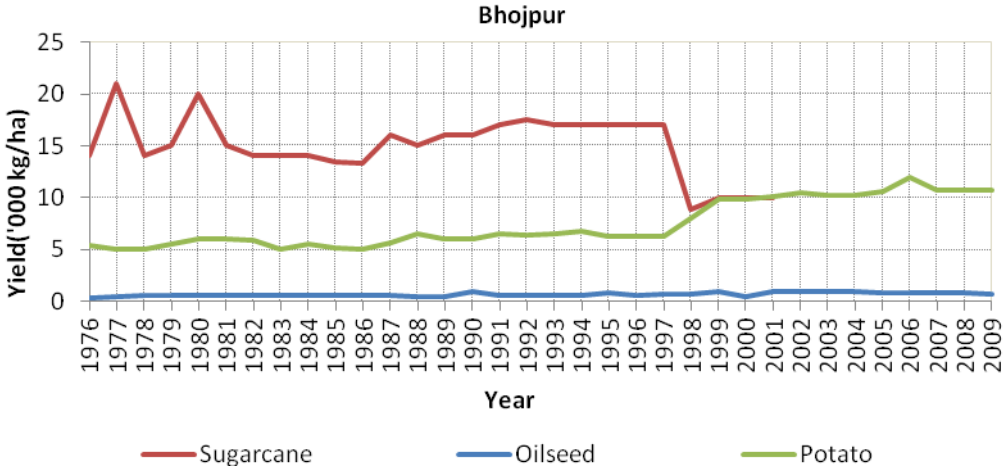
In case of the Koshi Tarai, the trends in the yield pattern of all three cash crops can be comparable with those of the country. Sugarcane has shown a rising trend, while potato has shown a gradually increasing trend. Like the country, the Koshi Tarai has depicted an increase by over 2.8 folds in sugarcane and 2.1 folds in potato (Figure 183). The yield of sugarcane reached to 51,881 kg per ha in 2009, the largest in the Koshi region as well as in the country.

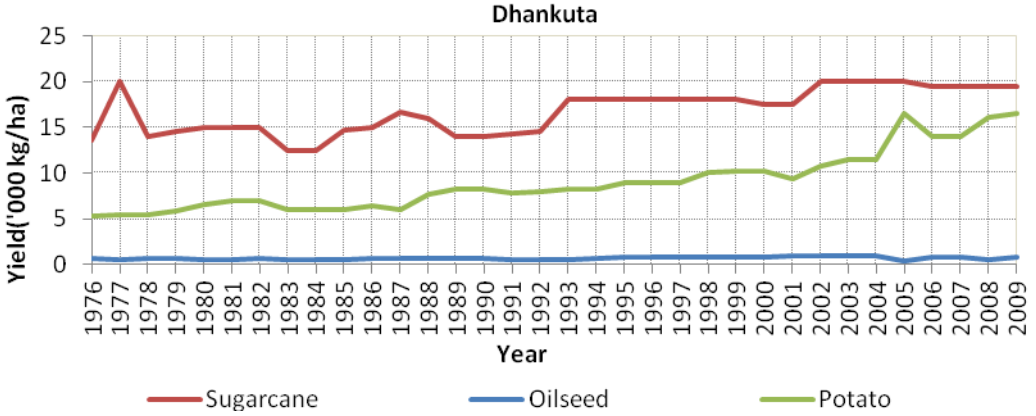
Figure 183: Trend in Yield of Cash Crops, Koshi Hills and Koshi Tarai

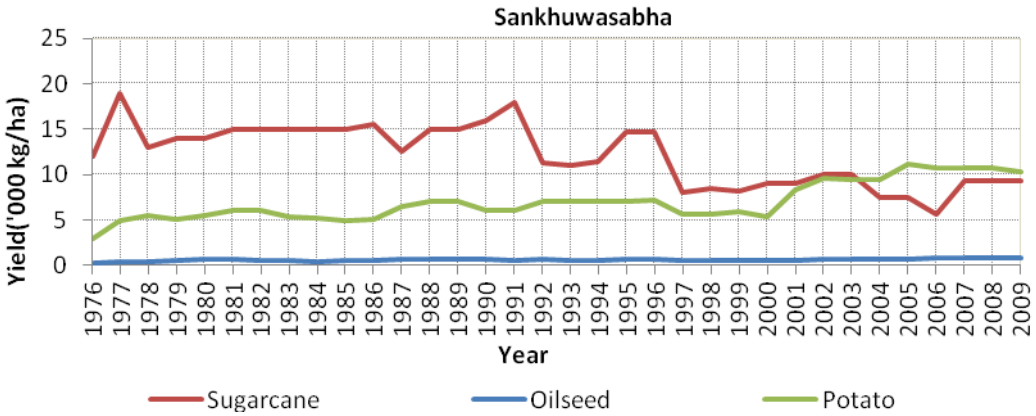


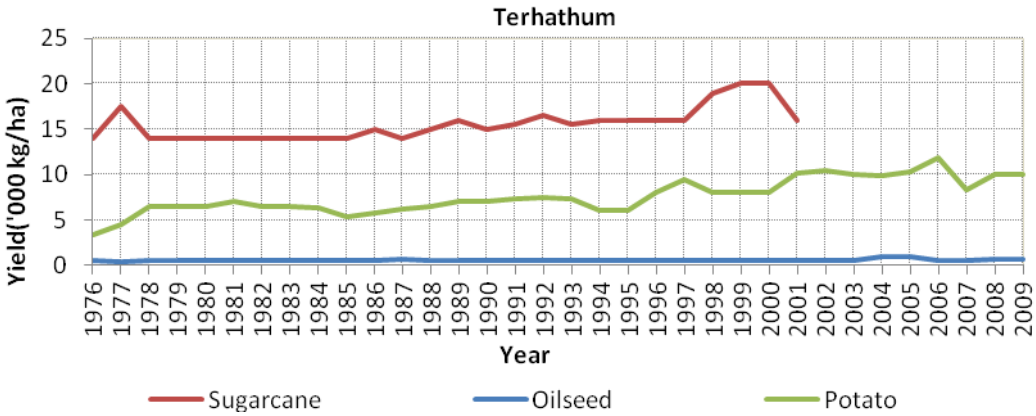
The yield of sugarcane in four individual districts of the Koshi Hills has depicted various trends: a declining trend for Bhojpur and Sankhuwasabha; a slightly increasing trend for Terhathum; and a declining trend and again a rising trend for Dhankuta (Figure 184).

Figure 184: Trend in Yield of Cash Crops, Koshi Hills Districts



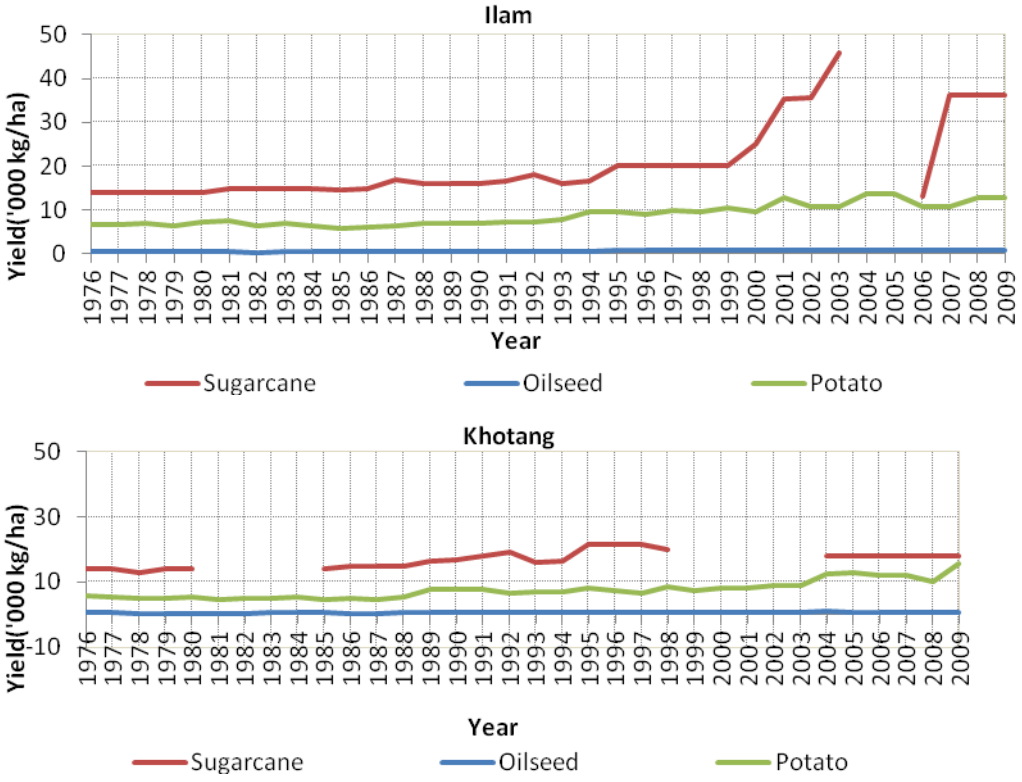






Though data for yield of sugarcane for neighbouring districts of Ilam and Khotang are not available for all years from 1976 to 2009, it has shown an increasing trend. Like in other hill districts of the Koshi Hills, the year 2000 seems to be notable, as from that year, the yield of sugarcane has increased drastically in Ilam and reached to 46,000 kg per ha.

Figure 185: Trend in Yield of Cash Crops, Ilam and Khotang

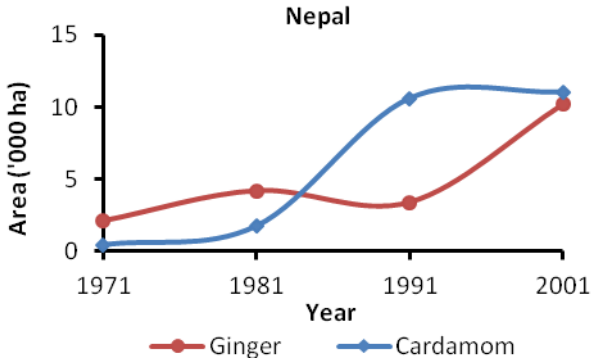


3.7.11 Other Cash Crops

The data on only area of holdings of two high value cash crops, viz garlic and cardamom for the Koshi Hills is available from the National Sample Census of Agriculture from 1971 to 2001. Garlic is grown in both the hills and the Tarai and cardamom is only in the hills.

For the country as a whole, the area under garlic has shown a rising trend from 1971 to 1981, declined during 1981-91, and again slight increase during 1991-01. On the other hand, the area under cardamom has been increased gradually from 1971 to 1981 and then sharply grew in the later years (Figure 186).

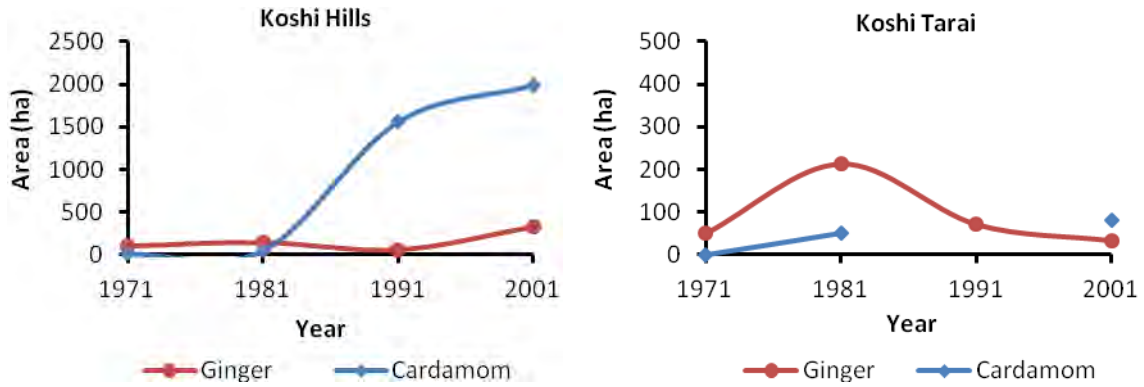
Figure 186: Trend in Area of Value Added Cash Crops, Nepal



Two distinct patterns of trend in area under the two cash crops appear to be existed between the Koshi Hills and the Koshi Tarai. In the Koshi Hills, cardamom has shown a sharp constant increase in the area of holding from 7 ha in 1971 to 1,564 in 1991 and again increased to 1,993 ha in 2001, while garlic has a slight increase from 123 ha in 1971 to 158 ha in 1991 and declined to 107 ha in 2001. On the other hand, garlic in the Koshi Tarai has depicted an increasing but rolling trend in area coverage from 194 ha in 1971 to 619 ha in 2001 with fluctuation in the two decennial years in between the two

years. The area under cardamom has a slight increasing trend with mere 1 ha in 1971 to 50 ha in 1981 and then to 81 ha in 2001 (Figure 187). There was no data on cardamom in 1991.

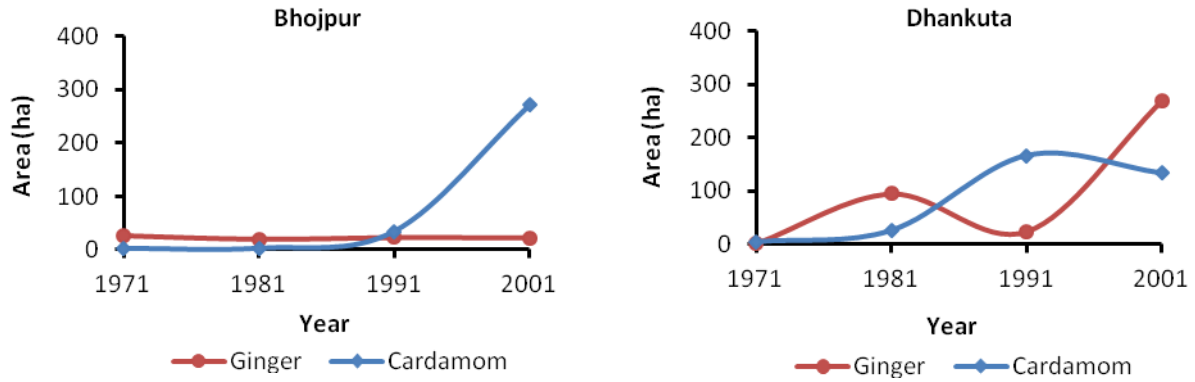
Figure 187: Trend in Area of Value Added Cash Crops, Koshi Hills and Koshi Tarai



The trends in area under these crops vary among the four districts of the Koshi Hills, which show two distinct patterns or groups. While Bhojpur and Dhankuta have more or less similar trends in area under garlic and cardamom; with cardamom having slightly larger area and rising trend than garlic, Sankhuwasabha and Terhathum show abrupt increase and rising trend in area under cardamom since 1981 and the area under garlic has shown a decreasing trend (Figure 188). Cultivation of cardamom began in Bhojpur and Dhankuta earlier than in Sankhuwasabha and Terhathum, but the area under cardamom in the latter two districts increased with far greater than in the former two districts. For instance, the area under cardamom in Sankhuwasabha and Terhathum increased from 5 and 13 ha in 1981 to 1,118 and 470 ha respectively in 2001. Compared to them, the areas under cardamom were only 2 and 5 ha in Bhojpur and Dhankuta in 1971 and increased to 272 and 133 ha respectively in 2001.

Like in Sankhuwasabha and Terhathum, the same pattern of trend in area coverage of cardamom and garlic found to have existed in Ilam, too, whereas the area under those two crops has shown quite different pattern in Khotang from all other districts (Figure 189), that is very small area being used to those crops.

Figure 188: Trend in Area of Value Added Cash Crops, Koshi Hills Districts



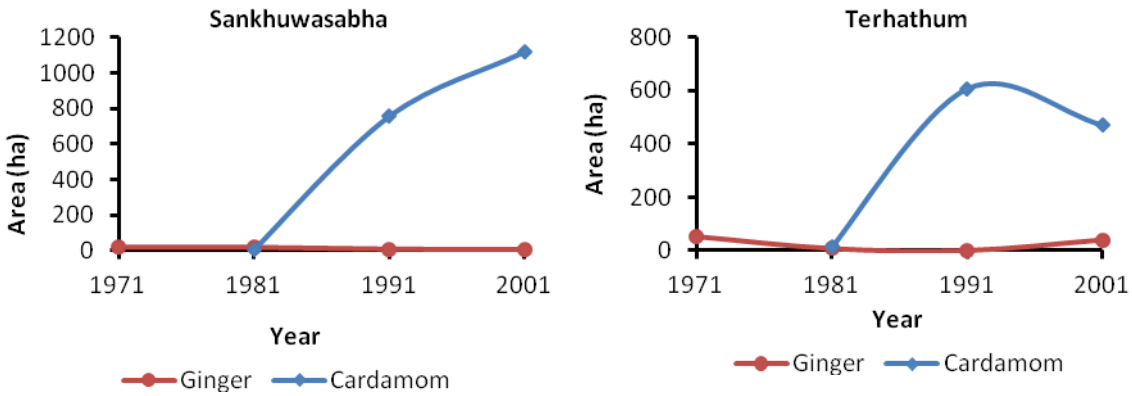
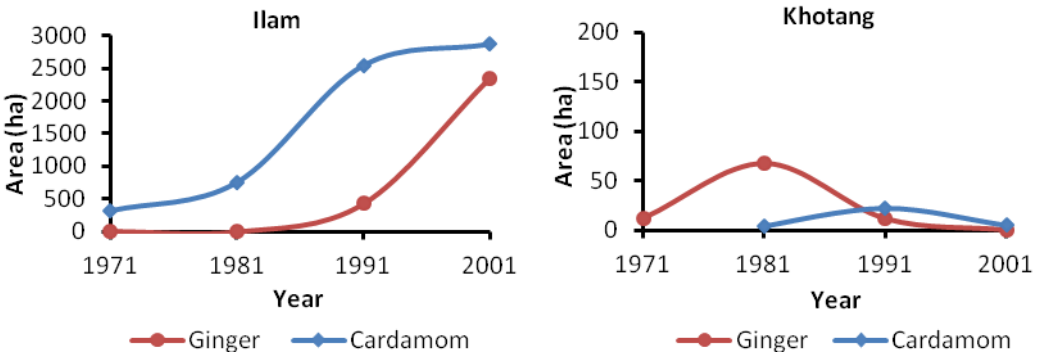


Figure 189: Trend in Area of Value Added Cash Crops, Ilam and Khotang



3.7.12 Livestock

The number of holdings with livestock has been decreased from 1981 to 1991 and again increased in 2001. This pattern is same to Koshi Tarai too. In Koshi Hills it is slowly increasing which is similar to each district of Koshi Hills and neighbouring districts too (Figure 190-Figure 191). The major livestock considered were cattle, yak, buffalo, goats, sheep and pigs (Annex 119-Annex 120).

Figure 190: Growth in Holdings with Livestock, Nepal

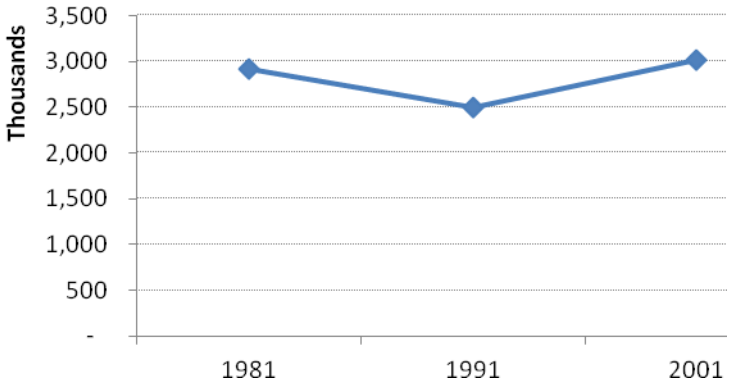


Figure 191: Growth in Holdings with Livestock, Koshi Hills and Koshi Tarai

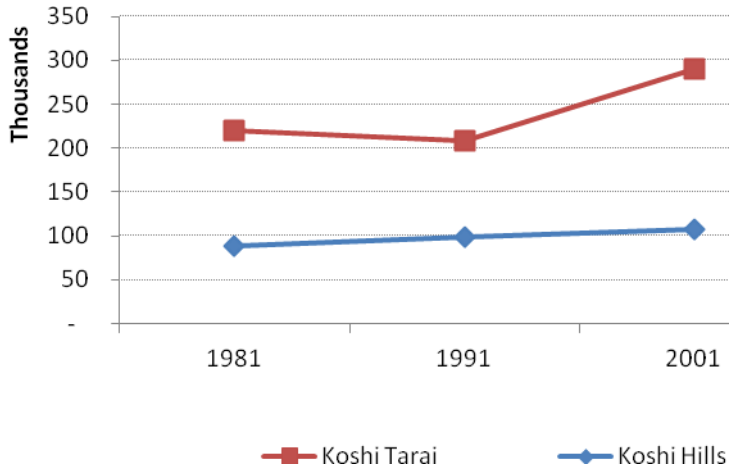


Figure 192: Growth in Holdings with Livestock, Koshi Hills Districts

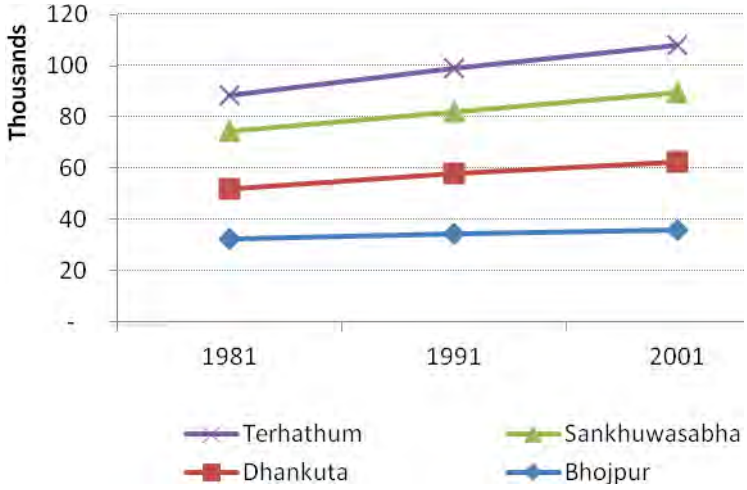
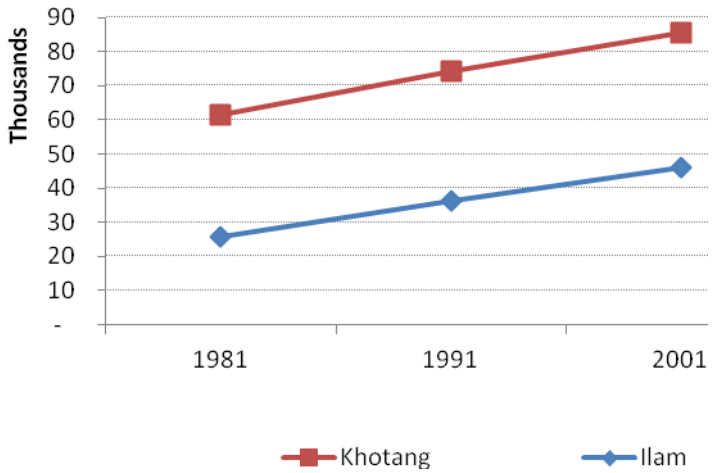


Figure 193: Growth in Holdings with Livestock, Ilam and Khotang



3.7.13 Poultry

The number of household with poultry has been increasing since 1981 in Nepal, but in Koshi Hills and its districts, it increased very slowly in two decades while in Koshi Tarai, it decreased in 1991 and slightly increased in 2001. In neighbouring district too, it increased slowly (Fig 56- 59).

Figure 194: Growth in Holdings with Poultry, Nepal

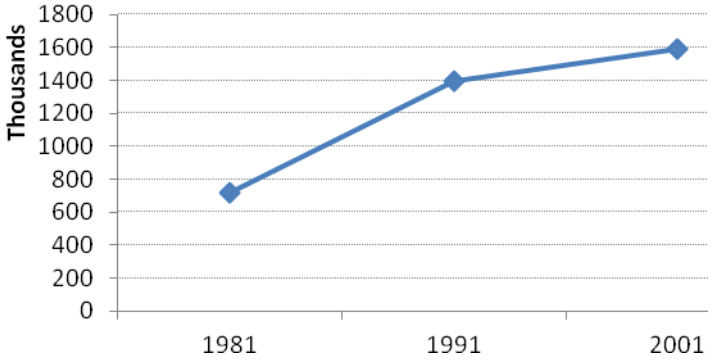


Figure 195: Growth in Holdings with Poultry, Koshi Hills and Koshi Tarai

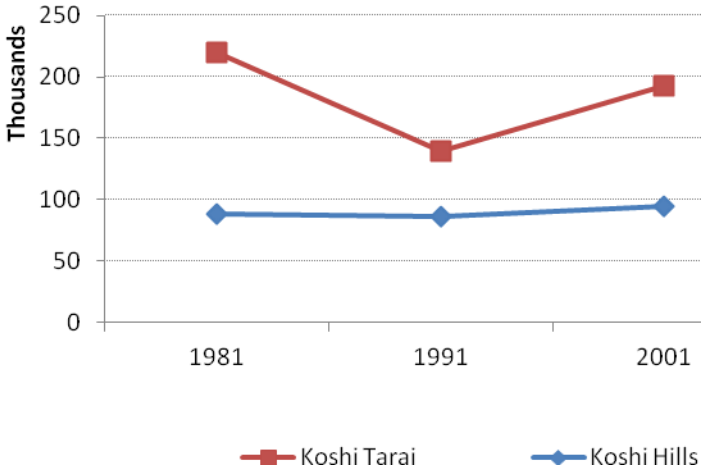


Figure 196: Growth in Holdings with Poultry, Koshi Hills Districts

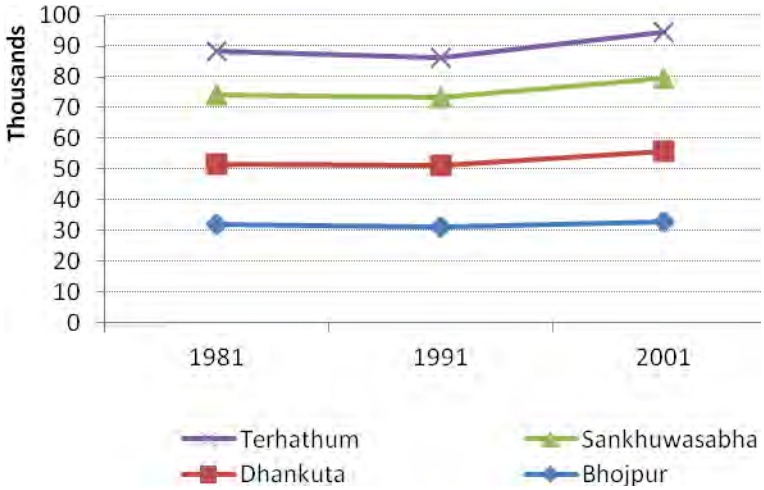
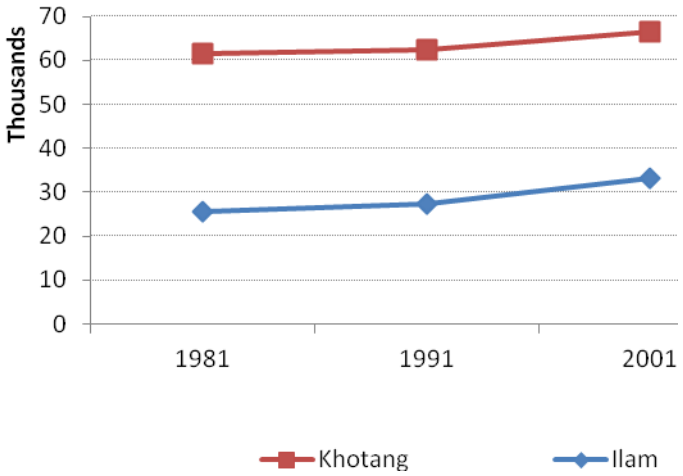


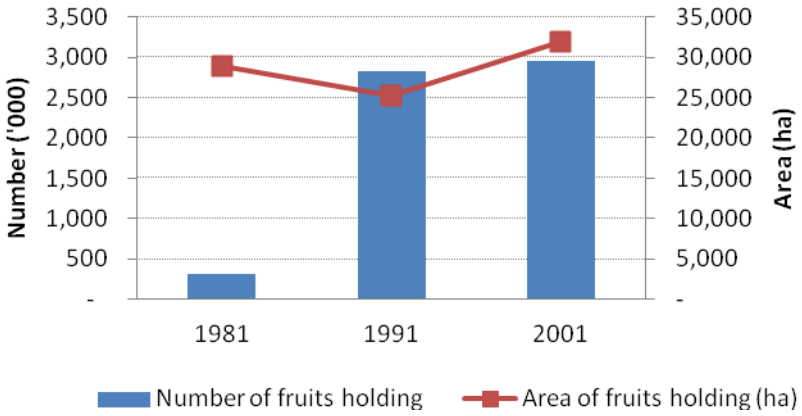
Figure 197: Growth in Holdings with Poultry, Ilam and Khotang



3.7.14 Fruits

Major fruits considered are orange, junar, sweet orange, lemon, lime, mango, banana, guava, jackfruit, pineapple, lychee, apple, plum, papaya, and pomegranate.

Figure 198: Growth in Holdings with Fruits, Nepal



Comparison between Koshi Hills and the Koshi Terai show that there has been a steady rise in the number of fruit holdings in the hills, while the rate is declining in the Terai. Within the study districts, the largest number of fruit holdings is seen in Dhankuta district.

Figure 199: Growth in Holdings with Fruits, Koshi Hills and Koshi Tarai

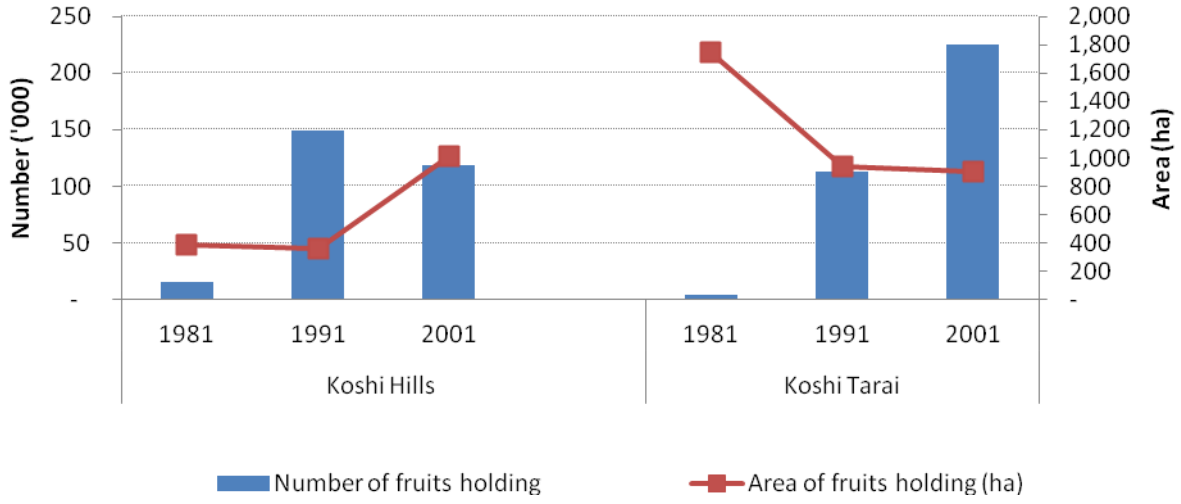


Figure 200: Growth in Holdings with Fruits, Koshi Hills Districts

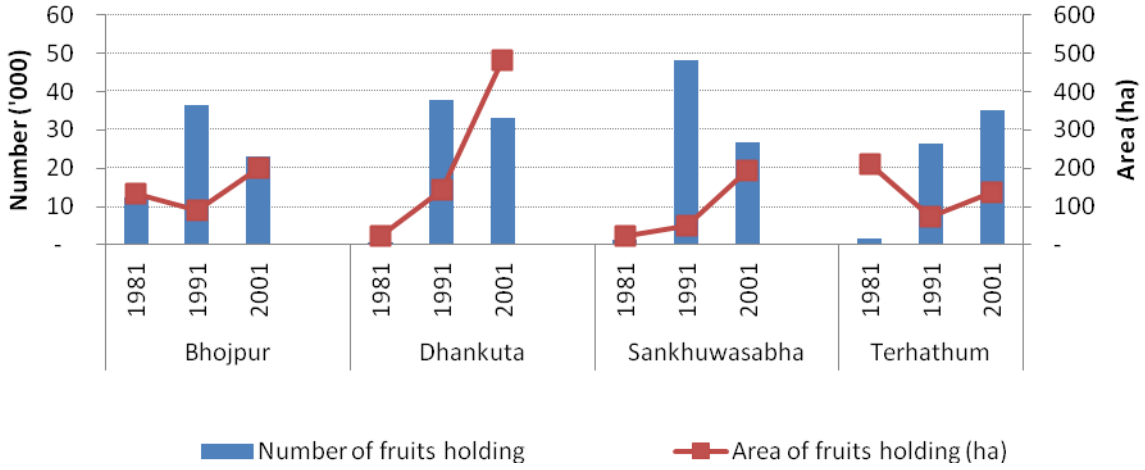
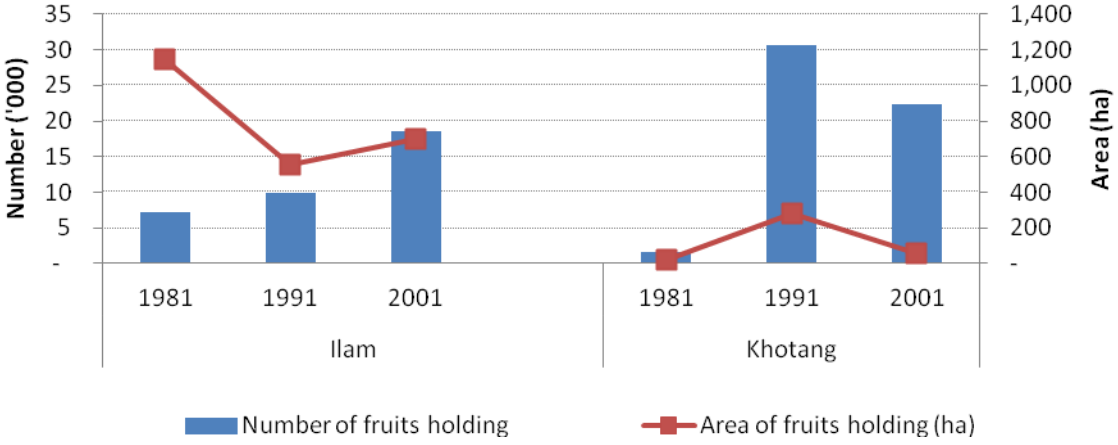


Figure 201: Growth in Holdings with Fruits, Ilam and Khotang



3.7.15 Food Sufficiency and Coping Manner

The national sample census of agriculture of 2001 has provided data on food sufficiency and manner of coping in insufficiency of food. Nearly 1.3 million holdings (i.e., 40%) have food sufficient to feed the household in Nepal. The percentage is lower in Koshi Hills and Koshi Tarai which is 37%. In Koshi

Hills Districts, it ranges from 28% in Dhankuta to 48% in Sankhuwasabha. In neighbouring districts, it is 38% in Ilam and 48% in Khotang (Figure 202-Figure 205).

Figure 202: Number of Holdings with Food Sufficiency, 2001, Nepal

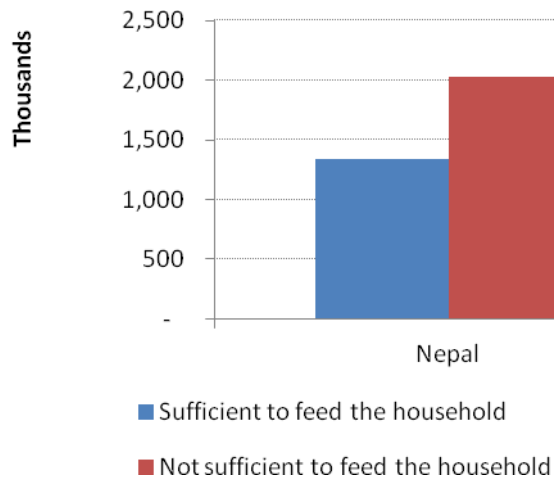


Figure 203: Number of Holdings with Food Sufficiency, 2001, Koshi Hills and Koshi Tarai

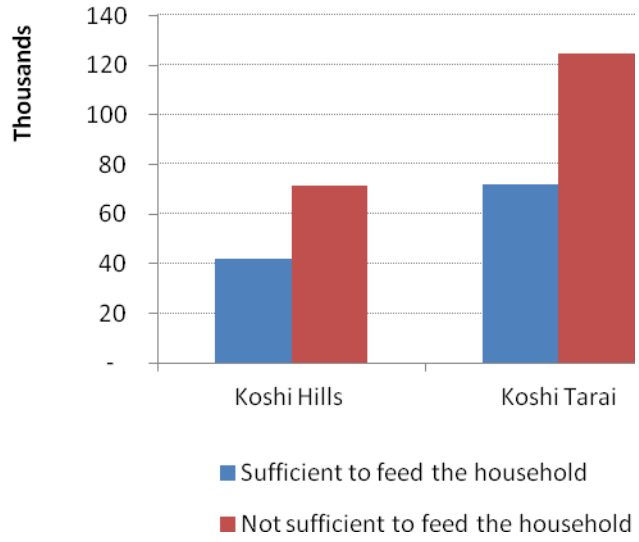


Figure 204: Number of Holdings with Food Sufficiency, 2001, Koshi Hills Districts

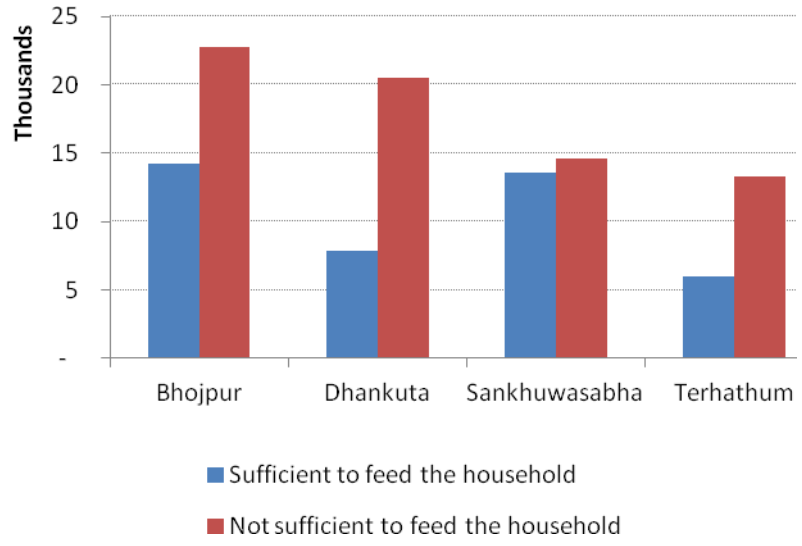
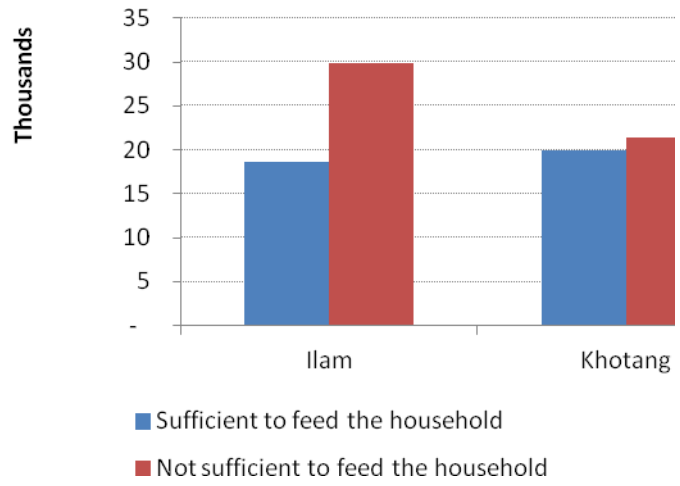


Figure 205: Number of Holdings with Food Sufficiency, 2001, Ilam and Khotang



3.7.16 Manner of Coping with Food Insufficiency

Coping with food insufficiency is available for 2001. Data shows that nationally, 69% of households coped by earning within their home districts. 13% also used the remittances from family members abroad to overcome shortages. Similar trends were also seen within the Koshi Hills, Koshi Tarai, Koshi Hills Districts, Ilam and Khotang (Figure 206-Figure 209).

Figure 206: Holdings with Copping Manner in Food Insufficiency (%), 2001, Nepal

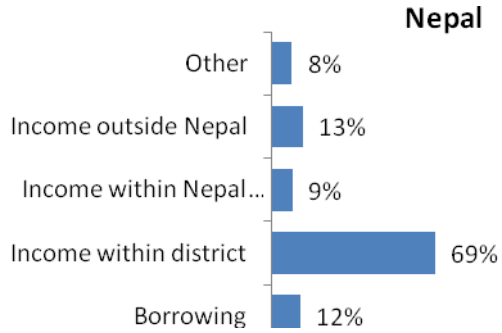


Figure 207: Holdings with Copping Manner in Food Insufficiency (%), 2001, Koshi Hills and Koshi Tarai

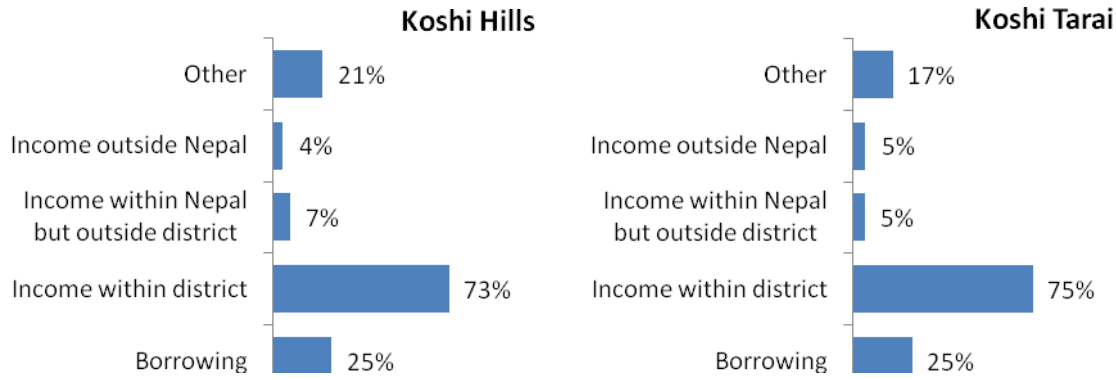
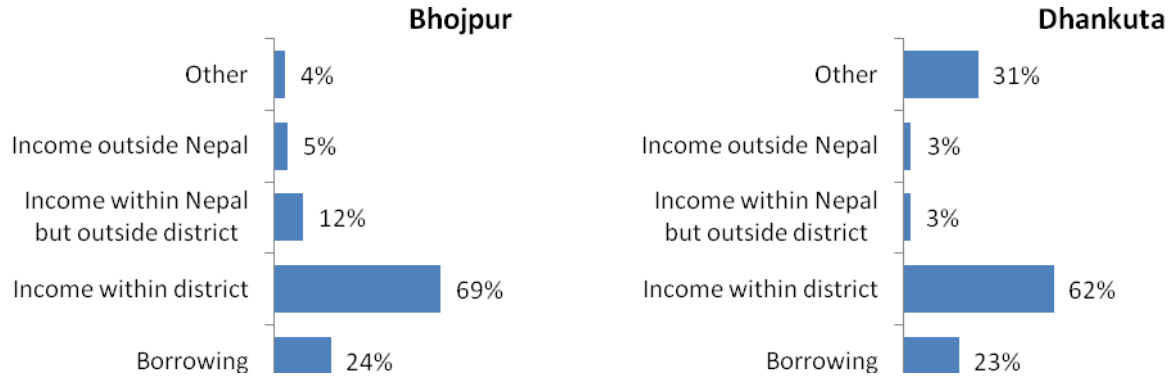


Figure 208: Holdings with Copping Manner in Food Insufficiency (%), 2001, Koshi Hills Districts



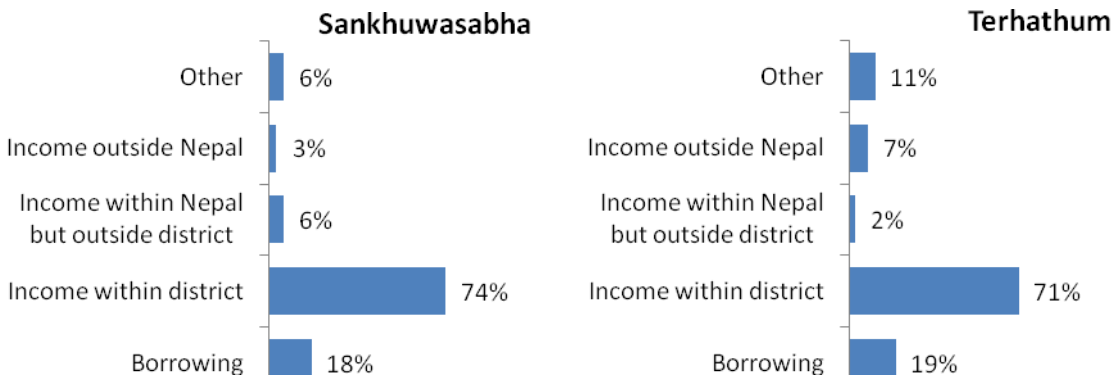
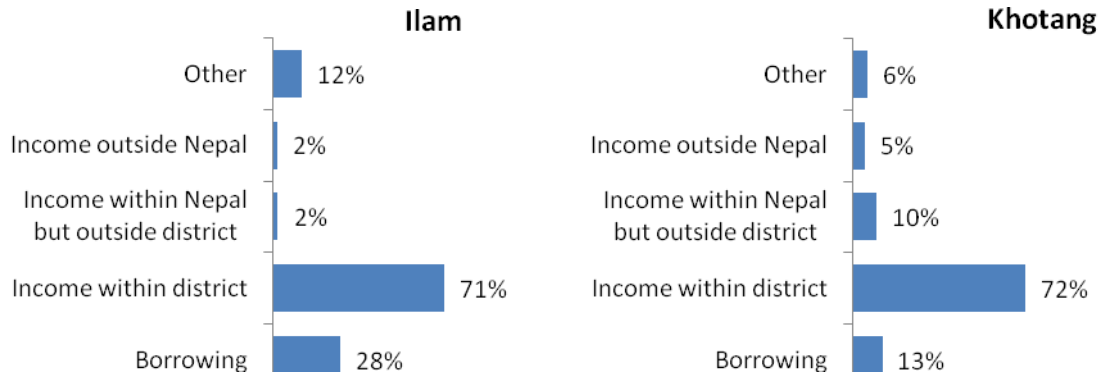


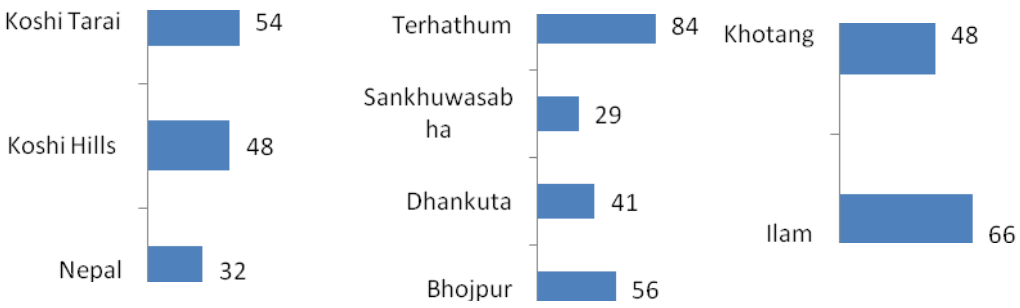
Figure 209: Holdings with Copping Manner in Food Insufficiency (%), 2001, Ilam and Khotang



3.7.17 Need of Agriculture Loan

The national sample census of agriculture of 2001 provides data on holdings in need of agriculture loan. About 32% holdings needed loan in Nepal. The highest loan needed was in Terhathum and the lowest was in Sankhuwasabha (Figure 210).

Figure 210: Holdings with Need of Agriculture Loan (%),2001, Nepal, Koshi Hills, Koshi Tarai, Koshi Hills Districts, Ilam and Khotang



3.7.18 Agriculture Loan (Credit)

The number of holdings taking agriculture loan has increased from 1991 to 2001 in Nepal, Koshi Hills and Koshi Tarai (Figure 211-Figure 213).

Figure 211: Holdings with Agriculture Loan (%), 1991-2001, Nepal, Koshi Hills and Koshi Tarai

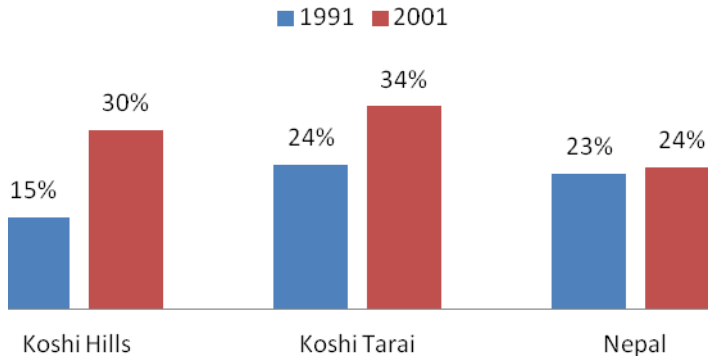


Figure 212: Holdings with Agriculture Loan (%), 1991-2001, Koshi Hills Districts

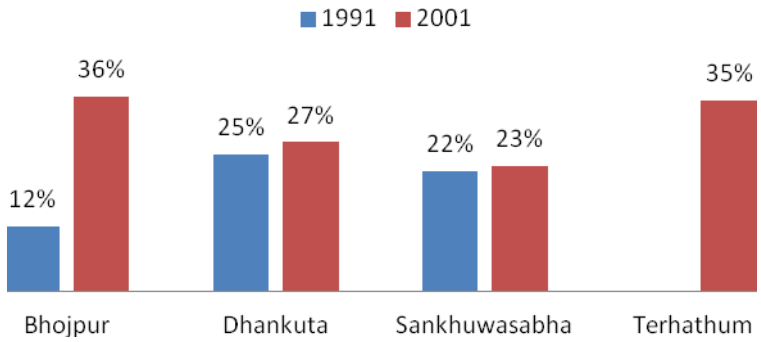
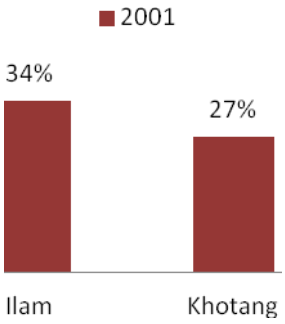


Figure 213: Holdings with Agriculture Loan (%), 2001, Ilam and Khotang



3.7.19 Purpose of Agriculture Loan

Most of agriculture loan was taken for livestock farming and some for cereal and cash crops. Within the study districts, apart from the investment in livestock farming, a large amount of the loans were also taken for cash crop cultivation in Terhathum and Sankhuwasabha.

Figure 214: Holdings with Agriculture Loan by Purposes (%), Nepal

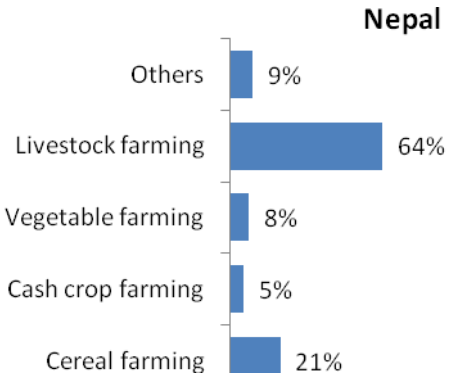


Figure 215: Holdings with Agriculture Loan by Purposes (%), Koshi Hills and Koshi Tarai

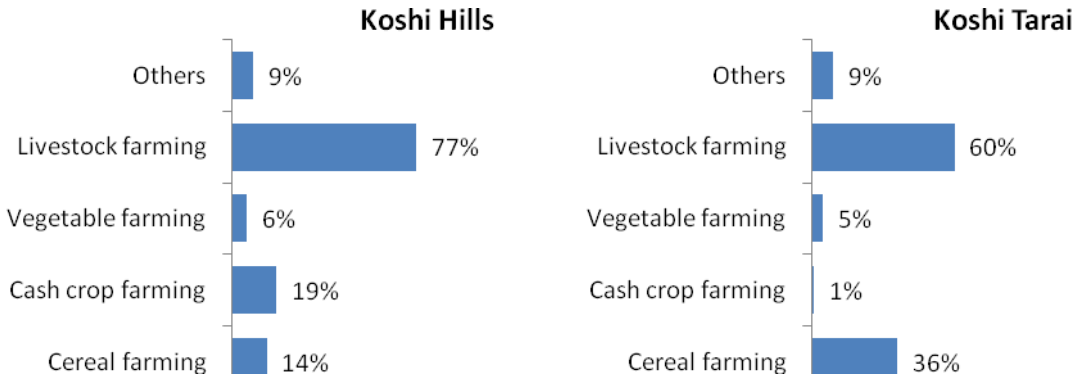
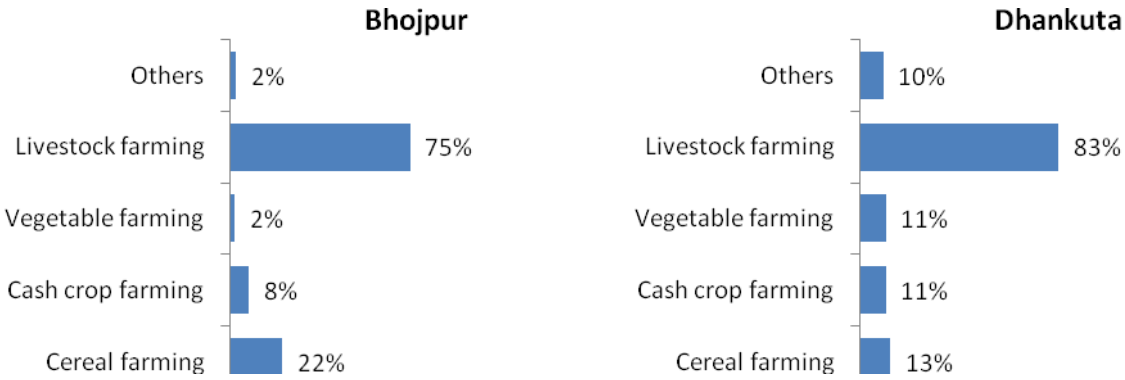


Figure 216: Holdings with Agriculture Loan by Purposes (%), 2001, Koshi Hills Districts



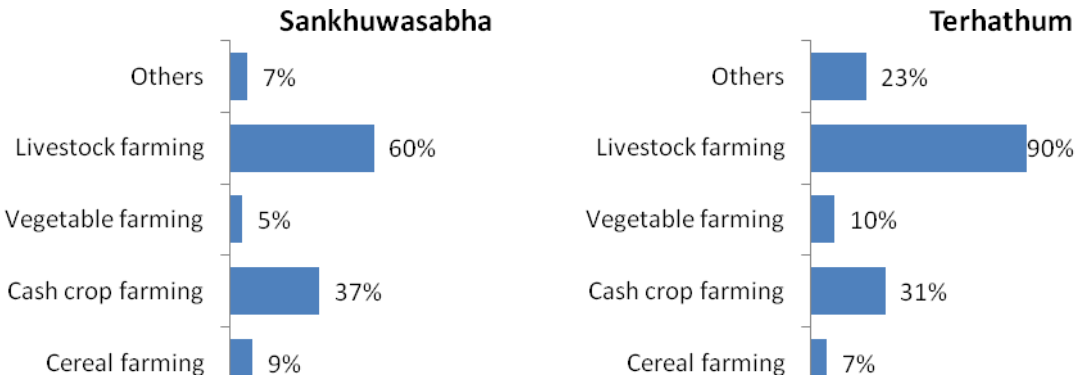
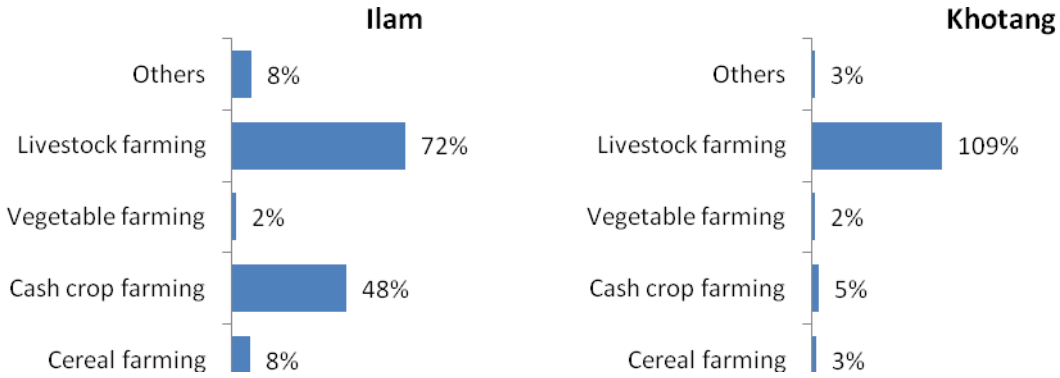


Figure 217: Holdings with Agriculture Loan by Purposes (%), Ilam and Khotang



3.7.20 Source of Agriculture Loan

The main source of agriculture loan differed according to the different districts. In Dhankuta and Terhathum the main sources were the Agricultural Development Banks. While the inhabitants of Bhojpur and Sankhuwasabha were more reliant on non-institutional sources (eg. money lenders).

Figure 218: Holdings with Agriculture Loan by Sources (%), 2001, Nepal

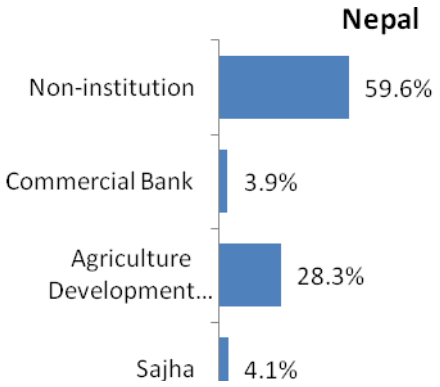


Figure 219: Holdings with Agriculture Loan by Sources (%), 2001, Koshi Hills and Koshi Tarai

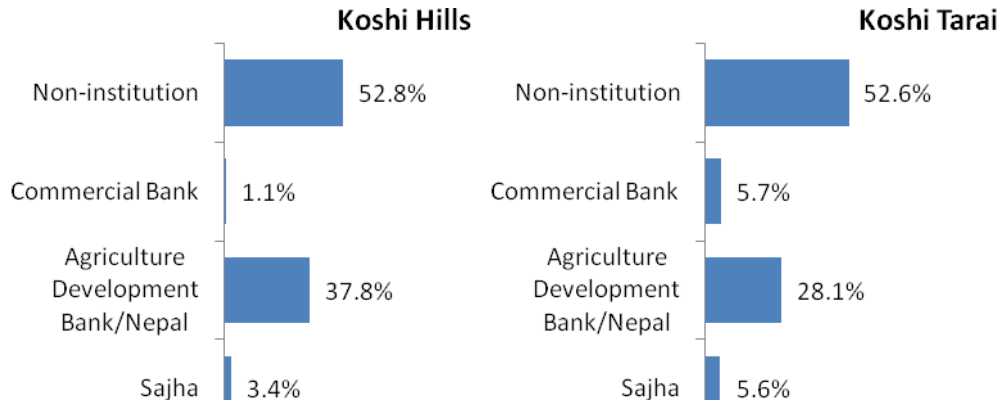


Figure 220: Holdings with Agriculture Loan by Sources (%), 1991-2001, Koshi Hills Districts

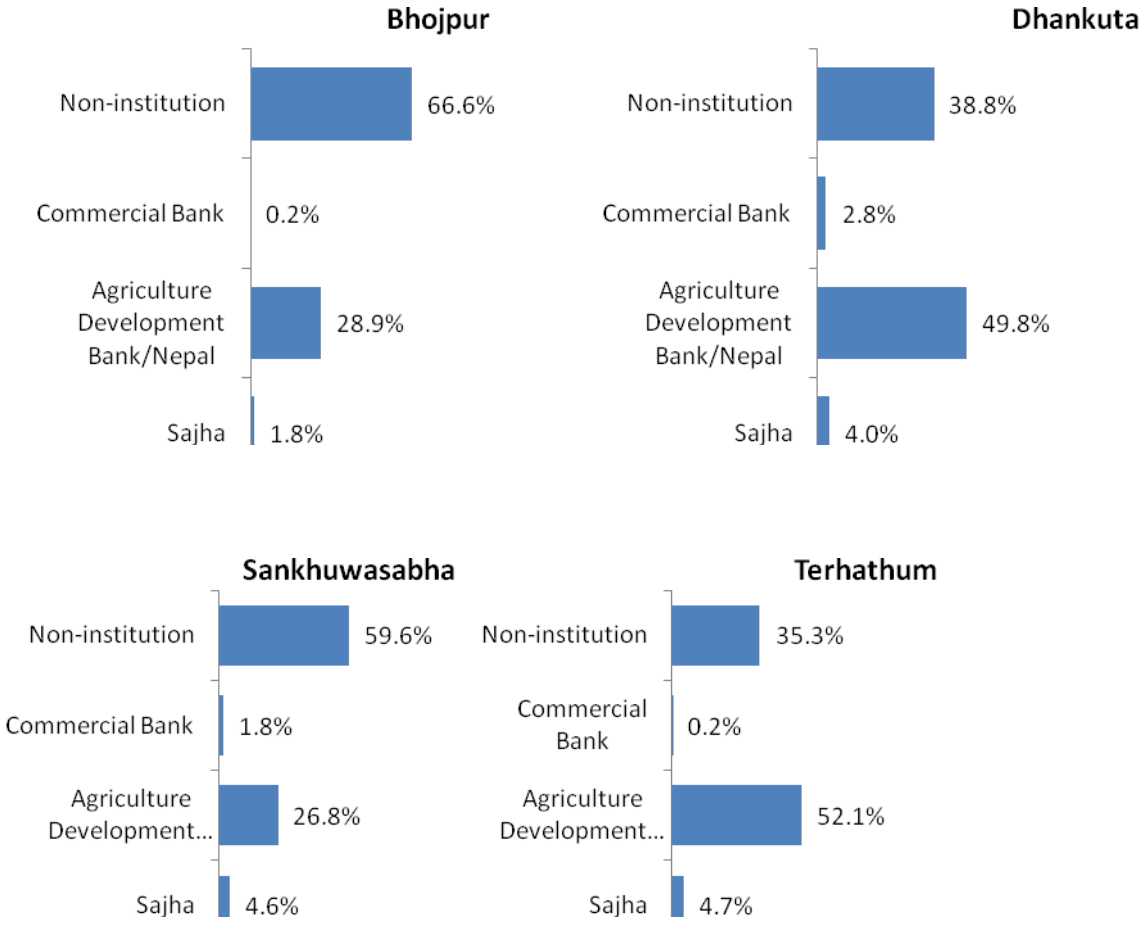
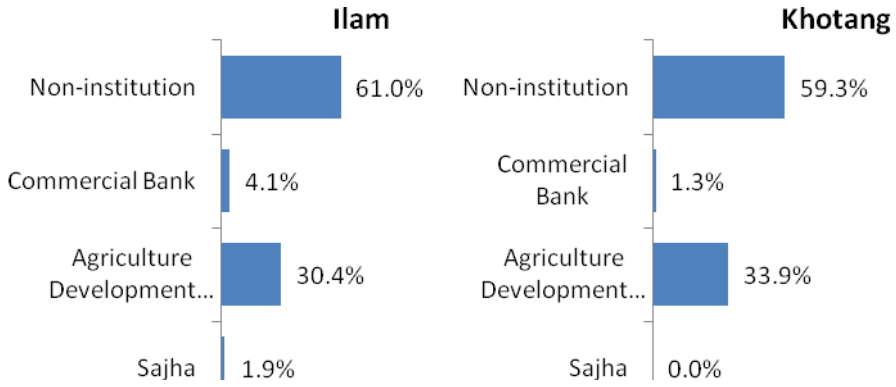


Figure 221: Holdings with Agriculture Loan by Sources (%), 2001, Ilam and Khotang



3.7.21 Agriculture Workers

The number of holdings with agriculture workers has decreased from 1991 to 2001 in Nepal, Koshi Hills and Koshi Tarai. In Koshi Hills Districts, it has increased in Bhojpur and decreased in Dhankuta, Sankhuwasabha, Terhathum (Figure 222-Figure 224).

Figure 222: Holdings with Agriculture Workers (%), 1991-2001, Nepal, Koshi Hills an Koshi Tarai

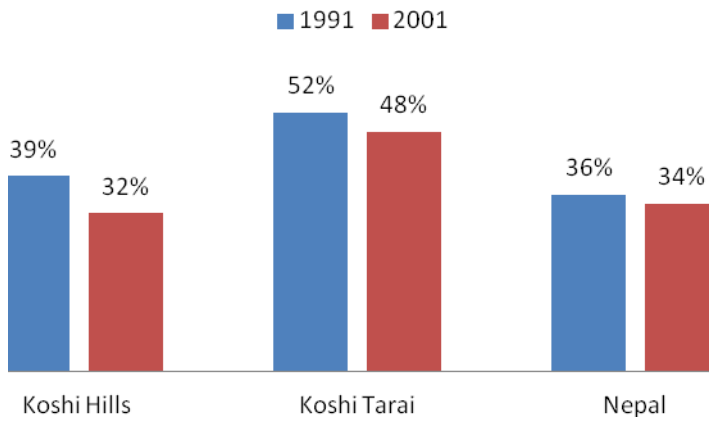


Figure 223: Holdings with Agriculture Workers (%), 1991-2001, Koshi Hills Districts

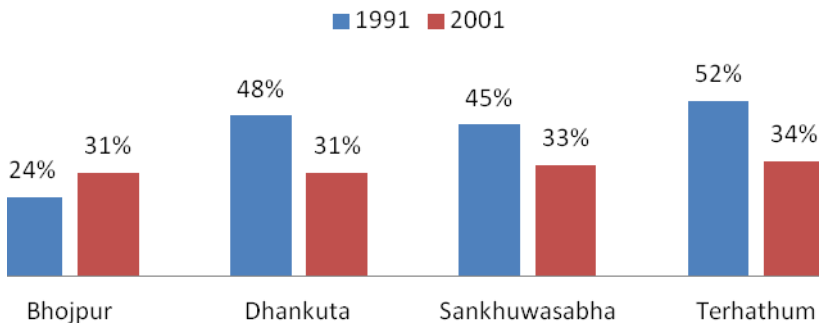
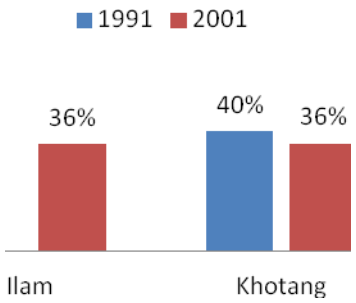


Figure 224: Holdings with Agriculture Workers (%), 2001, Ilam and Khotang



3.7.22 Type of Agriculture Workers

The majority of agriculture workers were occasional or seasonal workers. Very few were permanent workers. This was seen nationally as well as across the different districts (Figure 225-Figure 228)

Figure 225: Holdings with Agriculture Workers by Type, 1991-2001, Nepal

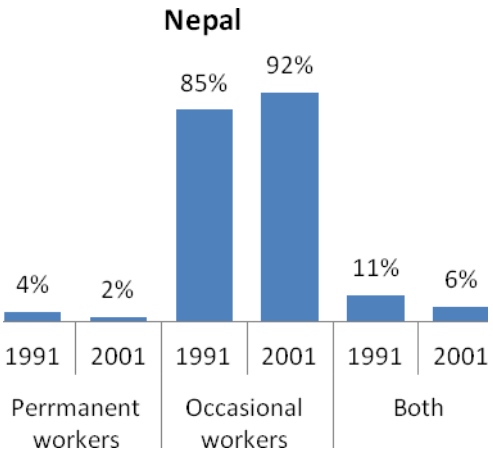


Figure 226: Holdings with Agriculture Workers by Type, 1991-2001, Koshi Hills and Koshi Tarai

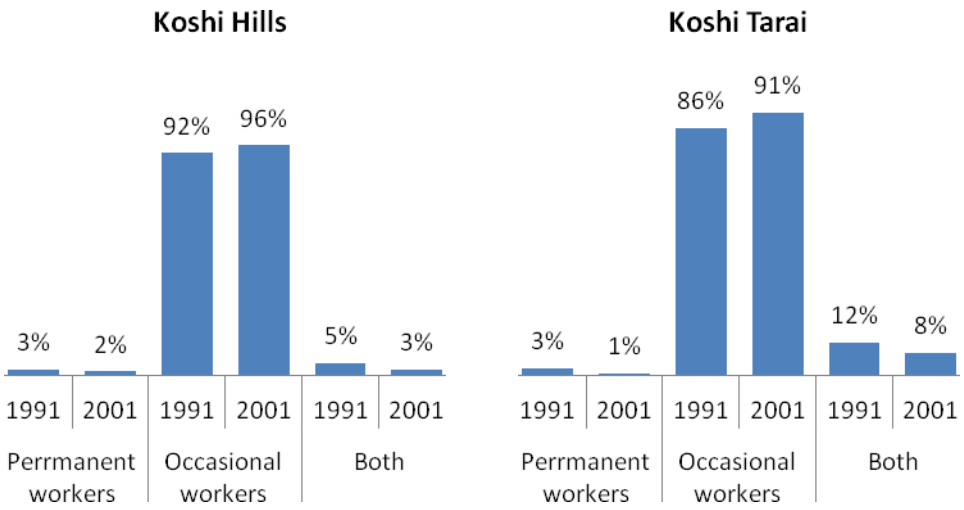


Figure 227: Holdings with Agriculture Workers by Type, 1991-2001, Koshi Hills Districts

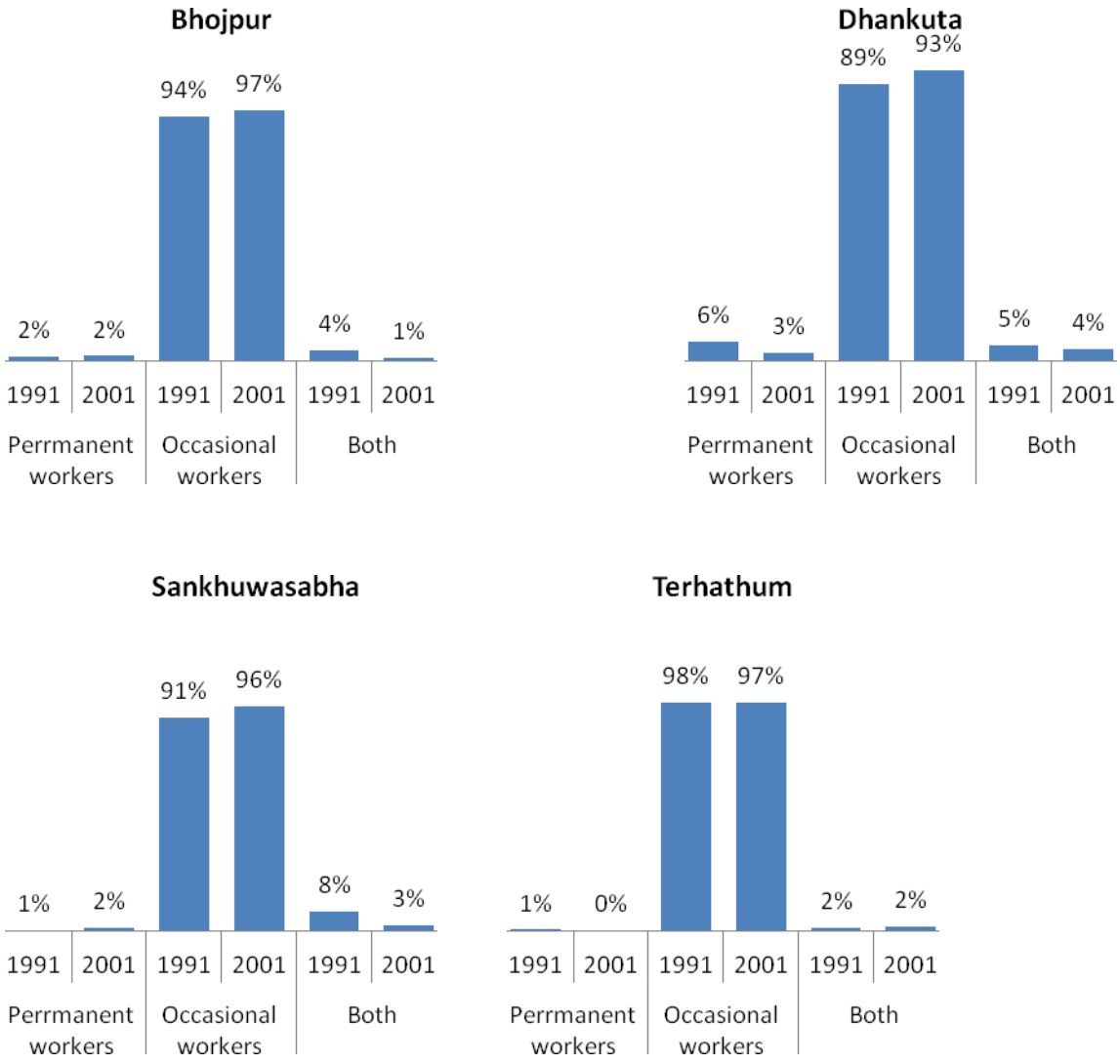
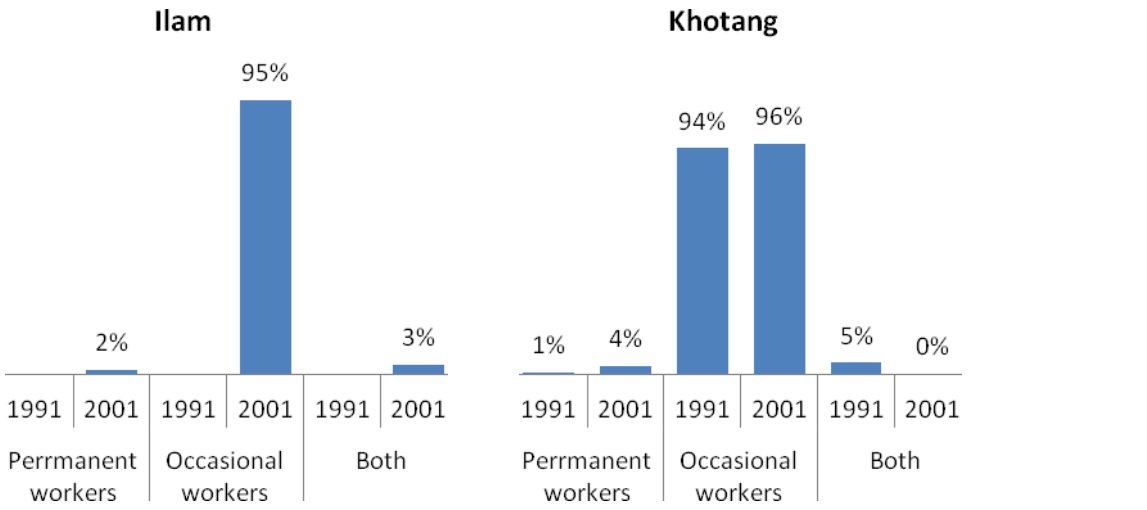


Figure 228: Holdings with Agriculture Workers by Type, 1991-2001, Ilam and Khotang



3.7.23 Between Factors and Production of Crops

Table 88 provides data on precipitation and production of paddy and maize for 34 years from the fiscal years 1976/77 to 2009/10.

Table 88: Rainfall and Paddy Production in Bhojpur, Dhankuta and Sankhuwasabha

Fiscal years	Bhojpur			Dhankuta			Sankhuwasabha		
	Paddy	Maize	Rainfall	Paddy	Maize	Rainfall	Paddy	Maize	Rainfall
1976/77	14660	17829	3973	12970	18646	738	18319	10594	1618
1977/78	11750	16020	4935	10200	13820	665	20150	8340	1753
1978/79	12240	17600	3554	15320	17950	794	20260	8900	1900
1979/80	10400	14080	5650	16080	17950	956	20260	5340	2218
1980/81	12250	16720	4475	18440	21360	689	18480	12350	1794
1981/82	14640	16560	3326	19370	26910	753	18480	12350	2008
1982/83	8950	9940	2604	13860	16670	632	14310	12230	1724
1983/84	10460	16560	2919	20140	25680	827	15870	12490	1994
1984/85	18990	17150	2911	20100	34550	1020	21270	19410	1933
1985/86	15900	18120	4040	18800	30220	772	22240	17540	2115
1986/87	13780	18100	3612	18000	28000	847	20500	17900	1616
1987/88	18900	21070	3560	17590	28050	1420	23530	15200	2227
1988/89	25040	23350	3518	20600	27560	995	29110	14730	2563
1989/90	28470	27720	3110	17810	29700	957	28090	13700	2509
1990/91	28590	24410	4259	22280	30410	1035	28560	15410	2010
1991/92	27780	21110	4908	22780	30310	760	26930	15310	2230
1992/93	24500	22960	4460	19680	31350	737	25520	15550	1386
1993/94	38240	23572	4560	18569	22950	777	17880	13290	1871
1994/95	30000	23464	4631	17612	26099	632	17100	14452	1708
1995/96	37917	29715	3974	22279	29900	915	18332	15169	2194
1996/97	38050	29760	4814	22280	28300	689	19520	14540	2011
1997/98	37540	29900	3792	22160	29000	884	18820	16985	1923
1998/99	48620	29920	4630	22830	28828	985	19600	16582	2432
1999/00	44825	39000	4260	23131	30600	862	21520	21580	2278

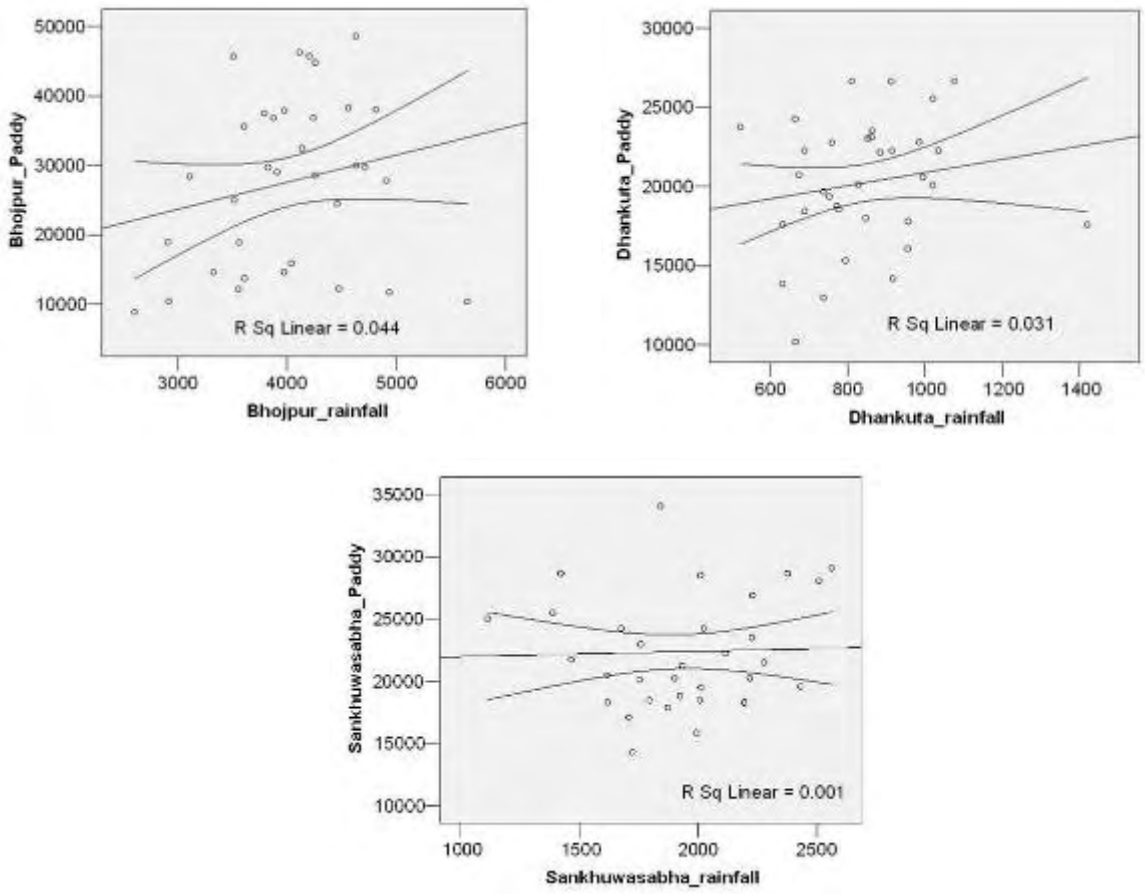
Fiscal years	Bhojpur			Dhankuta			Sankhuwasabha		
	Paddy	Maize	Rainfall	Paddy	Maize	Rainfall	Paddy	Maize	Rainfall
2000/01	46279	40130	4117	24268	33990	665	22992	20324	1758
2001/02	32470	38146	4139	14197	25022	917	18270	21448	2194
2002/03	45750	40907	3512	25556	33813	1021	24267	21838	1676
2003/04	45750	40907	4205	26645	24190	913	24267	21838	2025
2004/05	29741	40907	4714	26663	23382	811	34091	22789	1841
2005/06	29741	40907	3828	26663	38105	1076	28674	22623	1419
2006/07	29064	43638	3910	20750	41943	674	25030	23740	1113
2007/08	36866	38585	3876	23042	50960	853	28677	28209	2377
2008/09	36866	38585	4242	23770	50960	523	28677	28209	1421
2009/10	35600	42600	3607	23530	54750	864	21732	19583	1465

3.7.24 Precipitation and Paddy Production

Based on 34 years data, an attempt is made to compute the statistical relationship between precipitation and paddy production in the Koshi Hills districts. The correlations between these two variables show very weak in all three districts[343] with variations of R^2 1% in Sankhuwasabha to R^2 4% in Bhojpur. In other words, only little variation in paddy production is found to be related to the rainfall (Figure 229).

[343] Terhathum has been omitted for calculation, since rainfall data is available only since 2007.

Figure 229: Scattered Graph of Rainfall and Paddy Production, Koshi Hills Districts

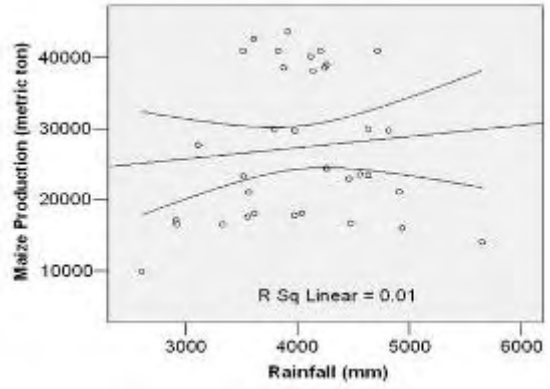


3.7.25 Precipitation and Maize Production

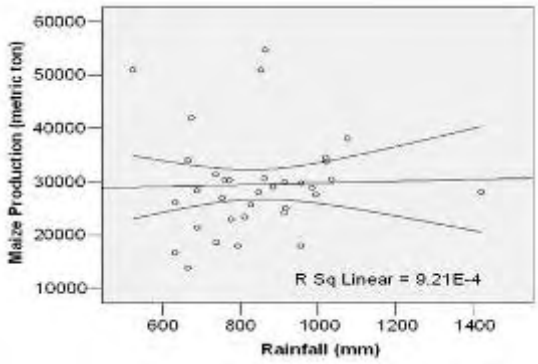
The trend in rainfall amount has shown a wide variation on 2604 to 5650 mm while the trend in maize production has shown gradually increasing over 34 years for Bhojpur. Similar trend pattern is observed in Dhankuta, too. The trend in rainfall amount is more or less the same, while the maize production has shown variable trend with little decreasing for Sankhuwasabha. These reflect over the correlation computation.

The correlation values between the production of maize and rainfall are 0.1 for Bhojpur, 0.03 for Dhankuta and -0.2 for Sankhuwasabha. For both Bhojpur and Dhankuta, the linear correlation is very weak and the R-square is only 1% and nearly 1% respectively. This indicates that 1% of variation in maize production is related to the rainfall. In case of Sankhuwasabha, there is very weak negative correlation and the R-square reveals that about 4% of the variation in maize production is related to rainfall (Figure 230).

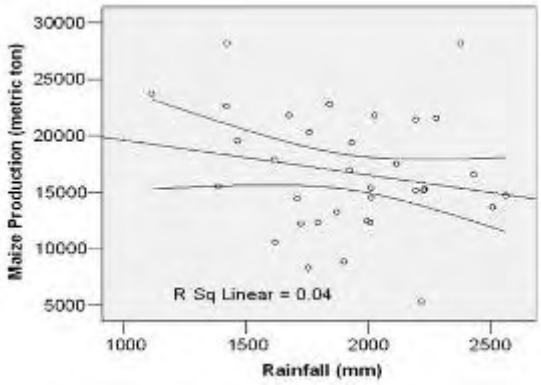
Figure 230: Scattered Graph of Rainfall and Maize Production, Koshi Hills Districts



Bhojpur



Dhankuta



Sankhuwasabha

3.7.26 Population Growth and Production of Crops

Attempt is also made to see the relationship between population growth and production of crops, as the former is assumed to determine the latter. While the population data is available only for five decades points, viz 1971, 1981, 1991, 2001 and 2011, the data on production of crops is available for 34 years from 1976 to 2009. In order to measure the correlation between them, population for each individual year from 1971 to 2011 is estimated using the growth rates of those census decades. Since there is no data available on crop production for 2010/11, the 2009/10 crop production data has been considered as "estimated" for 2010/11. Population estimation is shown in Annex 24.

Statistical analysis is computed for the Koshi Hills, Koshi Tarai and individual districts. While the range of correlation coefficient values lies in between -1 and +1, squaring of the computed values (R^2) is usually for interpretation. The square of the coefficient (R^2) is equal to the percentage of the variation in one variable is related to the variation in other. Table 89 shows the results of correlation values between population (estimated) and production of crops from 1976 to 2009.

Table 89: Correlation Values Between Population and Production of Crops

Areas	Paddy	Maize	Wheat	Potato
Bhojpur	0.57**	0.23	0.47**	0.14
Dhankuta	0.76**	0.63**	0.76**	0.81**
Sankhuwasabha	0.42*	0.84**	0.85**	0.81**
Terhathum	0.53**	0.33	0.85**	0.57**

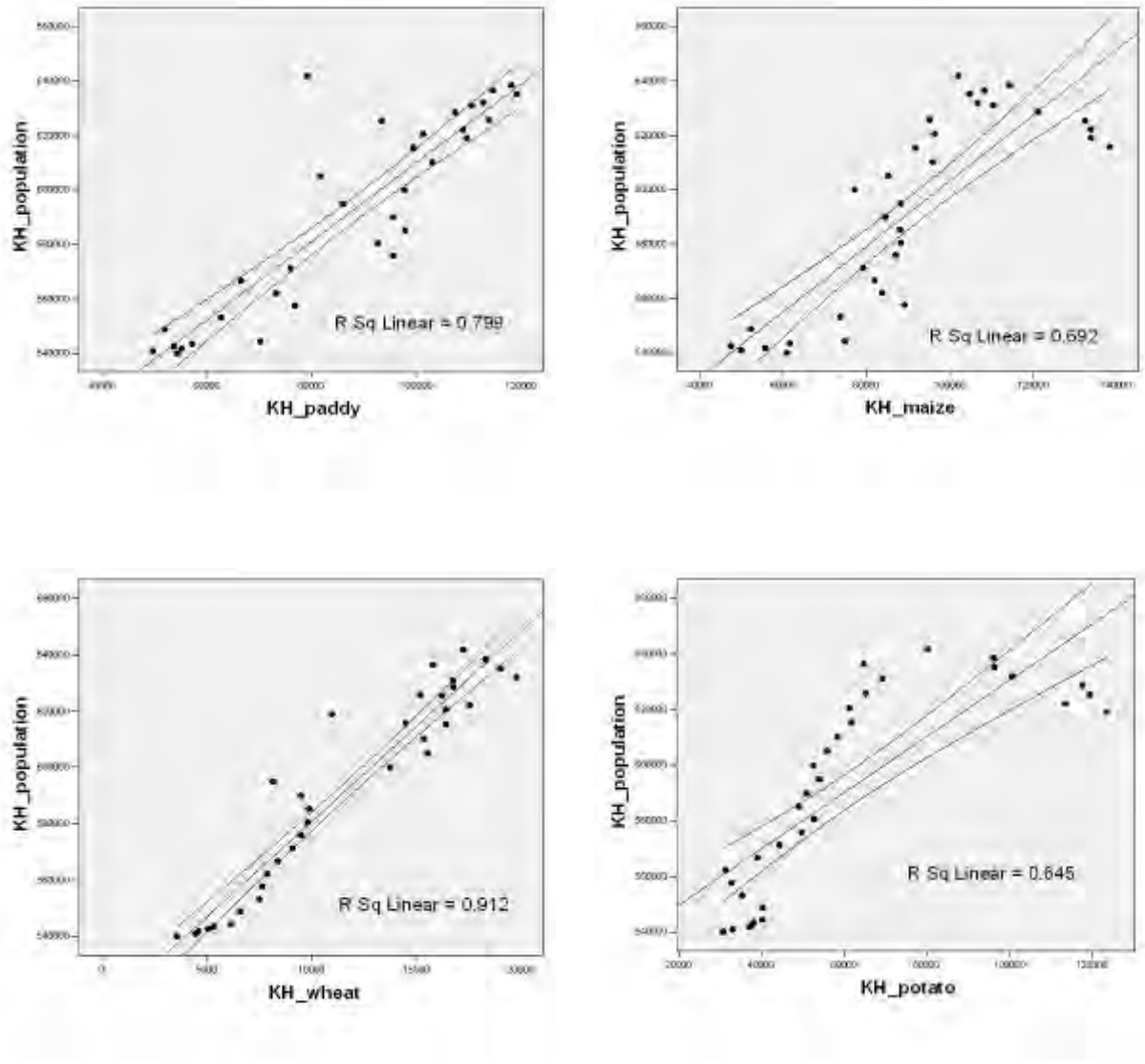
Areas	Paddy	Maize	Wheat	Potato
Koshi Hills	0.89**	0.83**	0.95**	0.80**
Koshi Tarai	0.89**	0.88**	0.96**	0.93**
Ilam	0.63**	0.96**	0.96**	0.91**
Khotang	0.70**	0.60**	0.50**	0.38*

*Note: **Significant at the 0.01 level (2-tailed); *Significant at the 0.05 level (2-tailed) and those without star mean no significant correlation.*

3.7.27 Koshi Hills

As shown in Table 89, the correlation values between population and production of each of four cereal crops for the Koshi Hills are significantly very high, with r = 0.80 and above. This indicates that there is a positive linear relationship between them. The R^2 value i.e. 0.799 between paddy production and population indicates that 80% of the variation in paddy production is related to the population growth (Figure 231). Similarly, the percentages of variation in maize, wheat and potato related to population are 70%, 91% and 65%, respectively.

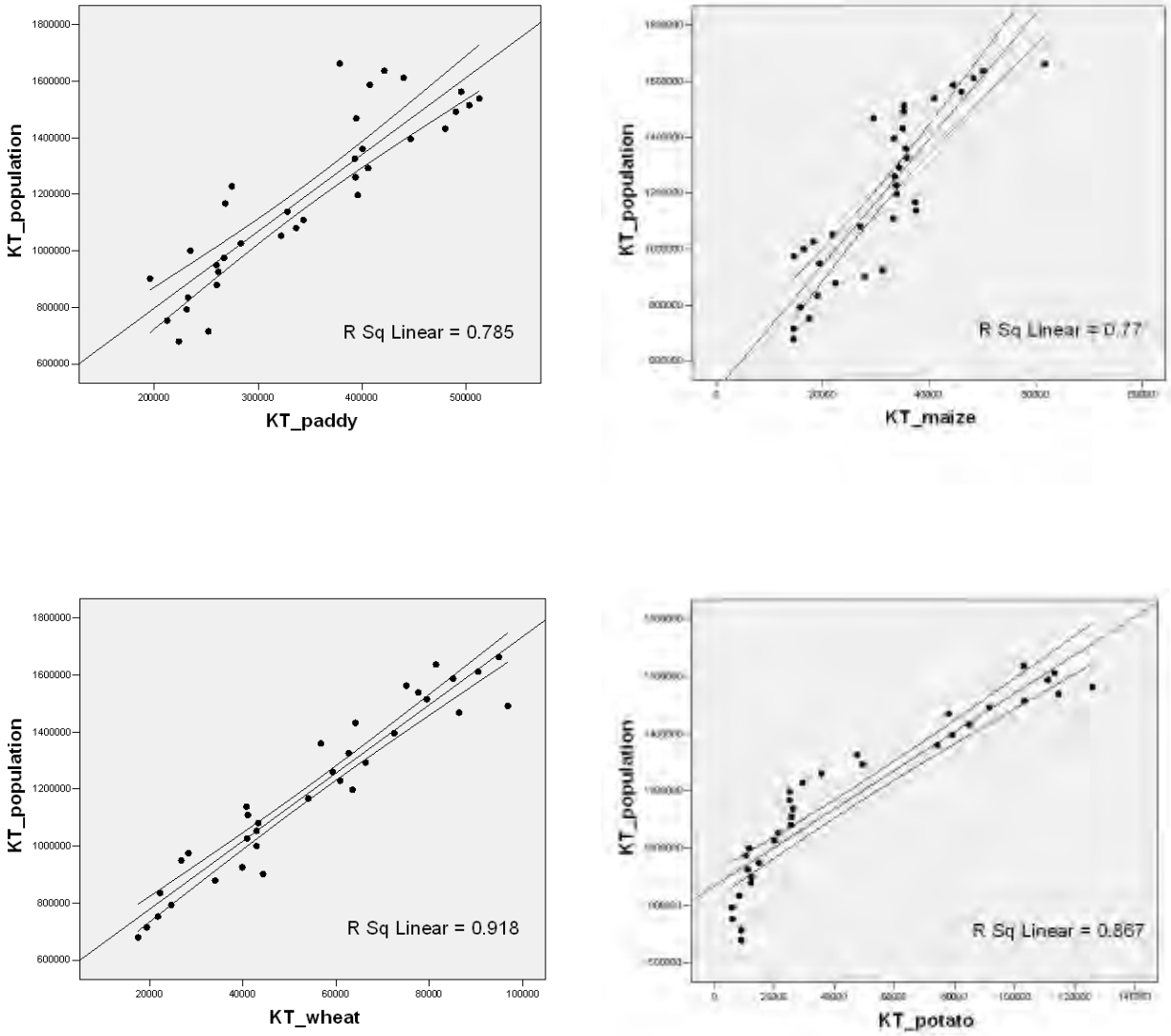
Figure 231: Population and Production of Crops (R^2), Koshi Hills



3.7.28 Koshi Tarai

In the Koshi Tarai too, the correlation values of population with the production of the four cereal crops are significantly very high (Table 89). The R^2 values for all individual crops production and population show 77% and above (Figure 232). Compared to the Koshi Hills, the relationships of wheat and maize with population are stronger and that of potato with population is much stronger in the Koshi Tarai.

Figure 232: Population and Production of Crops (R^2), Koshi Tarai



3.7.29 Individual Districts

There are remarkable variations in the correlations between the population growth and the production of the crops under consideration among the individual districts, as well as by crops (Table 89). Likewise, the R^2 values indicating percentile variations in relationship of each of the individual crops with population growth are weaker than the Koshi Hills and the Koshi Tarai (Figure 233- Figure 238). By comparison, Ilam has on the whole shown better relationship between population growth and production of crops than other hill districts. Bhojpur and Khotang have on the whole shown weak relationships in all three crops except paddy.

Figure 233: Population and Production of Crops (R^2), Bhojpur

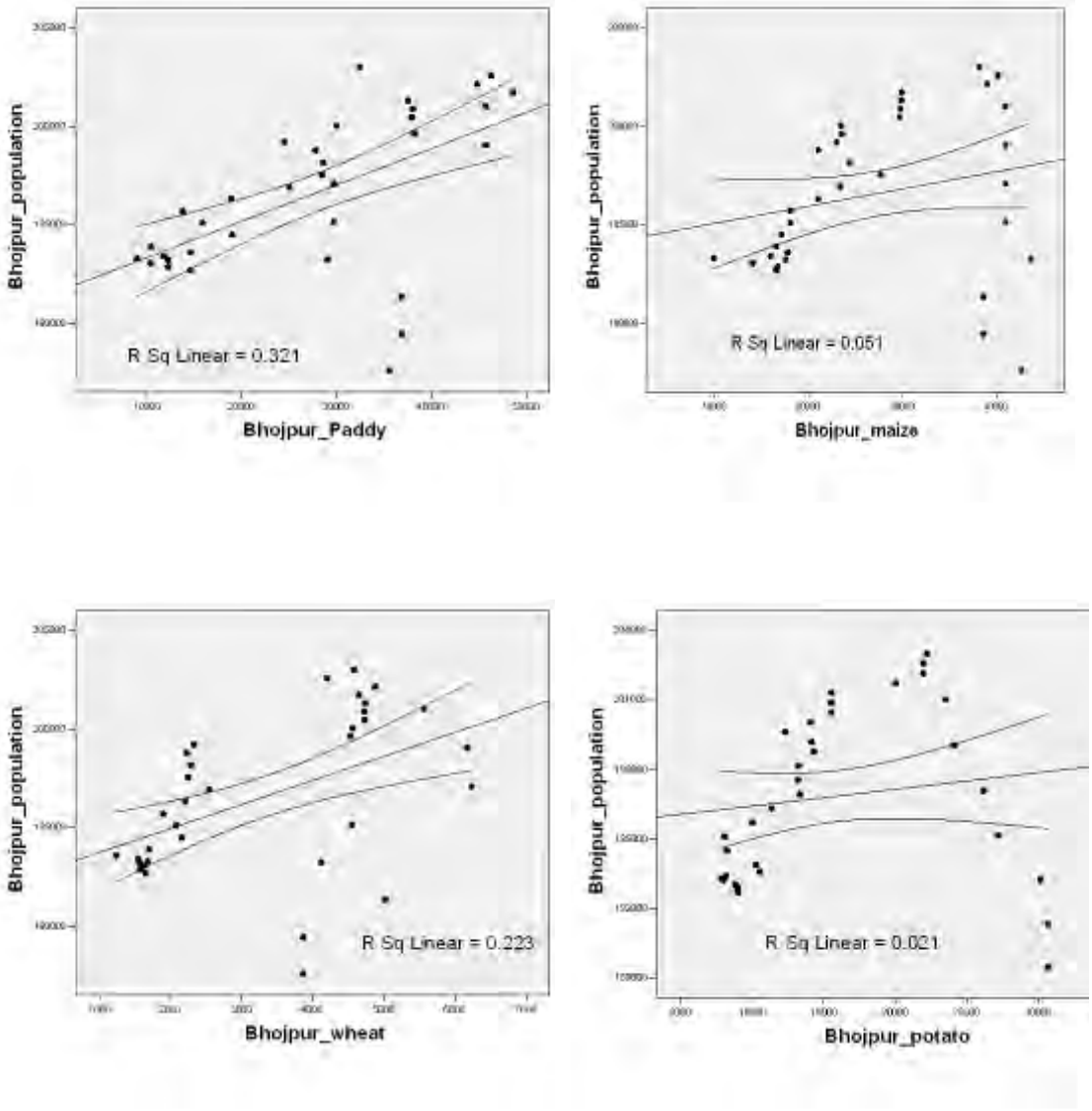


Figure 234: Population and Production of Crops (R^2), Dhankuta

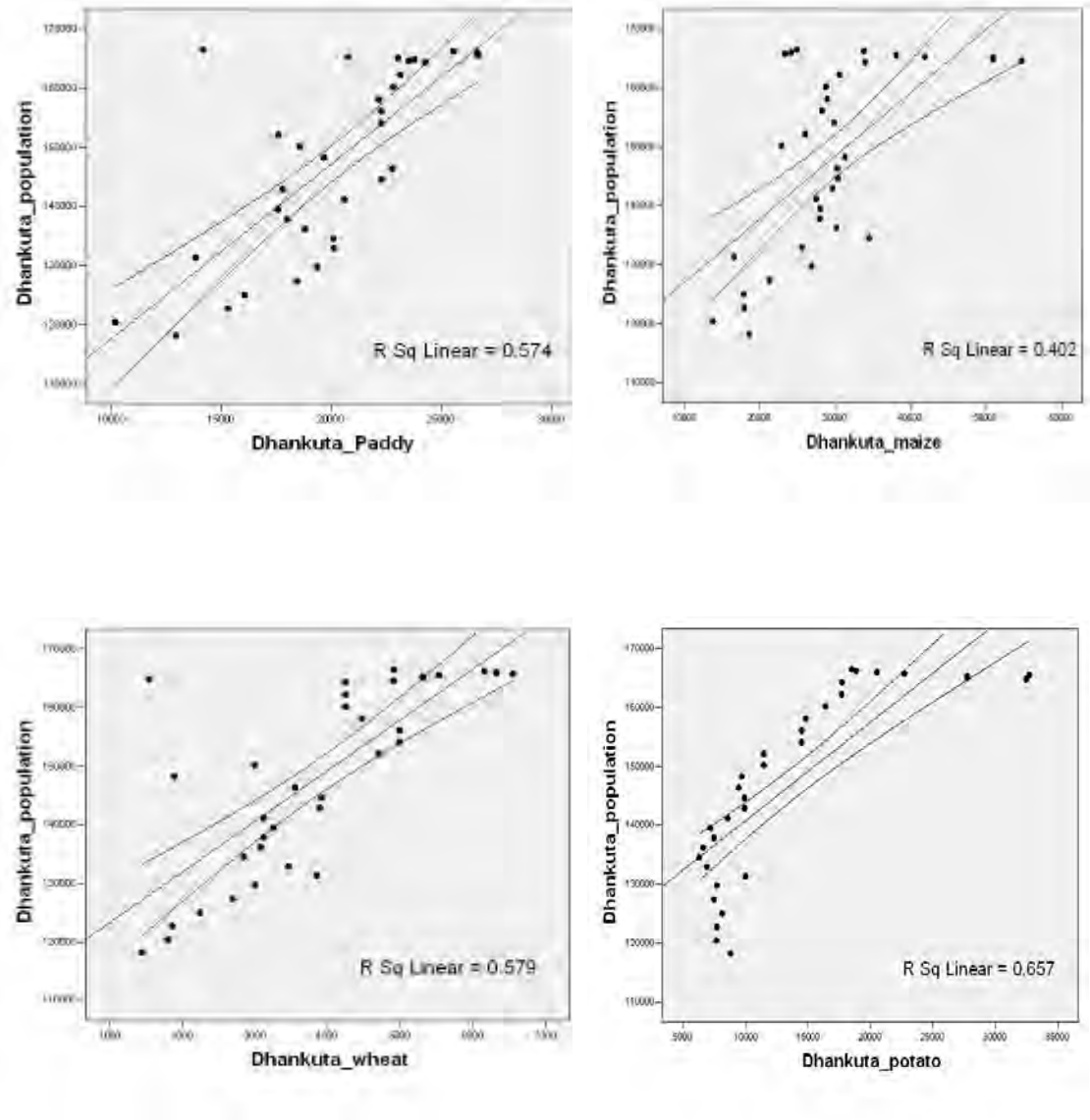
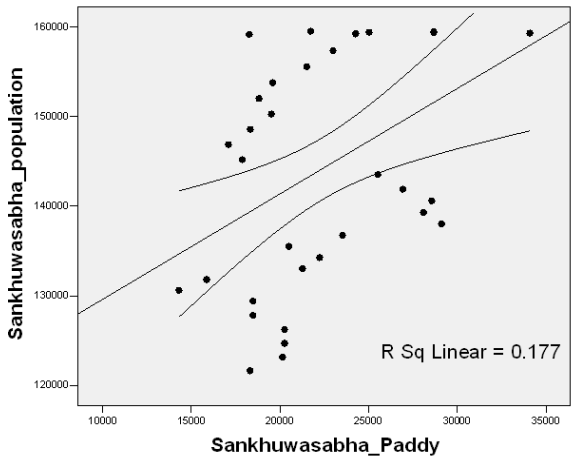
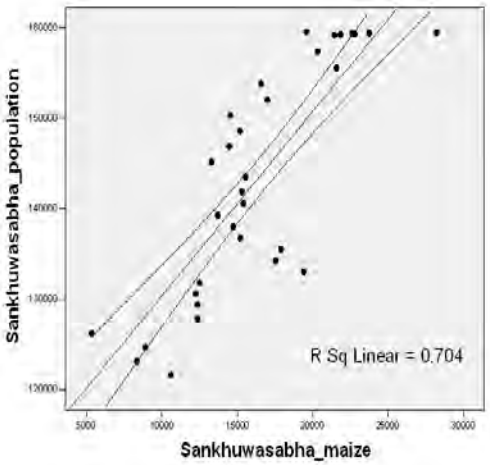
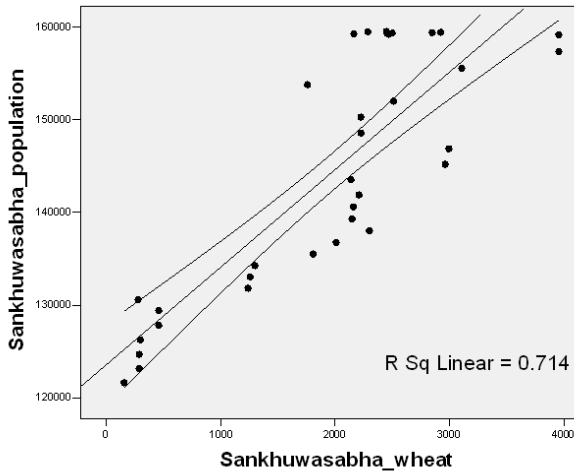


Figure 235: Population and Production of Crops (R^2), Sankhuwasabha







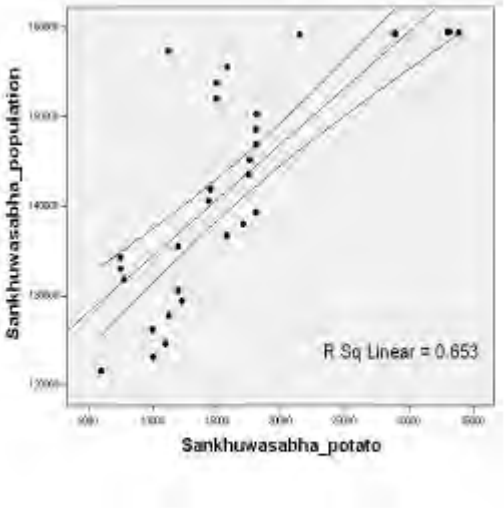
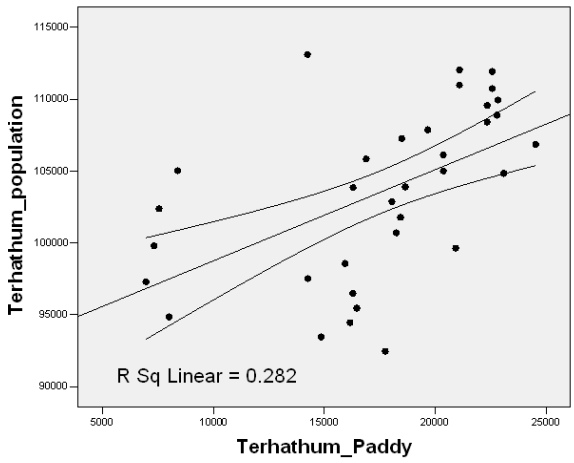
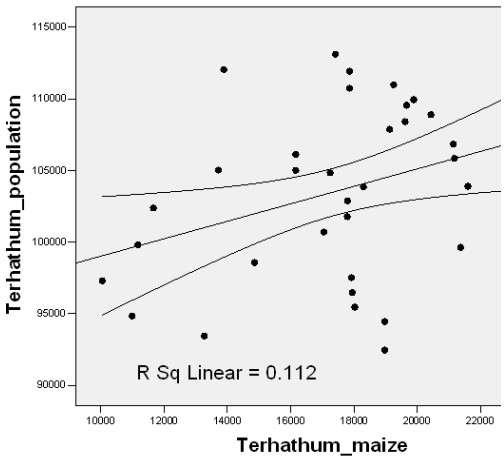
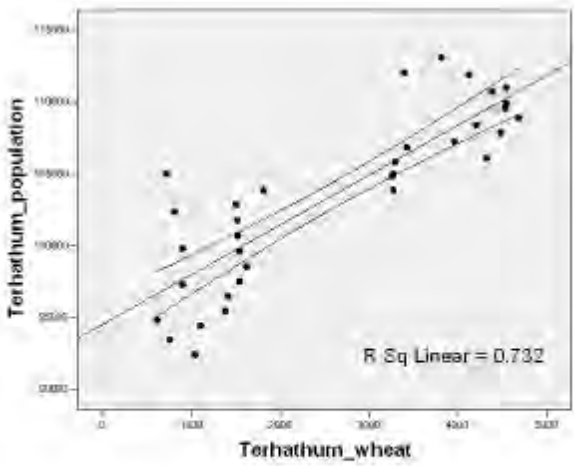


Figure 236: Population and Production of Crops (R^2), Terhathum







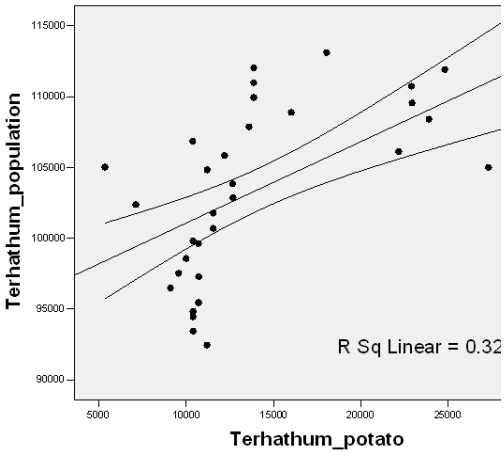
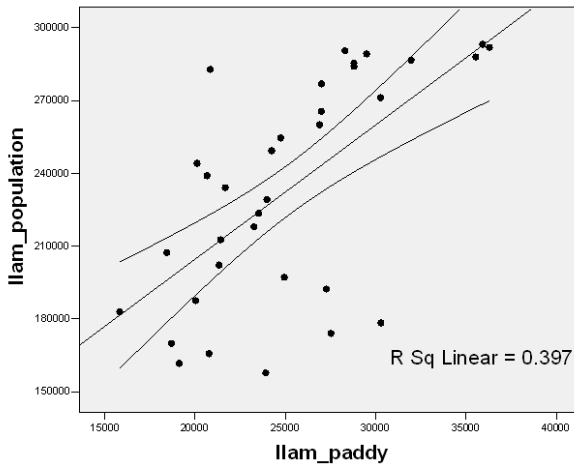
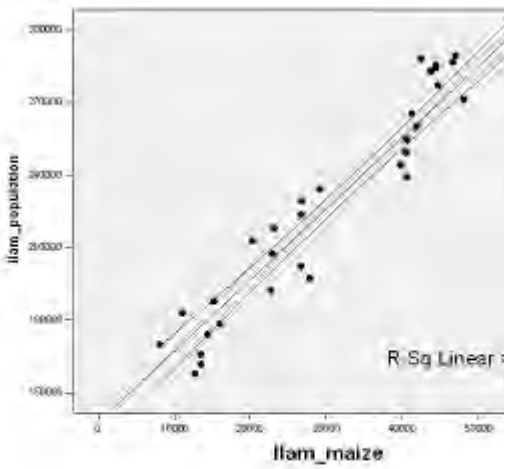
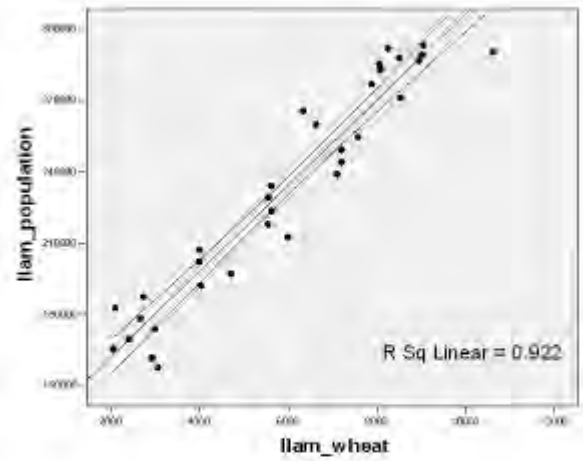


Figure 237: Population and Production of Crops (R^2), Ilam







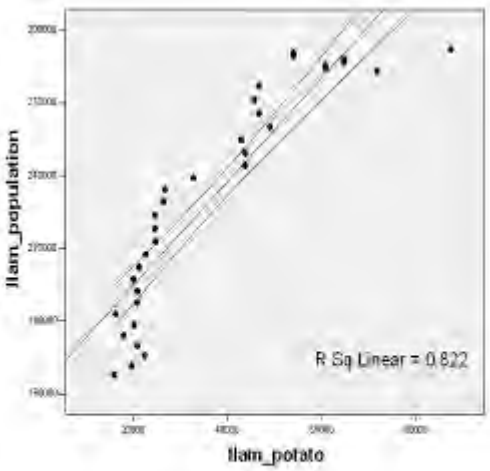
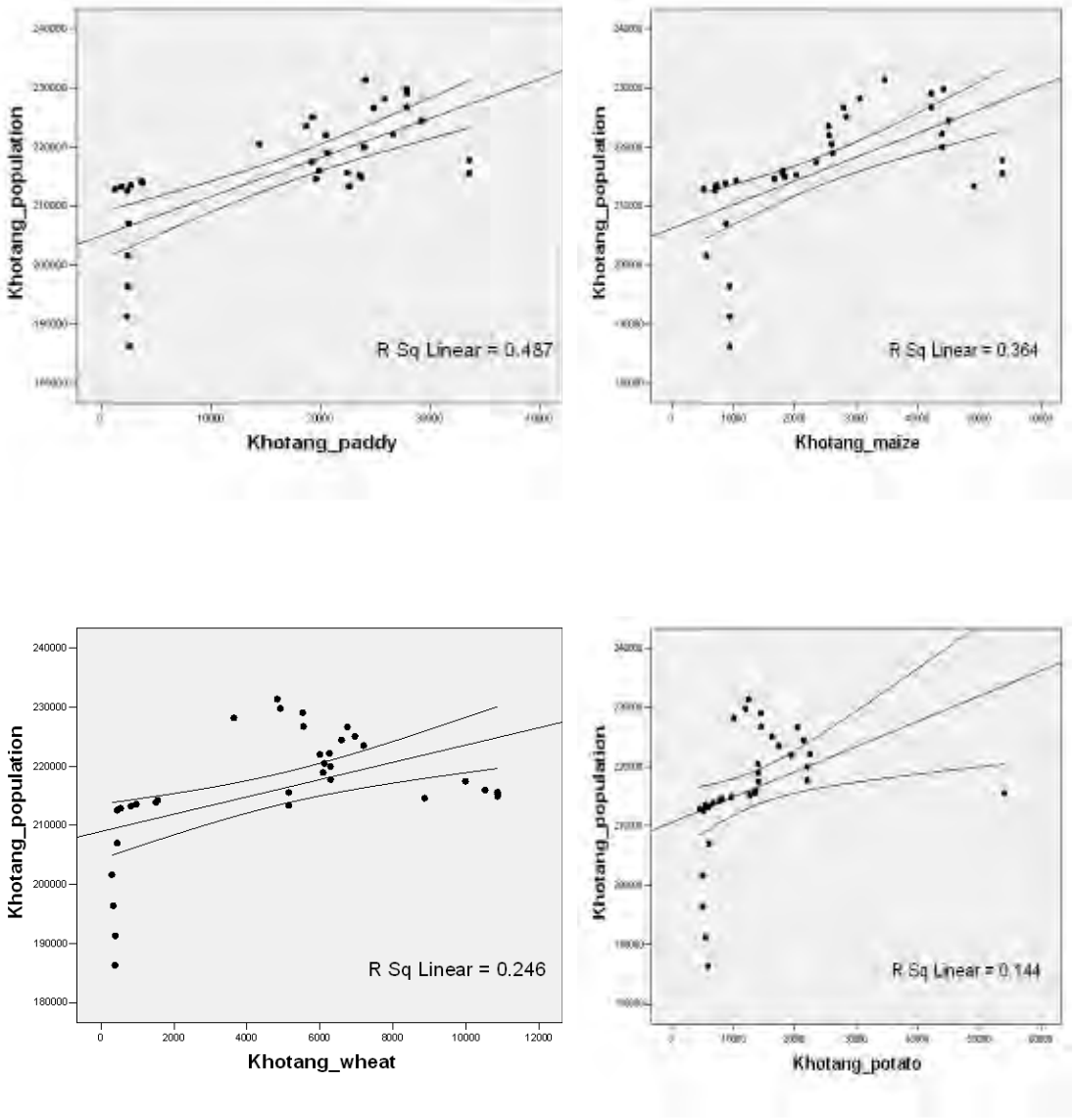


Figure 238: Population and Production of Crops (R^2), Khotang



3.7.30 Summary

The general features are that both area and production of the cereal crops (paddy, maize, wheat, millet and barley) and the cash crops (sugarcane, oilseeds and potato) considered here have shown a rising trend over the past 34 years since 1976. However, the changes in the trends vary among the crops, by district, and by year in the Koshi Hills. These patterns of change and trends are quite comparable with the districts of the Koshi Tarai and neighbouring two hill districts.

The yields of the cereal crops have shown rising, but with a rolling trend over the past 34 years in the Koshi Hills. These patterns are also comparable with those in other districts of the Koshi Tarai and neighbouring area. However two cereal crops such as millet and barley are less significant in terms of cropped area, production and yield. Among the cash crops, sugarcane and potato are very significant in terms of yield – rising trend in yield of both crops. The yield of oilseed has a constant trend.

Of the two high value crops, the area under cardamom has shown a rapidly increasing trend in the Koshi Hills, particularly since 1981. It was cultivated as a cash crop in Ilam before 1981, where the area under it now has largest among the districts under consideration. Conversely, the area under ginger is much larger and more important than that of cardamom in the Koshi Tarai districts.

Change in the production of agricultural crops, usually expressed in terms of intensification has a complex evolutionary process that involves several interacting drivers (Carswell, 1997). Few studies on the effects of different factors on changing agricultural production systems have been carried out in Nepal (Brown and Shrestha 2000; Nepal and Thapa 2009; Raut et al 2011).

Agricultural production system depends completely on monsoon rainfall pattern as well as on its timing and sufficiency across different parts of Nepal, including the Koshi Hills. Geographical scale is an important factor for precipitation variation. At the national level, the annual precipitation varies greatly within the country and throughout the year. Precipitation decreases from the east to the west and agricultural production is often better in the eastern parts than in the western parts of the country. A late or erratic monsoon quickly translates into crop losses and subsequent food insecurity (NPC 2010). Temperature generally decreases from the south to the north, so is the difference in practice of different crops over the hills and the mountains towards the north. Provision of adequate agricultural infrastructure and services such as irrigation, extension services, roads, etc across different parts is crucial to lessen the effects of the erratic monsoon. However, the geographic scale of the Koshi Hills is too small to explain the rainfall variation, though micro climatic variation may exist due to topographic variation.

Location of districts and their geographical features appear to be important in explaining agricultural systems in the Koshi Hills. Sankhuwasabha is a mountain district, located in the north while Bhojpur, Dhankuta and Terhathum are the Hill districts situated in the south. All have limited arable lands, which also are confined to the river valleys and tars and at lower foot-hills. To the north, come high mountains with cooler climate. By now, Dhankuta is a gateway district for other three districts, as it is connected with a road to the south, Tarai and then with other parts of the country. So, generally diffusion of innovation of agricultural crops, techniques etc first takes place in Dhankuta and then pass on through it to other districts.

For example, cardamom was initiated first in Ilam as a cash crop and then entered into Dhankuta. Personal interaction reveals that since the last few years, there has been a tendency to cultivate cardamom in the slash and burn farming areas, locally known as '*Khorea*' in the upper part of the Arun Valley, which were previously used by the native farmers – the Kulung Rais for growing staple crops such as maize and millet. A study by Raut et al (2011) indicates that the construction of a road network system between the watershed and the nearest markets enhanced the intensification process in agriculture in the central hills of Nepal. Further, the study revealed that the Government extension services and a proliferation of NGOs have contributed to agricultural development in Nepal. Since 1996, an NGO called CEAPRED (Centre for Environmental and Agricultural Policy Research, Extension & Development) with the financial assistance of the Royal Danish Embassy of Nepal supported to implement off-season vegetable production together with improved vegetable seeds to the farmers of different parts of the hills, including the Koshi Hills.

The linear relationships of production of four cereal crops with population based on correlation measure are better and stronger in case of the Koshi Hills and Koshi Tarai, compared to the individual districts. There exists a non-linear or curvilinear relationship between population growth and crop production in some cases, for example, potato and maize in Bhojpur. Among the districts, Ilam has on the whole better position in the correlation between population growth and crops production than other hill districts.

4 IDENTIFICATION OF GAPS AND FORMULATION OF HYPOTHESIS

4.1 Summary and Gaps

4.1.1 Environment, Natural Resources and Conservation

4.1.1.1 Summary

- Since 1957, GON has undertaken several efforts for planning and conservation of environmental resources and biological diversity for the benefit of the people in accordance with the principles of the Convention on Biological Diversity. The efforts however have been shifted adopting different policies and approaches during different years, the landscape conservation being the current one.
- The Koshi basin is the largest, as well as a significant river basin in Nepal for a wide variety of reasons, viz environment, economic and politic, for instance the construction plan of the largest hydroelectric project “Arun III”.

4.1.1.2 Makalu-Barun National Park

- Since set up in 1992, MBNP is being managed under the participation of local communities. By now, there are 88 forest user groups and 12 communities with 6,000 households getting benefits from its buffer zone. The Mountain Institute (TMI) since 1997 has contributed to improve the conservation of the park and tourism facilities in MBNP and Buffer Zone.
- MBNP is facing manifold challenges. There are struggles over different land uses and between livelihoods support and environmental protection. Since the last few decades, there has been continuous struggle of reconciling and saving threatened species and managing their habitats as still the people depend heavily on the products of the natural resources for grazing and animal fodder collection, fuel wood, timber collection, and the collection of medicinal and other economically valuable plants.
- *Tourism impacts* - According to the Nepal Tourism Board (NTB) records, a total of 1,000-1,500 visitors visited the Makalu-Barun National Park and Buffer Zone (though below 0.5% of the country’s tourist arrivals) and generated an estimated Rs. 12.5 million (US$275,000) annually for the rural economy. At the same time, the increased number of visitors over the decades has also resulted in increased environmental degradation of the fragile mountain area. A corridor of disturbance related to contemporary indigenous and tourist use (tree harvesting, burning, grazing) was observed along the main valley trail and impacts appeared to be growing in frequency and magnitude.

4.1.1.3 Climate Change and Its Impacts

- Studies have shown an increasing trend in observed precipitation data in the Koshi Basin - more than 0.3^0C per decade at elevations over 4000 m. The prediction is that there would be more impacts from global or regional climate change than local, such as the monsoon would most likely be weakened initially, leading to a dryer state in the short term due to the effects of land use changes and greater aerosol production from increasing industrialisation in the Indian subcontinent, followed by a more wet monsoon in the long term as the effects of increased CO_2 levels become increasingly significant.
- The glacier in the eastern Nepal Himalayas has shrunk by 26% in 21 years from 0.57km^2 in 1978 to 0.42km^2 in 1999. Over 30 years from 1970 to 2000, the glacier area was lost by 0.2% per year in the upper Tamor River basin. Such widespread glacial retreat can have two direct consequences such as changes in the hydrological regime and glacial lake outburst floods. The upper Koshi drainage basin alone, including the rivers of Arun, Tamor, Sunkoshi, Dudhkoshi, and Tamakoshi, has 13 out of 14 GLOFs recorded in the Nepal Himalaya. Several GLOF events recorded in the Koshi basin, for instance the first event occurred in the Dudh Koshi in 1977, followed by an even in the Bhotekoshi and the Sunkoshi Rivers in 1981 and with the most recent and significant GLOF event in terms of recorded damages occurred in 1985 that amounted to a loss of US $3 million. These events caused damages in hydropower plant, roads and bridges, main trails, cultivatable land and forest, and houses in both the headwaters and down water areas.

- The ongoing climate change and changes projected to occur are likely to have impacts on different sectors of Nepal, including the Koshi Hills. According to the ranking of all 75 districts of Nepal, based on the climate change vulnerability index, Dhankuta and Terhathum fall in low vulnerability group, whereas Bhojpur and Sankhuwasabha lie in moderate vulnerability. Among the other districts, Ilam and Morang lie in very low and low vulnerability groups, Sunsari in moderate vulnerability group and Khotang in high vulnerability group.
- *Agricultural Systems Impacts* - impact of climate change on water resources is likely to affect agricultural systems and food security. This is especially critical in the Koshi Hills where a high percentage of the population is dependent on agriculture for livelihoods, as only limited land has irrigation facilities. A study on the climate change impacts on agriculture in the Dudhkoshi sub basin depicts that, the effects of a much weaker monsoon were evident, particularly in relation to crop production in 2009. As a result of a 30% weaker monsoon, many rice terraces were left unplanted due to a lack of sufficient water, and many rice crops that were planted dried out and left unusable due to the delay in consistent rainfall.
- *Livelihood* - a recent study about the farmers' experience and observation in 2011 based on case studies of five villages of Terhathum district provides that monsoon rainfall has begun to show erratic behaviour; delayed onset of the monsoon over the last 10 years; increasing numbers of dry spells during the monsoon period damaging crops. In contrast to 2010, the monsoon rains started early in 2011. There has been a slight increase in average annual rainfall over the whole period, but a decrease over the last 20 years. Winter rain was highly variable, with almost none falling in the 2 years before the survey. Cash crops such as black cardamom, ginger, and broom grass, which were proliferated in Terhathum, reduced in harvests and thus income due to decrease in water availability.
- *Other social impacts* – there is likely to be an increasingly positive correlation between urban migration and the impacts of climate change, with more and more "climate refugees" moving to urban areas.
- *Land use change* - major land use categories of the Koshi Hills include arable land, forest, shrub, grassland and others. An increase in forest coverage between 1996 and 2000 can be attributed to the initiation of forest conservation programmes such as community forestry and leasehold forestry in the Koshi Hills in the late 1970s and 1980s. While a decrease in the forest coverage coincided with an increase in arable land between 1986 and 1996, the latter can also be attributed to the building of Dharan-Dhankuta road in the early 1980s and the introduction of the improved agriculture (off season vegetable farming) system in the area.

4.1.2 Gaps

- As in other parts of the hills of Nepal, has farming land abandonment increased in accordance with decreases in manure supplies from livestock, reduction of farm size and increased wildlife in the Koshi Hills.
- What are the effects of the conservation policies their impacts on economic activities, social interactions and development opportunities, as well as in communities and indigenous people whose livelihoods have traditionally been dependent on community-based resources.
- Contribution of mining of sands and gravels along the river banks to revenue generation of the local governments such as district, municipality and village development.
- Understanding in developing a process for systematic data collection on climate.
- Understanding of the most climate impact in the hills on the exact causes of migration and to what extent climate change will lead to future increases in urban population growth as farming becomes increasingly risky and untenable due to the effects of climate change.
- Implementation of plans and programmes and acts regarding nature conservation actually in the Makalu-Barun area as well as in KH area
- Implication of M-B project for sustainable eco-tourism
- Exploitation of medicinal plants with respect to local livelihoods, integration of human and natural systems

- Conflicting demands of land use , ecological conservation and resource protection and livelihoods support
- Impacts of the construction of Arun III hydroelectric dam the on the boundary of the park and an access road to the dam site

4.2 Agriculture and Livestock Sector

4.2.1 Summary

4.2.1.1 Focus on Increasing Agriculture Production

- The supports of the programmes such as PAC/KHARDEP during the 1970s and 1980s were focused on transforming "subsistence" or "traditional" farming systems into more productive systems through "transfer of technology" including the provision of extension services and Agriculture Service Centres. Efforts were primarily on boosting *cereal crops* production.
- Support to livestock development was focused on introducing new breeds (pigs, buffalos, cattle and poultry), improving nutrition and providing health services (e.g. KHARDEP, KHDP).
- PAC's focus was on initiating cash crops such as vegetable seed production, but the effort was not successful to catch on due to limited access to inputs, technological know-how and markets.
- Emphasis of the programmes like KOSEVEG, SSSP, and CEAPRED in the 1990s shifted towards initiation of *off-season vegetables, vegetable seeds*, *fruits* in the hills and *livestock and potato seeds* in the mountains, based on taking advantages of the agro-ecological zones vis-à-vis the Agriculture Perspective Plans. Their impact could be seen by increasing the cultivated area and production of off-season vegetables by twofold between 1993/04 and 2003/04.
- Donor supported programmes in the 2000s concentrated on increasing commercialisation by focusing on High Value Crops (e.g. Cardamom and Tea).
- Studies record that small farmers remained unwilling to fully transform into the cultivation of cash crops, but mostly concerned with food security and cereal production for household consumption.
- In certain locations primarily along the Hile-Basantapur road corridor, the production of off-season vegetables has increased along with incomes. The overall rise in production has been contributed by a number of factors like technical support and know-how provided by DADO, CEAPRED and KOSEVEG, large market of Dhankuta bazaar and market link with the large markets of lowlands by provided by Dharan-Dhankuta road.
- Efforts were focused enhancing forward and backward linkages within "value chains".

4.2.1.2 Pro-poor focus

- Most of the programmes disproportionately benefitted wealthier/large farmers in terms of access to extension services, inputs and credit.
- Specific programmes targeted towards small farmers (<0.5 ha) were lacking even though baseline studies identified the lack of land as the single most significant factor to limiting production and contributing towards poverty. Even though new programmes were initiated, poor farmers could not take advantage from them.
- Extension services of agriculture and livestock were mostly concentrated in relatively more accessible locations, to where the frequency of visits from the remote places declined sharply.

4.2.1.3 Gender

- Women were found to be ignored in the development programmes except in vegetable farming and seed production. Most of the participating farmers in the development programmes were men largely due to staff perception that they were the 'farmers' and 'decision makers'.

4.2.1.4 Yield of Cereal Crops

- Cultivation area of cereal crops rose rapidly between 197/77 and 2008/09. There was a twofold increase in cropped area of staple crops such as maize and paddy. While for wheat and millet, a threefold increase was recorded. Similar increase in the cultivated area was also seen in the

neighbouring districts of Ilam and Khotang, indicating a pattern of larger growth within the Eastern Hills.

- There was a threefold increase in winter wheat cultivation area
- The highest increase in cultivated area was recorded between 1980/81 and 1990/91 for all crops expect Barley, which rather saw a decrease in the cultivated area.
- Yield of the cereal crops however remained to be low within the Koshi Hills. The yields of all major cereal crops, such as paddy with 2186 kg/ha), maize with 1981 kg/ha) and wheat with 1893 kg/ha were lower than the national averages of 2907 kg/ha, 2205 kg/ha and 2225 kg/ha respectively. These yields of the Koshi Hills were also lower than those in Ilam
- There was an increase in the use of quantity inputs (improved seeds, fertilizers). Likewise, use of improved seeds has also increased for paddy with 19 times and for Maize with 3 times between 1991 and 2001.
- Use of fertilizer and manure has drastically increased for all crops between 1981 and 2001. But, majority still continued to use local manure. The highest use of chemical fertilizers was recorded for maize (30 fold increase); while use of chemical fertilizers for paddy and wheat increased by four and three folds respectively.

4.2.1.5 Cultivated Area and Production of Cash Crops

- Vegetable area under cultivation has doubled from 3,956 ha in 1993/94 to 6,826 ha in 2003/04 within the Koshi Hills. Production has also increased from 32,112 mt in 1993/94 to 69,464 mt in 2003/04; with the greatest increase of 202% recorded in Dhankuta.
- The average yields of 10,176 kg/ha of the cash crops are comparable with the national average of 10,952 kg/ha.

4.2.1.6 Food Security

- Food security from own production remains critical for most rural households. In Dhankuta the number of households with self-sufficiency from own production for less than 3 months increased from 17.76% in 2000 to 26.23% in 2009.

4.2.1.7 Livestock

- Livestock rearing continues to be an essential component of farming systems, with providing manure and draught power. The activity also acts as a coping mechanism in times of food insecurity as well as a source of income within the region.
- Number of livestock holdings has gradually increased from 88,248 holdings in 1981) to 108,105 holdings in 2001.

4.2.1.8 Questions and Gaps

- Magnitude of contribution of agriculture to GDP of the Koshi Hills
- Has there been a transition of subsistent farmers into more commercial productions? How has this changed amongst various ethnic groups?
- How has increased in cash crop production affected food security?
- How has access provided by roads affected farmers/agriculture production within the Koshi Hills?
- Have there been changes in traditional cultivation practices?
- Impact of short and long term migration on agriculture? (labour, capital, land)
- How has increased in out-flow migrant workers or absent population primarily men affected the agricultural production pattern?

4.3 Forestry Sector

4.3.1 Summary

Community forestry has been a key sector of support by the UK government since the 1980s because: (i) forests had been degrading rapidly in the country, and (ii) there was ample evidence that poorer rural household depended more than others on forest products for their livelihoods.

Early support of agencies such as KHARDEP focused on afforestation through plantations, nursery establishment and conservation of forests in the KHs before 1980s.

A growing focus on community forestry programmes (such as KHCP, NUKCFP) during the 1980s-1990s, which concentrated on: (i) strengthening government forestry department and staff capacity in the 'social' element of forestry, and (ii) mobilising communities into 'user groups' for the conservation and management of forests they have been using for their livelihoods.

There was focus on livelihoods and poverty alleviation through community forestry such as LFP) in the 2000s. An impact study carried out in 2008 identified that increased remittances accounted for 54% as contribution to the household income, while contribution of the community forestry and LFP activities accounted for 25%, general economic growth accounted for 12%, and other development efforts contributed the remaining 9%. At both times of baseline and impact evaluation remittances was the biggest source of income for the respondent households.

The status of the Community Forestry by 2011 in the four Koshi Hills districts was that:

115,000 ha of forests (7% of the total area) handed over to a total of 1,449 CFUGs (8% of total CFUGs in the country)

Almost 142,000 households (23% of total households) were members of those CFUGs;

Sankhuwasabha had the lowest CFUGs (263) whereas Bhojpur had the highest with 506 CFUGs. Dhankuta and Terhathum had 360 and 320 CFUGs respectively.

While compared the revenue from different types of forest products from the Hills with the Eastern Development Region in FY 2009/10, EDR contribution was 16% of total national revenue (NRs. 206,965) and 22% from Community Forests (NRs. 310, 74,698), the second highest in the country; only 2 and 4% from non-timber forest products (herbs and minor forest products) from the Eastern Hills.

4.3.2 Gaps

- *Benefits of community forestry* in terms of income and forest resource utilisation – how systematic and equitable has it been in terms of gender, caste/ethnicity and class?
- How far has the alienation of very poor and disadvantaged groups of people been due to lost opportunity costs in terms of wage labour and prolonged extension processes in community forestry? Are the benefits cost effective for them?
- How effective has the participation and decision making by women, very poor and marginalised groups been in local governance through forest user groups?
- What has been the balance of community forest interventions in terms of processes vs. benefits for the community, especially for the very poor and marginalised?
- What have been the direct and indirect benefits (revenue generation, sharing, tourism, etc) to the neighbouring communities and to Sankhuwasabha district from the establishment of the Makalu Barun National Park?
- Value for money in terms of the investments (government and donors) in community forestry and benefits in terms of revenue generation and poverty reduction in the KHs?

4.4 Health Sector

4.4.1 Leprosy/TB Eradication - Ongoing Since 1968

- The KHs – one of the geographical areas to benefit from vertical programmes in Leprosy and TB eradication since 1968 with a focus on case finding, TB clinics and Hostels for treatment (which were subsidised for the poor).
- BNMT evaluation in 2002 identified a limited knowledge of symptoms among TB patients and a continuing preference for local healers as first place for treatment.

4.4.2 Hill Drugs Scheme from 1969 Onwards in Various Forms

- Implemented since 1969 and highly popular due to increased access of drugs at low costs. An evaluation conducted in 2002 pointed to the need for continuing cost sharing (community-health centres), supervision and monitoring to ensure sustainability of this scheme.

4.4.3 KHARDEP Health Component (1980-85)

- A big emphasis on provision of infrastructure support – health post buildings, staff quarters, and a training centre for health staff – yet limited timely follow up with services and human resources by the government.

4.4.4 Improvements in Health

- The findings of an assessment study in 2003 suggested that knowledge, practice and coverage of health were poor in the communities and there were significant disparities based on class, caste, ethnicity and literacy levels.

4.4.5 Reduced Maternal Mortality and Morbidity

- Increased awareness and utilisation of maternal health services (from 22 to 66%), and establishment of regional maternal health network
- Deliveries attended by skilled workers increased from 5 to 30% but majority of women (over 82%) delivered at home and those using Clean Home Delivery Kits ranged from 36% in Sankhuwasabha to 66% in Terhathum.
- Activation of Health Facility Management Committees in all working VDCs initiating processes for local governance.

4.4.6 Rights Based Approaches to Health

- Piloting a rights-based approach to the demand and supply of health services focusing particularly on women, Dalits and ethnic minorities who have traditionally had problems with access to services and have also faced discrimination in accessing the services in the past.
- Reformulation of HFMC became more socially representative
- Increased knowledge of health problems but knowledge gap between those from disadvantaged groups and those who were not.

4.4.7 *A Sector Wide Approach* to Support Health Interventions Throughout the Country

4.4.7.1 Gaps

- How has the quality of and access to health services and drugs (government/private services) changed over the years and what have been the main contributing factors for the changes?
- How have attitudes of health personnel towards poor and marginalised groups changed over the years? And what can the changes be attributed to?

- What are the key health messages that have been most important to families – men, women, and children, elderly – and where are they coming from?
- What have been the detrimental factors in accessing to different types of health services, drugs, and information?
- Prevalence of programmes catering to adolescents and potential migrants – reproductive health knowledge and services for adolescents and youth – men and women?
- Participation in and perception about the effectiveness of Health Facility Management Committees in relation to local self governance and in relation to health as a basic right
- Effectiveness of health programmes being implemented by NGOs and CBOs.
- How much are households spending on health care and how has this changed over time? (Where they go, for whom and for what kinds of services?)
- Assessment of government and external development partners investments in health in the KHs and percentage of investments?
- Value for money in terms of impact of the investments?

4.5 Roads and Transport

4.5.1 Summary

- As elsewhere in other parts of Nepal, road impacts have a very short history in the Koshi Hills, as the construction of first road took place in the early 1980s.
- Roads and trail-bridge seem to have made profound positive economic impacts in their corridor region. The first and foremost is the emergence of market towns along the roads and their backward (collection of local produce) and forward (exporting and transhipment of local produce and import of household goods) linkages. It has caused to increase in the production of agricultural crops through adopting more intensive and commercialised production systems, as well as introduction of new and high value crops and expansion of cultivated land and therefore increase in average income of the farmers. Further, there has been significant reduction in the price of basic consumer goods.
- Roads have also provided a novel spatial-economic linkage for the growth of the road-bound market towns to deliver marketing, administrative, and other services particularly in the region. They have also helped to improve the traditional pattern of flow of goods and people and to cover extensive areas that were previously mostly localised in the areas.
- Impacts appear to have been variable on the communities as well as in the corridor or buffer areas by the nature of road such as all weather and fair weather, in addition to other factors such as availability of infrastructure/facilities (irrigation, improved seeds and fertilizer), geographical conditions (terrain, soils and climate), distribution of arable lands (marginal, small and large), etc.
- There has been changed or shifted in the existing transport system. *Dhākar* or *Bhariya* (porter) that had served portering of goods between market towns and villages for long has been either disappeared or replaced by motors and coolies. The mules and donkeys as local and traditional transport means have been replaced and moved to areas where now there is no motorable road.
- While the commercial importance and role of the roadsides market towns such as Hile, Sidhuwa, Basantpur, Leguwa, etc has been enlarged, the role and importance of some of the traditional towns have declined sharply due to bypassing them by new roads or emergence of intervening centres, or link with larger towns, such as Taksar in the case of Bhojpur, Chainpur in Sankhuwasabha (due mainly to shifting of district headquarters services to Khandbari), etc. More importantly, the local handicraft and traditional artesian products have been disappeared due to penetration of cheaper manufactured goods in the local markets.
- On social front, different kinds of people of the surrounding areas have moved to the road side for building new settlements, or establishing business enterprises. Access to health and school and other facilities has increased. Awareness of the innovative ideas, technology, banking or politics has been raised.

- One of the negative effects of the construction of the roads is the morbidity and death of the people due to motor accidents along the roads. Though this is a human error, the occurrence and magnitude of the accidents can be minimised due to efficient and sincere road and vehicular traffic management, and awareness of the road users towards the traffic system. Landslides are a general cause of the construction of roads along the fragile hill slopes. Further, environmental degradation such as forest encroachment and loss of prime arable lands have also occurred due to the construction of roads, though the main objective of the RAP is with the environment friendly road provision.

4.5.2 Gaps

- Dearth of research on differential impacts of roads on different social groups and categories, employment and migration
- Magnitude of the changes in agricultural output and diversification that can be directly attributed to the road building as opposed to general changes, including growth of local economy and increase in remittances
- Loss of traditional handicrafts and other value added products in economic terms and employment due to import of cheaper manufactured goods
- Alternative means to provide economic opportunity rather than road building, e.g. develop small scale marketing opportunities within the local economy, or increase in investment in healthcare, education, given the vast amount of investment being put into transport infrastructure

4.6 Migration of Population

4.6.1 Summary

- Magnitude of people migrating out has been increased in the KH as a whole, for instance with 3% in 1991 to 8% in 2001; with differentials such as about 10% for Terhathum and 8% for Sankhuwasabha; similar pattern appears to have existed in neighbouring districts
- Change in destinations for out-migration, traditionally to India, and now to Gulf States
- Those migrated out were primarily males, with 94% male out-migrated

4.6.2 Gaps

- Inflow of remittances and its repercussions on different social and economic groups
- Contribution of magnitude of remittance to GDP

4.7 Cumulative Change: District Data Analysis

- District data sources include population censuses from 1971 to 2001 in general and from 1991 to 2001 for all kinds of demographic aspects under consideration; national census of agriculture is available for four decades -1971, 1981, 1991 and 2001; time series data on major crops from 1976 to 2009
- Trend analysis has been performed to see the changes in population, agriculture, education, and health
- Correlation analysis has been carried out to see linear relationship of crop production with population; population for each year from 1976 to 2009 was estimated based on growth rates of existing censuses; production of crops & rainfall pattern

4.7.1 Gaps

- Use of NLSS data only at regional level; but not at the district level analysis due to inadequate sample size
- Absence of data on certain crops in some years
- Correlation of production of crops with out-migrants, use of fertilizers, etc

5 GEOGRAPHIC INFORMATION SYSTEMS MAPPING OUTPUTS: GEOGRAPHIC INFORMATION SYSTEM (GIS) FOR SOCIOECONOMIC IMPACTS AND CHANGE

5.1 Review of Map Data

In Nepal, the Survey Department is the only government authorised agency to deal with both analogue and digital data covering the entire country, as well as to make them available for use to the public. The Survey Department has for the first time published analogue map, known as 1:1 mile (63360 inches) colour toposheet in 1954, and then followed by two series of other analogue and digital map sheets at the national level such as LRMP 1986 (Land Resources Mapping Project with three datasets viz land capability, land utilisation, land suitability at the scale of 1:50 000), toposheets 1996 (1: 25 000 and 1: 50 000). The 1986 data sets have information primarily on land uses, while the 1996 data sets include *nine* layers such as land use and land cover, administrative boundaries (VDC, Municipality, District, National), hydrography, contour, transportation, building-footprints, utilities/facilities (selected), designated areas (national parks and protected areas), and place names. There are altogether 675 toposheets covering entire country and a total of 64 data sheets cover the entire Koshi zone (6 districts). Under this department the National Geographic Information Infrastructure Programme has the repository of those analogue and digital data sets.

In addition, there are several agencies that deal with the map data, but the major ones are National Planning Commission (district level data in different time series), Central Department of Geography/ Tribhuvan University (district level land use data), MENRIS/International Centre for Integrated Mountain Development (satellite data), Department of Roads (SRN data), Department of Water Supply and Sewerage (Community based rural water supply systems), Department of Forest (2000 satellite data), Department of National Parks and Wildlife Conservation (national parks), Department of Health Services (health information system), Higher Secondary Education (school location), Poverty Alleviation Fund (poverty baseline data), Janajati Empowerment Project/Federation of Indigenous Nationalities (24 highly marginalised Janajatis baseline data), and so on. However, the data available from these agencies are project and topic specific.

Here for our purpose, the 1986 map data has been considered as the baseline data, which is available for across the country, since there is no comprehensive map data on land use and others related to the impact studies before that year. Again there is no comprehensive national map data for land use analysis after the year 1996. The LANDSAT 2010 data[344] will also be used for land use and land use change as the most recently available data.

5.2 GIS Mapping Method

GIS based spatial approach is being used to analyse the differential impacts that vary from one place to another place[345] due to several locational attributes such as physical, social, economic, cultural, and institutional factors. These attributes allow places to interact each other, because places act as complementarity in the flows of goods, services, people, capital, and information. This approach believes that each place is unique. Thus GIS based spatial approach is being used to investigate variations in both quantitative and qualitative terms.

The primary objective of the use of spatial analysis is to gather data available on land use and land cover of the Koshi Hills area and determine the locations of change of major land use categories between 1986[346], 1996 and 2010. These three data points have been taken as digital maps for all four

[344] Previously, it was proposed to use the new RapidEye 5m MSS imagery covering entire Nepal (2010/2011 March/April) for our purpose, but due to some practical reason, it has to be replaced by LANDSAT imagery.

[345] The place as referred to location is used to include settlement locality, village, and town, or areas (village development committee or district, or region).

[346] The 1986 map data will be considered as the baseline data, as no comprehensive map data on land use like this is available for across the country before that year.

study districts are presently only available for these three time periods. Here the assumption is that the changes on the land uses over time (three years considered here) will be varied. This variation of change in land uses, at different locations, will then be used to provide a basis for the selection of sample sites for the study of differential impacts, as well as to analyse the changes in land uses with respect to the factors of development intervention between those two years.

Here, maps are a best means to the study land use changes.[347] Maps contain land mapping units and, each map unit refers to an area that possesses a degree of homogeneity in physical characteristics. Map scales are an important issue for data generation and analysis, particularly if the maps to be used are on different scales. Mapping analysis can also be used as a best feasible option for impact assessment in the situation where there is lack of a particular methodological framework for impact assessment to comprehensively capture the complex relationships between change in land use due to development interventions and the resulting change in social and economic systems. Map data of different years are often used to identify the differences in land use by location and over time.

GIS mapping analysis is being used primarily for two purposes: one for assessing the development interventions as drivers of change of land uses, as land use change can be considered as a proxy indicator of the development impacts and the other for determination of areas of different intensity of change in land uses that also comprise villages or communities to be selected as sample sites for the reality check approach. The GIS methodology for land use change comprises the processes, such as preparation of spatial digital data, processing, outputs, and analysis of major land uses and their change over time and by location, which are described below.

5.3 GIS Mapping Process

The following steps have been undertaken to produce layouts and maps (draft form) by the GIS mapping procedures. Upon completion of the field verification final map outputs will be produced (described below in separate unit).

- The Koshi Hills Region comprises four districts, viz Bhojpur, Dhankuta, Sankhuwasabha, and Terhathum. Two sets of GIS mapping layouts or maps will be produced – one for each of four individual districts, and the other for the Koshi Hills region as a whole.
- All required map sheets (analogue and available digital) has been procured from the reliable sources for dates 1986, 1996 and recent digital map – Landsat Imagery 2010. There were altogether 64 data sheets to cover the Koshi hills.

[347] Land use is dynamic and, land use change is the only physical phenomenon being visualised over the periods of time, due to development interventions such as irrigation, roads, extension services, forestry, pasture, or from direct decisions by human concerning land use, or natural calamities such as earthquakes, landslides, soil erosion, siltation, etc. Analysing the impact of development interventions on the land use change requires methodologies that integrate understanding of the processes affected by those drivers. This analysis is fundamental for understanding the drivers of land use change in different areas. Development programmes affect land use, which generally differs across the regions. For example, the area for agricultural use may be increased as response to the agriculture development policies. There may be spatial shifts of different land use categories and increases in intensified agriculture areas can be attributed to the location of road access or market town or service centre. Arable land mostly occupies good agricultural soils, which are often better than the soils occupied by grassland. In general, these are heterogeneous landscapes with a mosaic of arable land, patches of natural vegetation, grassland, agro-biodiversity, built-ups, etc. Increase in production and productivity of agricultural crops often occurs due to the provision of infrastructure and services such as irrigation, roads and bridges, improved seeds, fertilizer, extension services, forestry, market, etc. Studies are available on the processes of change in the use of land in the rural areas and their links to external driving forces, such as the common agricultural policy in developed European countries (Lourenço et al 1997) or the effects of specific social, economic, and demographic changes over time on the use of land in Nepal (Axinn and Ghimire, 2011).

- Available map scales or map resolutions for the land use mapping were toposheets of 1996 at 1: 25 000 and 50 000 and LRMP land utilisation data of 1986 at 1: 50 000. The base map scale was 1: 25 000 and all data has been adjusted to this scale.
- While the Upon procuring of digital (1996), analogue (1986) and Landsat Imagery, the GIS data transformation processes has been included scanning, geo-referencing, digitising, editing, geometric correction, topology building, edge matching, appending, and integration of attribute data related to land use.
- LRMP land utilisation data of 1986 at 1: 50 000 has information on only the land use, and no data on others (services and infrastructure), whereas toposheets of 1996 at 1: 25 000 and 50 000 has different thematic layers viz public services, cultural and religious places, settlements, roads and trails, drainage, land uses, administration boundary etc.
- At the service centre maps, public services as well as market centres and its size and road network were available.
- The location and features has been checking at Toposheets 1996 and service centre maps by GPS at various locations. LRMP data has been verified by the checklist with above 50 years aged people.
- Road data of 2005 and 2010 has been taken from road statistical year books and transformed in GIS format.
- Integration of spatial data and other related attribute data has been based on standard coding system and Nepal standard projection system.
- The digital data has been built on the ArcGIS format.
- The GIS analysis and outputs have been based on the followings:
  - Overlaying function of digital data between a pair of years: 1986 and 1996 and 1996 and 2010
  - Producing layouts of land use coverage for two slots years: 1986-1996 and 1996-2010, which require generating three land use coverage or maps of three different years: 1986, 1996, and 2010.
  - Major land use categories comprise cultivated land (both lowland and slopping terraces), forests, pasture, shrub, water bodies and others, as well as VDC boundary.
  - Land use change in the land use categories has been defined at four levels according to the change percentage, such as 25% and below, 26 – 50, 51 – 75 and above 75%, based on the mappable polygon sizes (mapping units).
  - Population distribution map has been prepared by dot method where one dot represents 50 persons, based on total population of VDC and location of dot has been carefully places avoiding river, forest, rocky and snow area.

Table 90: Draft Outputs of GIS Thematic Layers

Thematic layers	Bhojpur	Dhankuta	Sankhuwasabha	Terhathum
District level				
Agriculture change	√	√	√	√
Forest change	√	√	√	√
Grass change	√	√	√	√
Shrub change	√	√	√	√
All changes	√	√	√	√
Land use 86	√	√	√	√
Land use 96	√	√	√	√
Religious monuments	√	√	√	√
Rivers	√	√	√	√
Services	√	√	√	√
VDC	√	√	√	√
Total completed layouts	11	11	11	11
Koshi Hills region				
Location of Koshi Hills Relief Rivers Roads and trails 1995 Roads and trails 2010 Population distribution 2011	√ √ √ √ √ √			

Notes: Map layers to be made:

Other layers such as settlements or population (major) and updated 2010 land use map

Overlay analysis between roads and services, land uses, flows of goods, etc.

5.4 Field Verification

The field visit was made by the GIS team (a GIS specialist, an assistant, and several local field assistants) to verify and update the GIS produced draft map layouts of all four districts of the Koshi Hills for about three weeks from 24th January – 10th February 2012. This was accompanied by the colour toposheets (1:25 000 & 1:50 000) and service centre maps (1:250 000), with basic information of infrastructures and public services, cultural and religious places, location of markets, settlements, roads and trails, drainage, land uses, administration boundary etc. GPS was also used for the verification. In most cases, roads mainly of earth types were updated on the maps. The following observed features will be added on the map wherever feasible or mappable, and then final maps will be produced.

5.4.1 Gathering of Secondary Information

- The publications and digital data whatever formats and forms available were collected from the district government offices such as DDC, DAO, municipality, Education, Forest, Livestock, Road, Health, and some non-government offices.
- The map outputs have been corrected and updated through discussions with the relevant district office personnel and key informants like teachers, businessman, local leaders, etc.

5.4.2 Field Observation

5.4.2.1 Dhankuta:

- Majority of the forest cover changes seen at some places in 1996 maps were verified and found due to deforestation, particularly for the collection of fodder, firewood, and grass and timber for house construction. Most of those deforested areas now are found to be converted gradually into new forest managed by communities.
- Land abandonment is seen mostly at marginal area of major cultivated patches. It is because of heavy outmigration of agriculture labour from the villages surrounding those areas.

5.4.2.2 Terhathum:

- In Terhathum, too, majority of the forest cover changes seen in some places in 1996 were due to deforestation specifically for fodder, firewood, grass and Timber for construction and now they appear to be converted into new forest protected by the communities.
- Heavy deforestation along the Tamor River in 1996 was verified, as due to the cutting of trees for timber for building construction mainly in Jirikhimti and Myaglung, as well as firewood in the village. Now these deforested areas have been converted into the forest by the community forest groups.
- Some of the cultivated land has been converted into built ups in Jirikhimti, Lasune, and Myaglung. Land abandonment has also been observed basically in the marginal area of cultivated land.
- Some of the cultivated lands have been converted into grassland and cardamom plantation, particularly along the marginal areas along the road from Lasune to Jirikhimti.

5.4.2.3 Sankhuwasabha:

- The deforested areas in the upper parts of Khandbari in Chhyangkuti and Diding VDC area seen in 1996 have now been converted into community managed forests.
- Cultivated land has been converted into built up area in Mudhesanischare, Khandbari, Kharang, and Num due to rapid urban expansion.

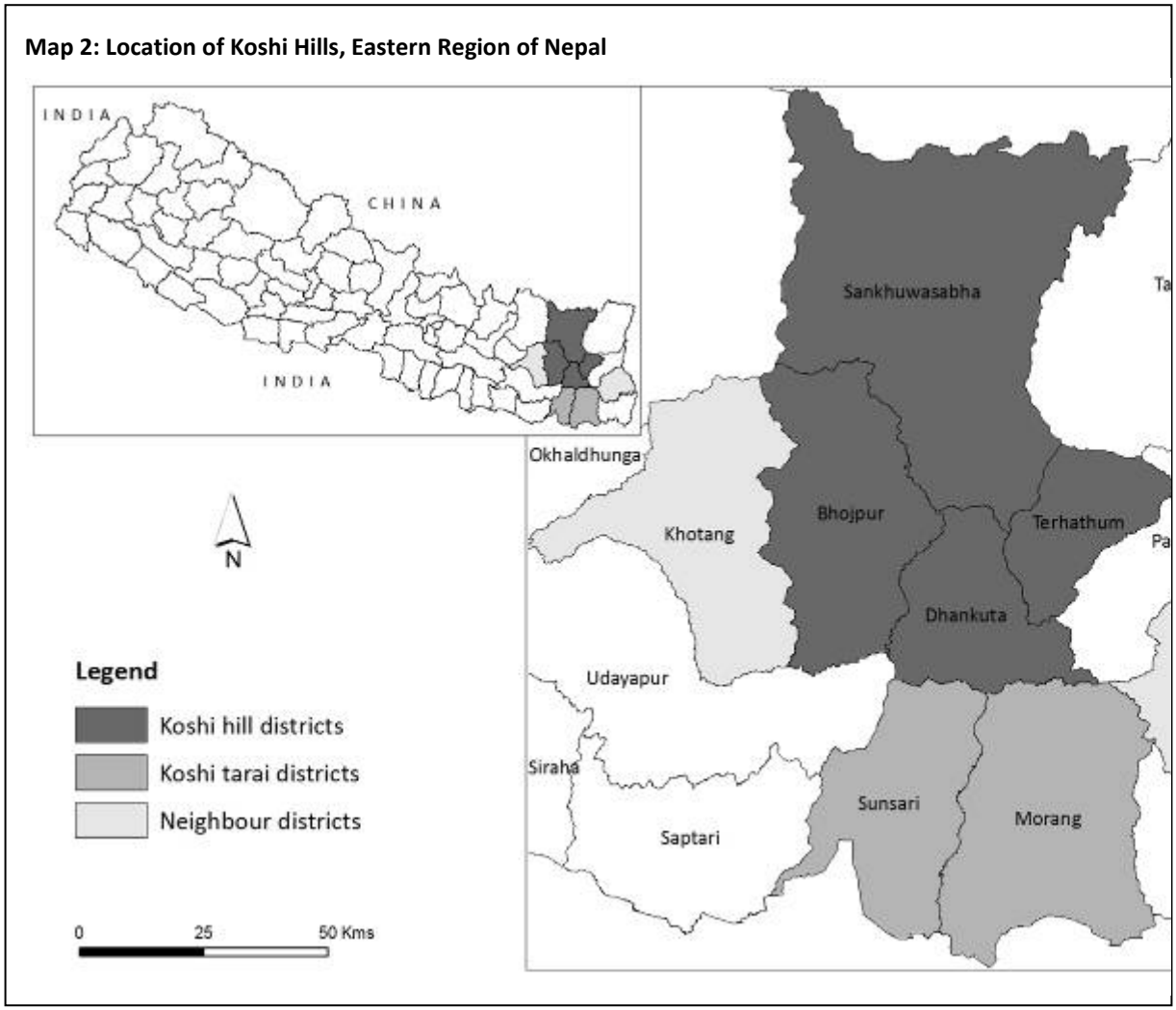
5.4.2.4 Bhojpur:

- Deforested land in Suntale area has now been converted into Sal forest.
- Many previously cultivated and later abandoned fields found to have converted into forest and grassland on sides along the road from Leguwa to Tiwari Bhanjyang.
- Deforested area of lower Taksar has now been converted into community forest.
- Some cultivated land has been converted into built up area in Deurali and Panitank areas of Bhojpur locality.
- Cultivated land field now abandoned are seen in several, including even the lower middle hill like Dingla, etc. Even irrigated paddy fields found to have abandoned in some places.

5.1 GIS Maps

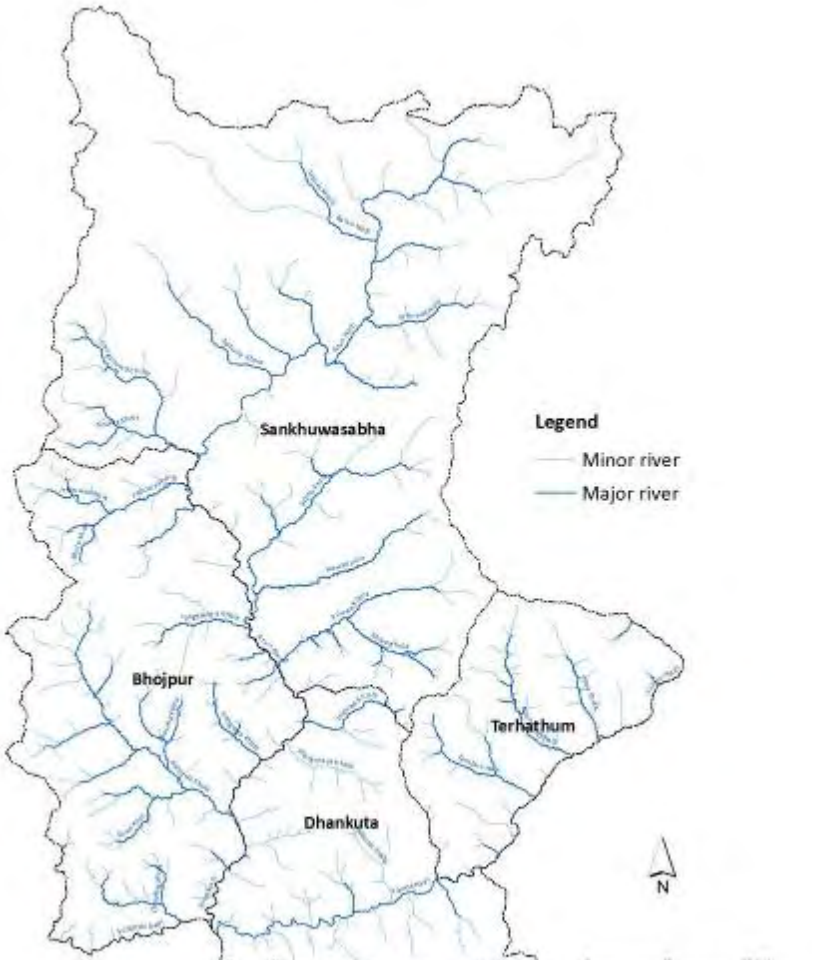
5.1.1 Koshi Hills

Map 2: Location of Koshi Hills, Eastern Region of Nepal

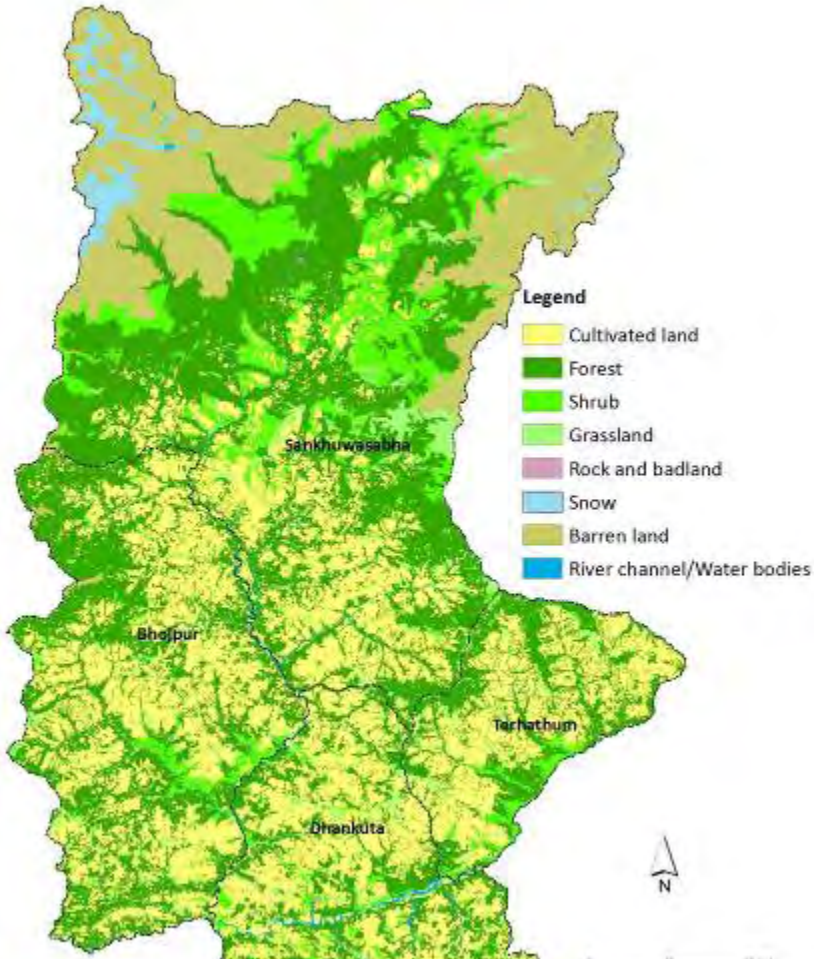


Map 3: Topography, Koshi Hills

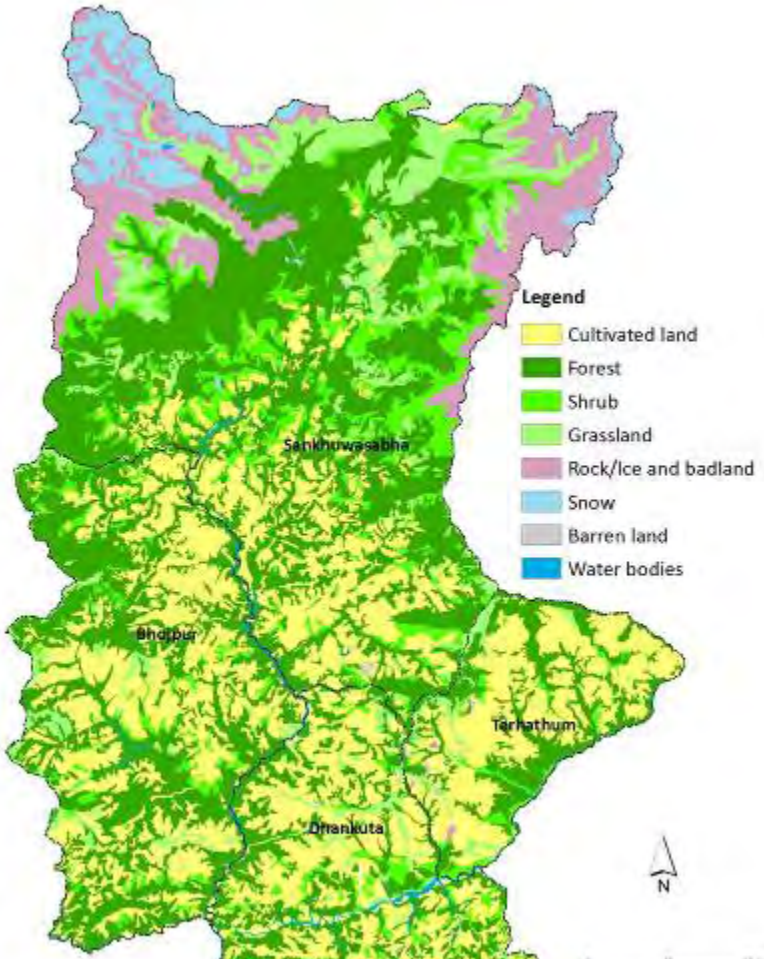
Map 4: Drainage Pattern, Koshi Hills



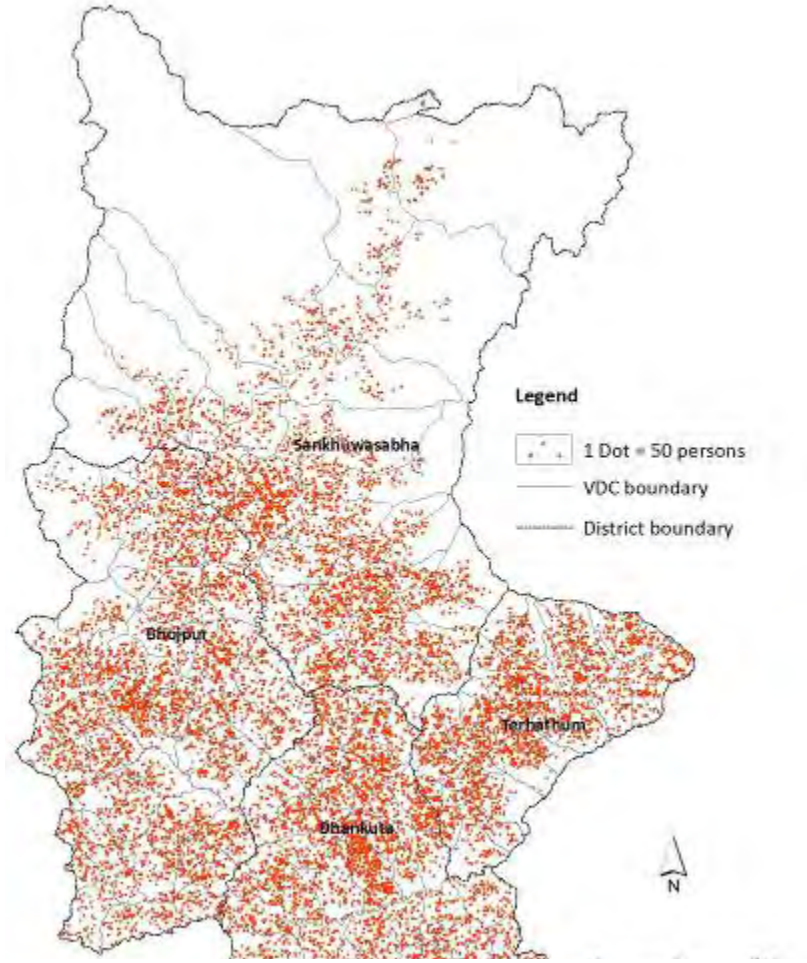
Map 5: Land use, Koshi Hills, 1996



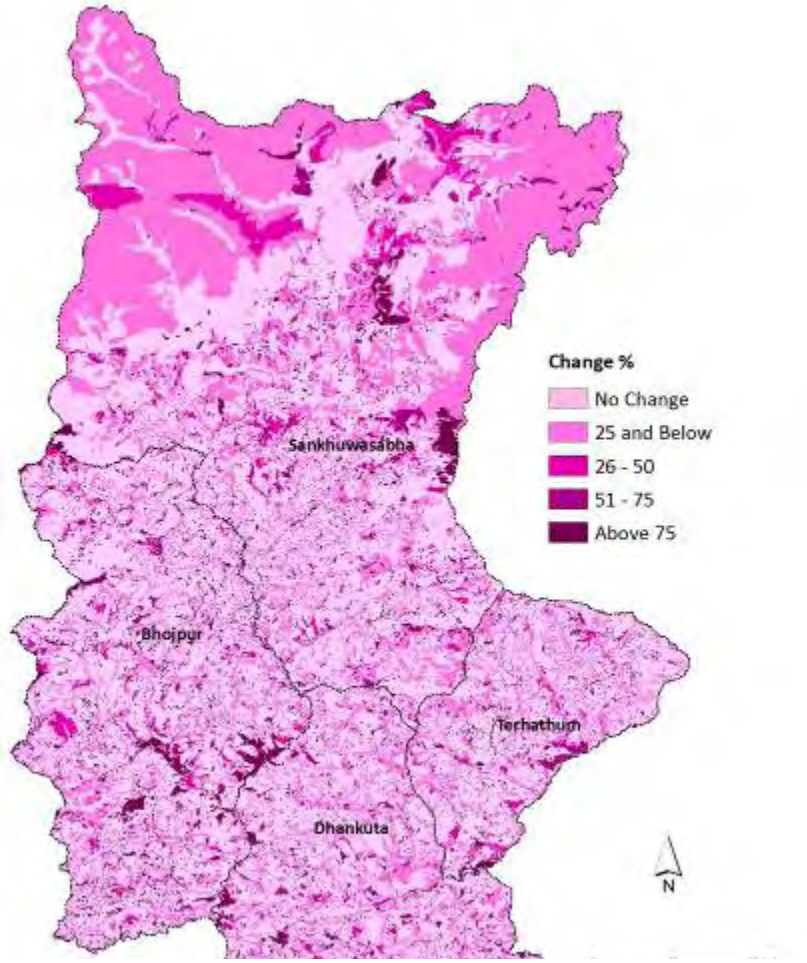
Map 6: Land use, Koshi Hills, 1986



Map 7: Population Distribution, Koshi Hills, 2001



Map 8: Land use Change, 1986-1996, Koshi Hills



Map 9: Road Network, Koshi Hills, 2010

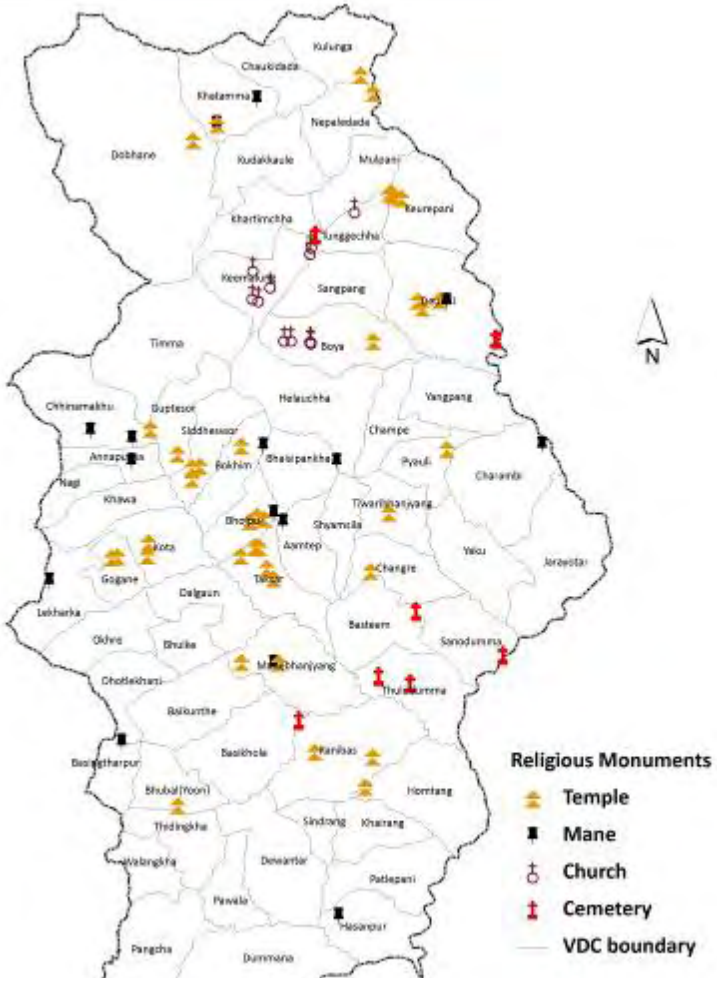
Map 10: Road Network, Koshi Hills, 1995

5.1.2 Bhojpur District

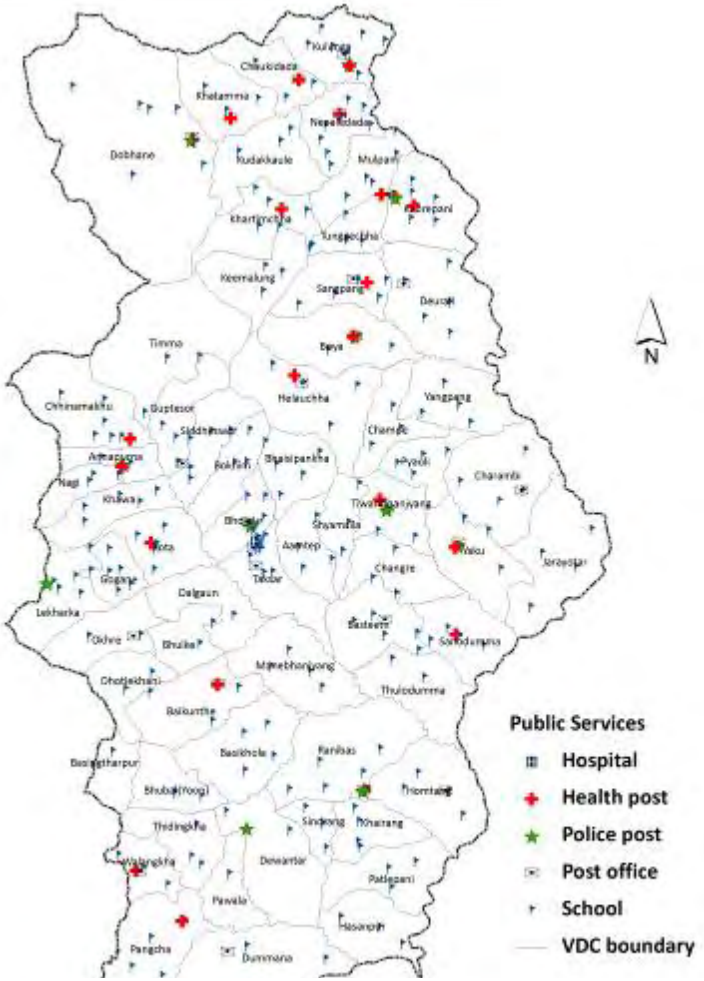
Map 11: Drainage Network, Bhojpur District

Map 12: VDC Boundary, Bhojpur District

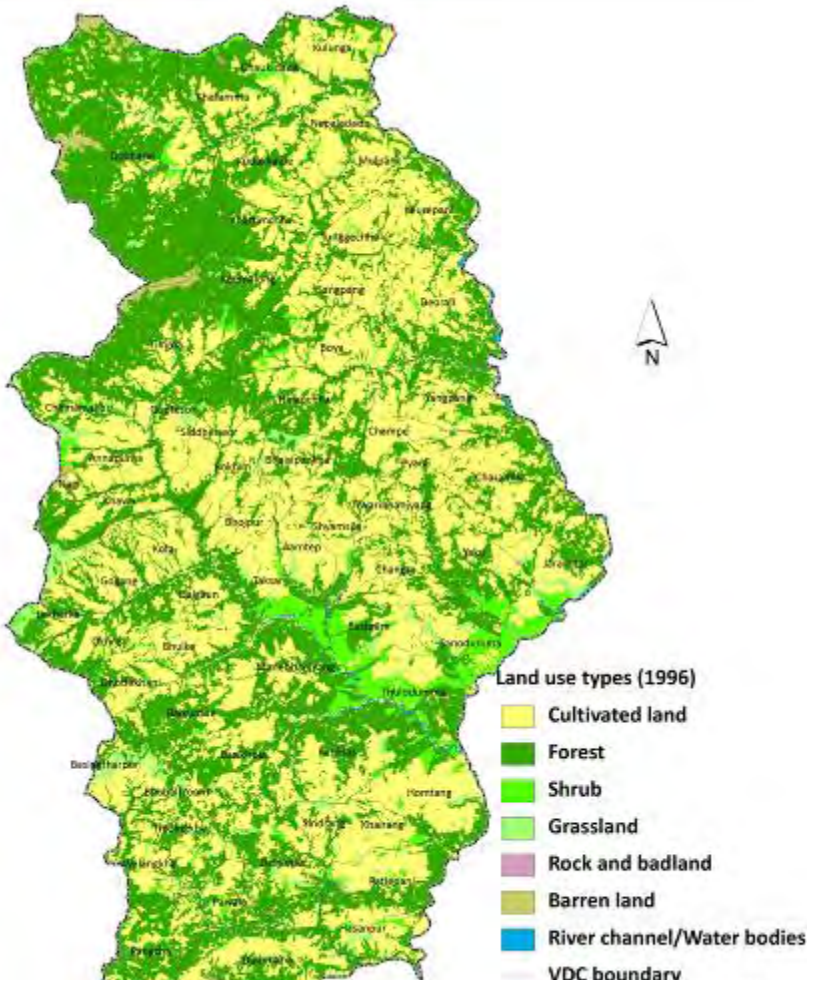
Map 13: Location of religious monuments



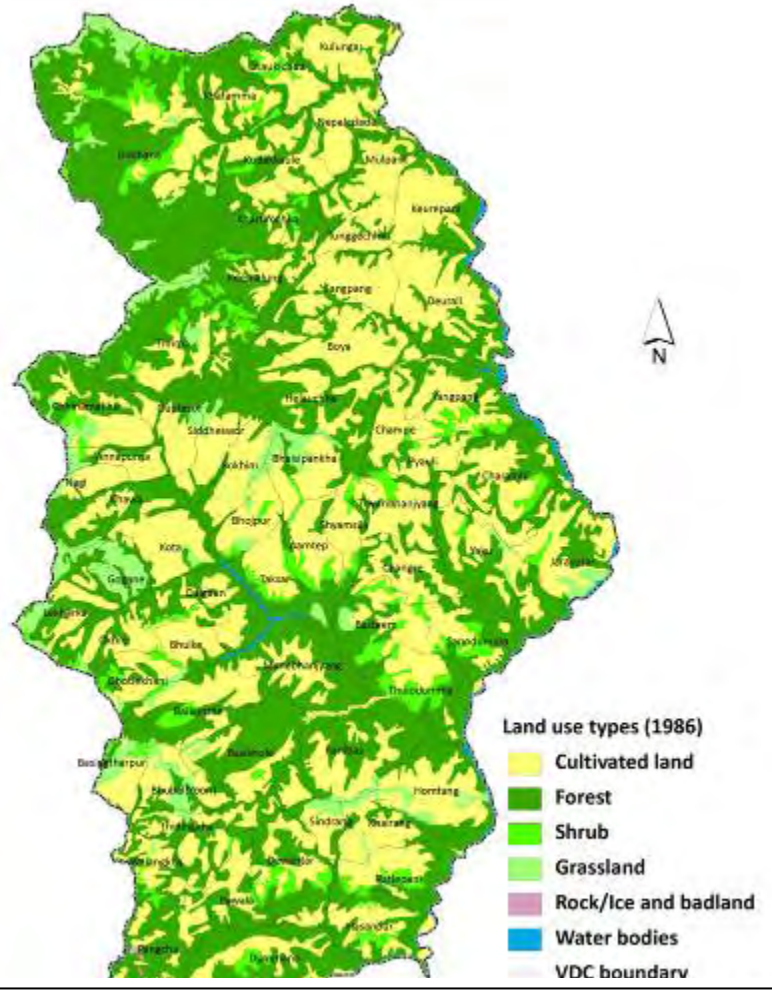
Map 14: Location of Infrastructure and Facilities



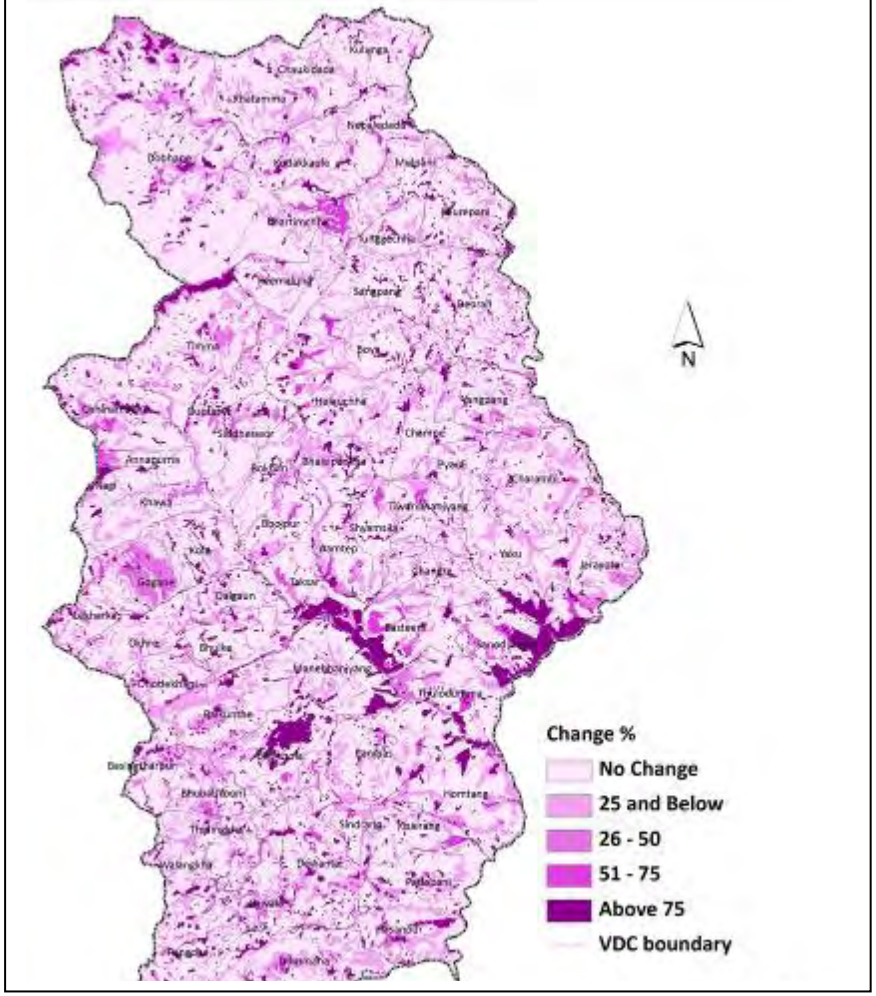
Map 15: Land use, Bhojpur District, 1996



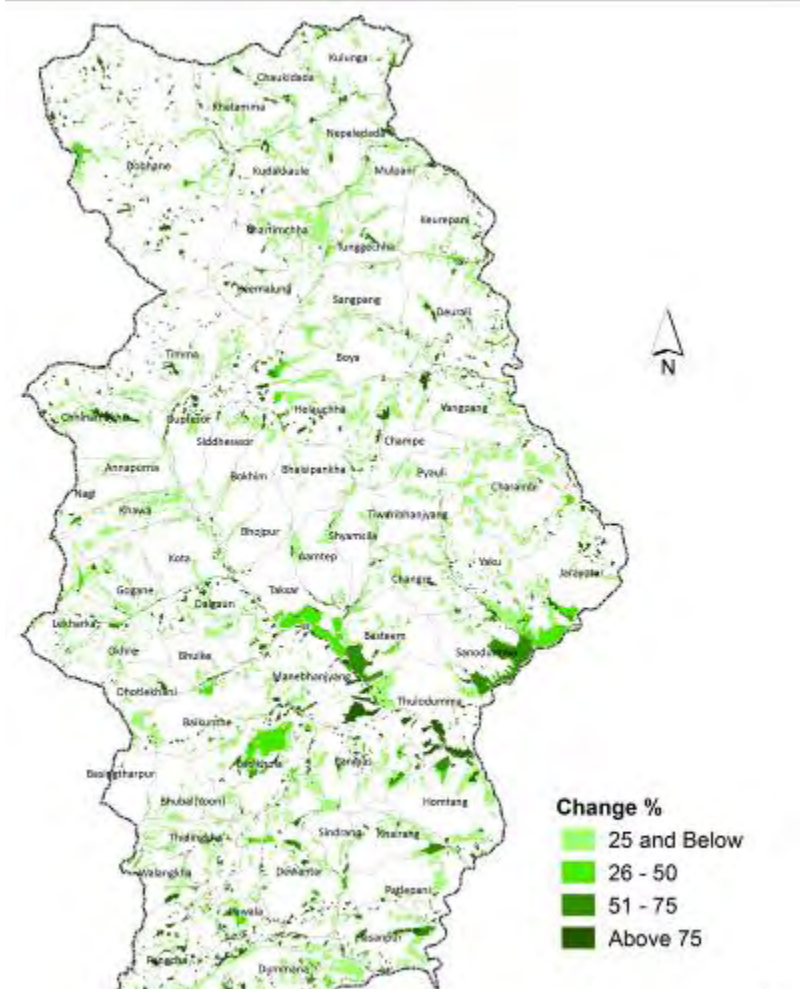
Map 16: Land use, Bhojpur District, 1986



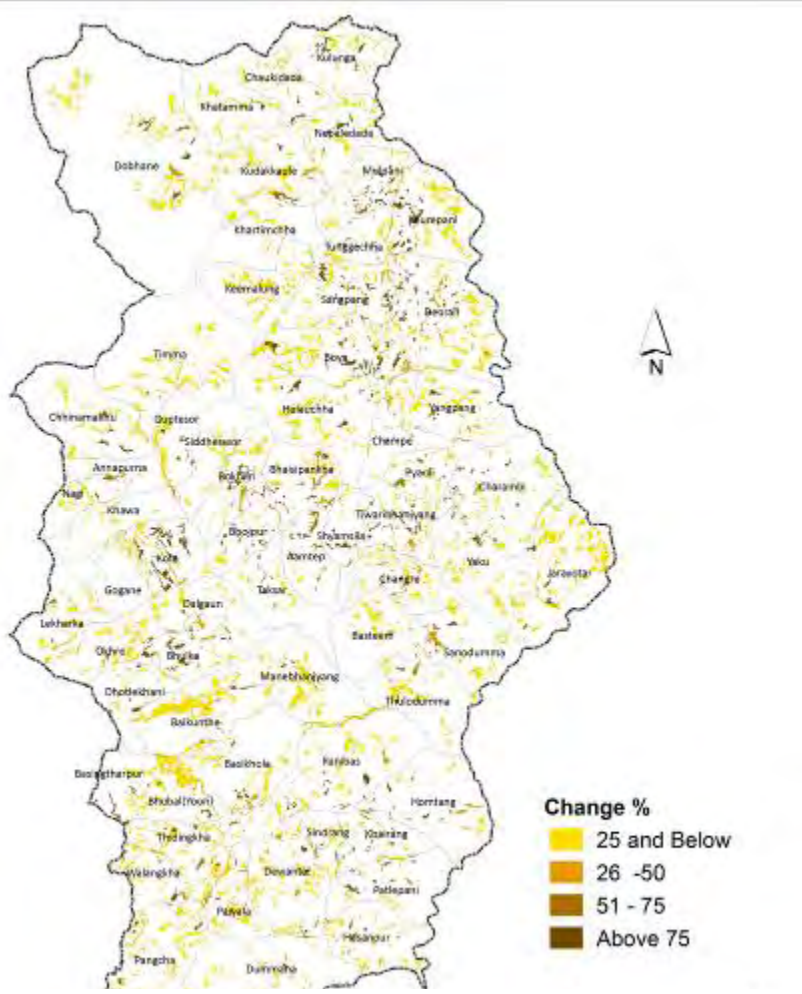
Map 17: Land use Change, 1986-1996, Bhojpur District



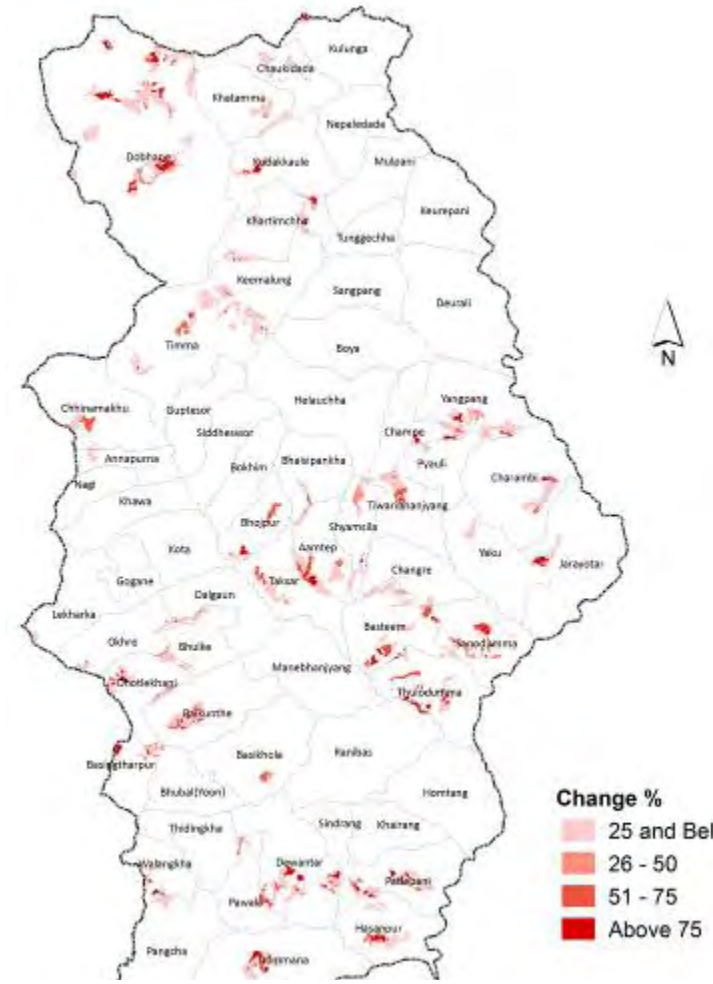
Map 18: Forest land change 1986-1996, Bhojpur District



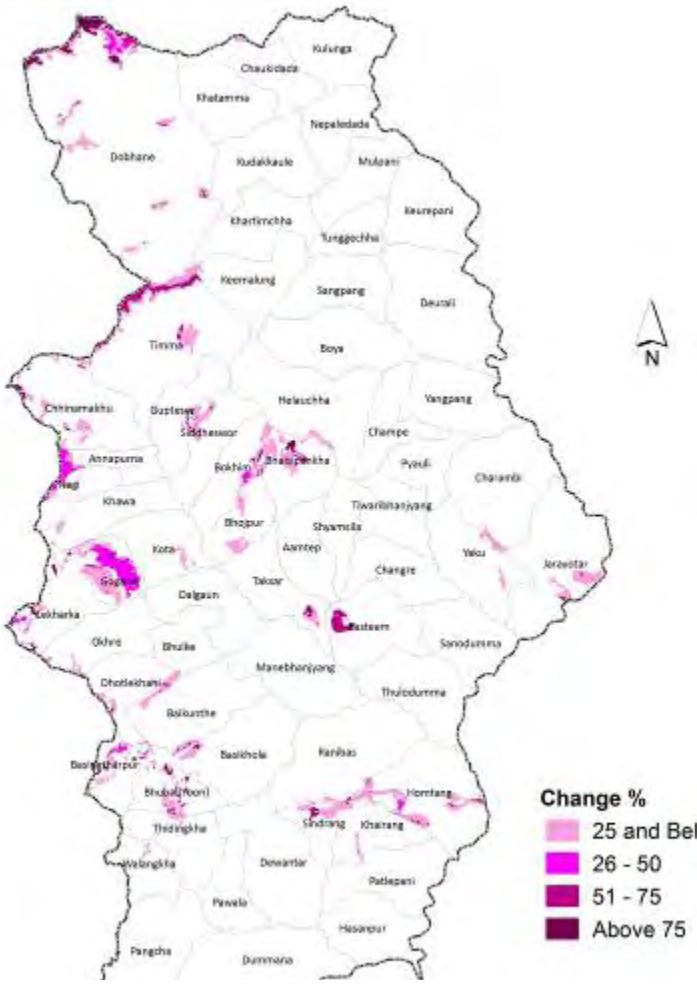
Map 19: Agricultural land change 1986-1996, Bhojpur District



Map 20: Pasture land change 1986-1996, Bhojpur District

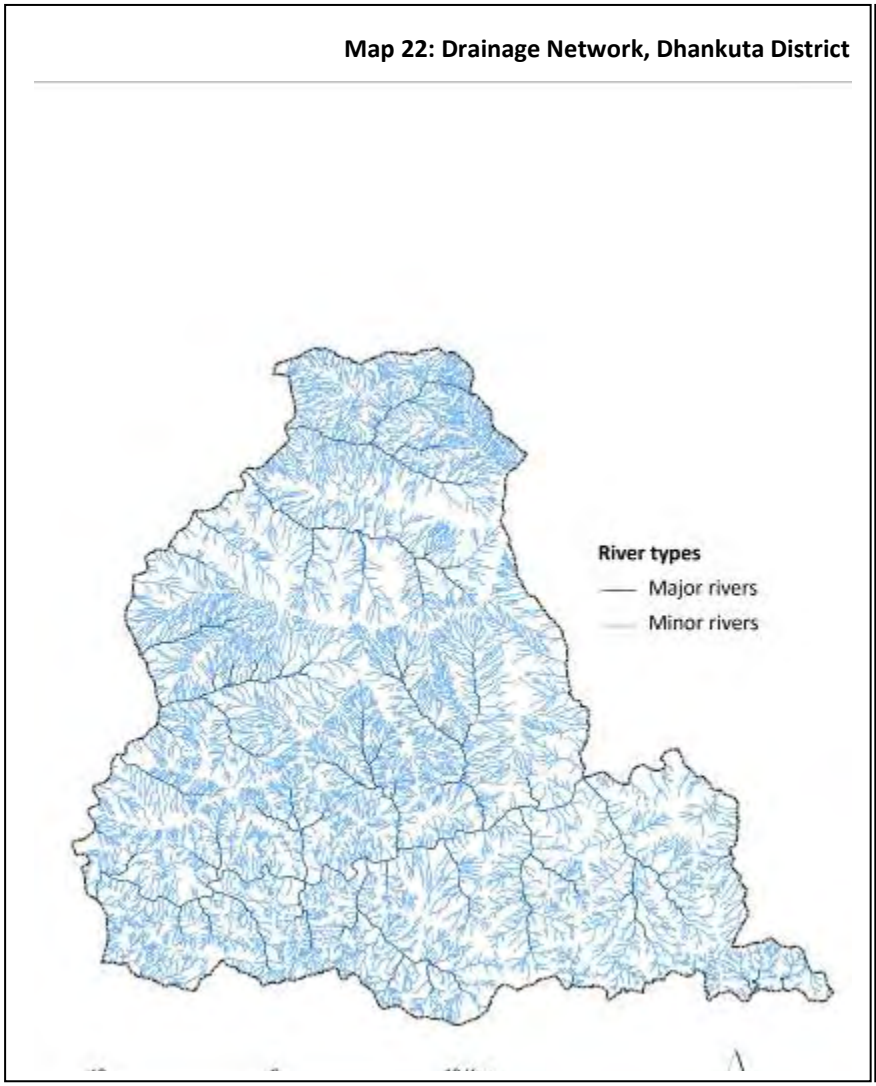


Map 21: Shrub land change 1986-1996, Bhojpur District

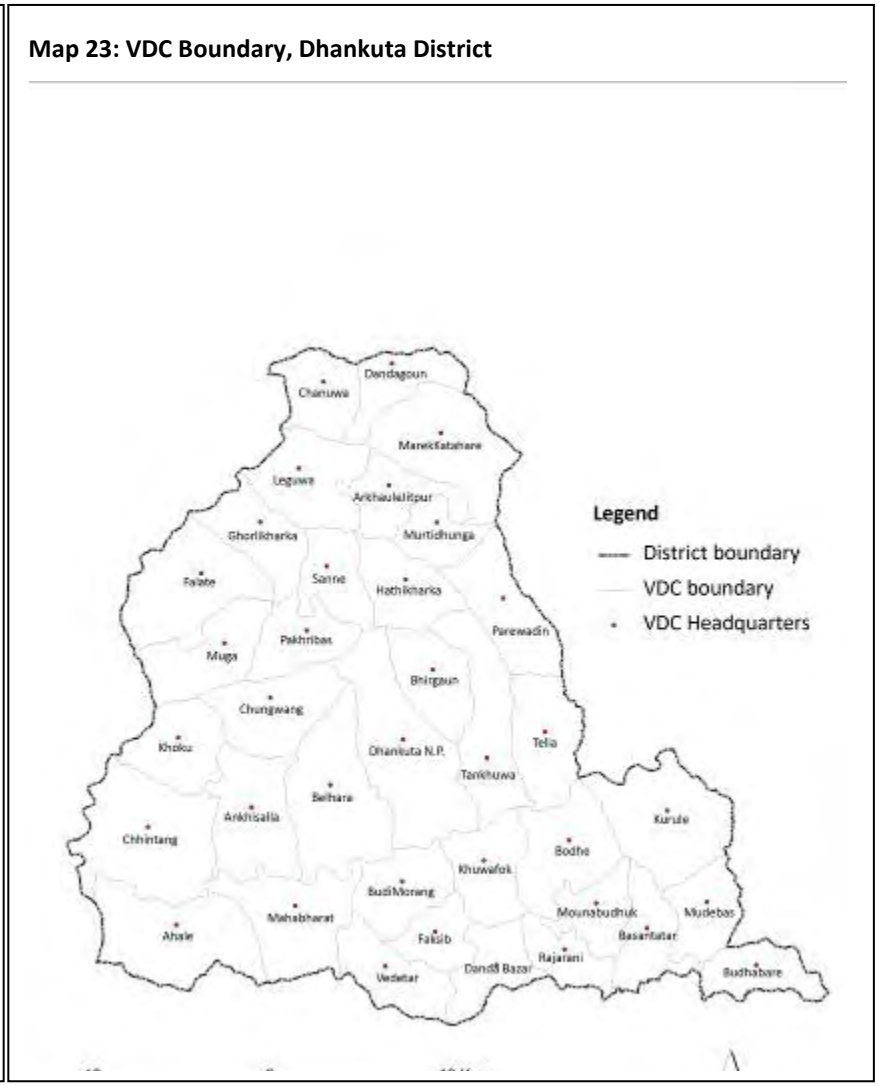


5.1.3 Dhankuta District

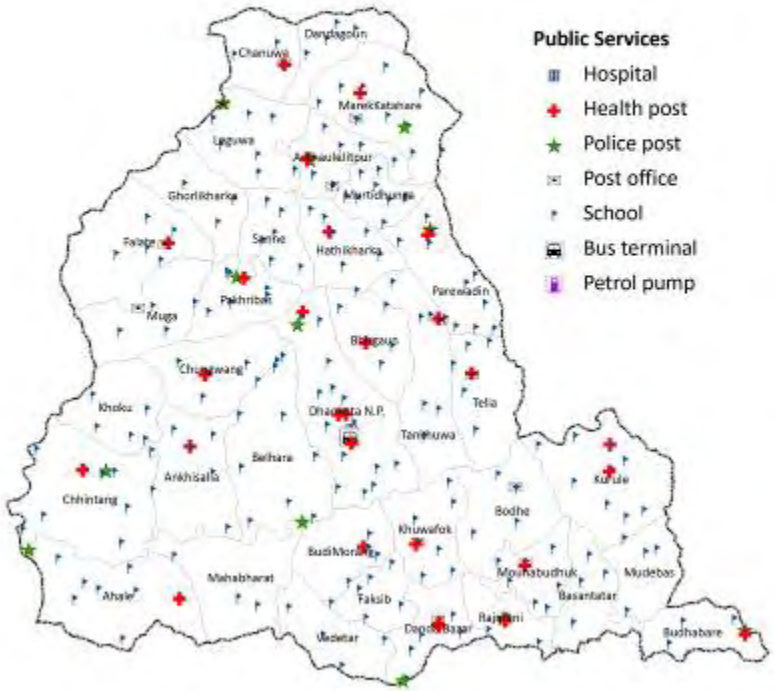
Map 22: Drainage Network, Dhankuta District



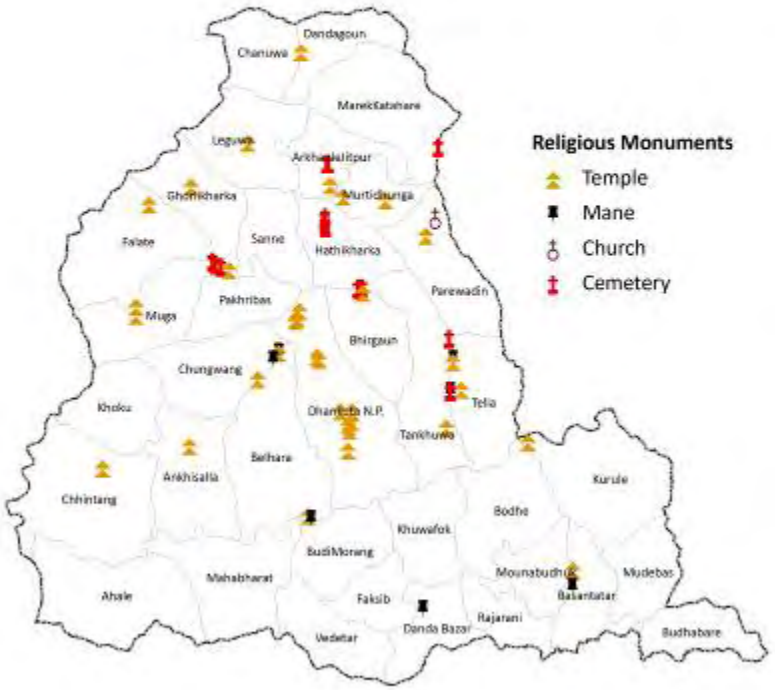
Map 23: VDC Boundary, Dhankuta District



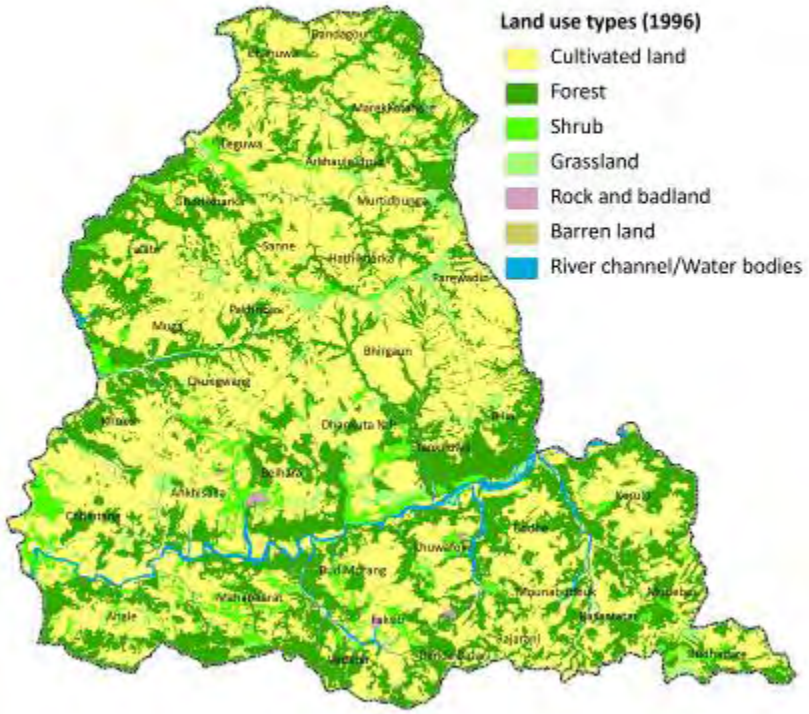
Map 24: Location of Infrastructure and Facilities



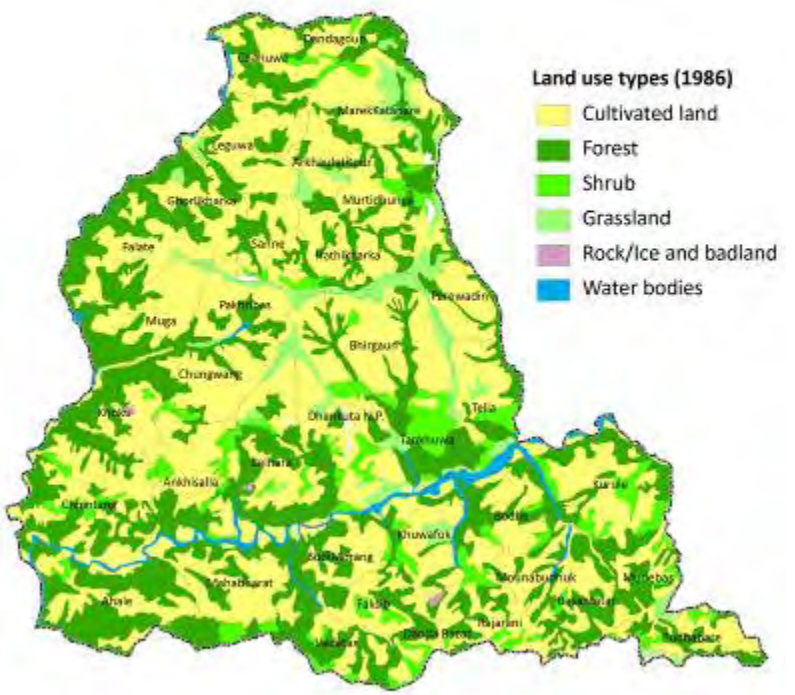
Map 25: Location of religious monuments



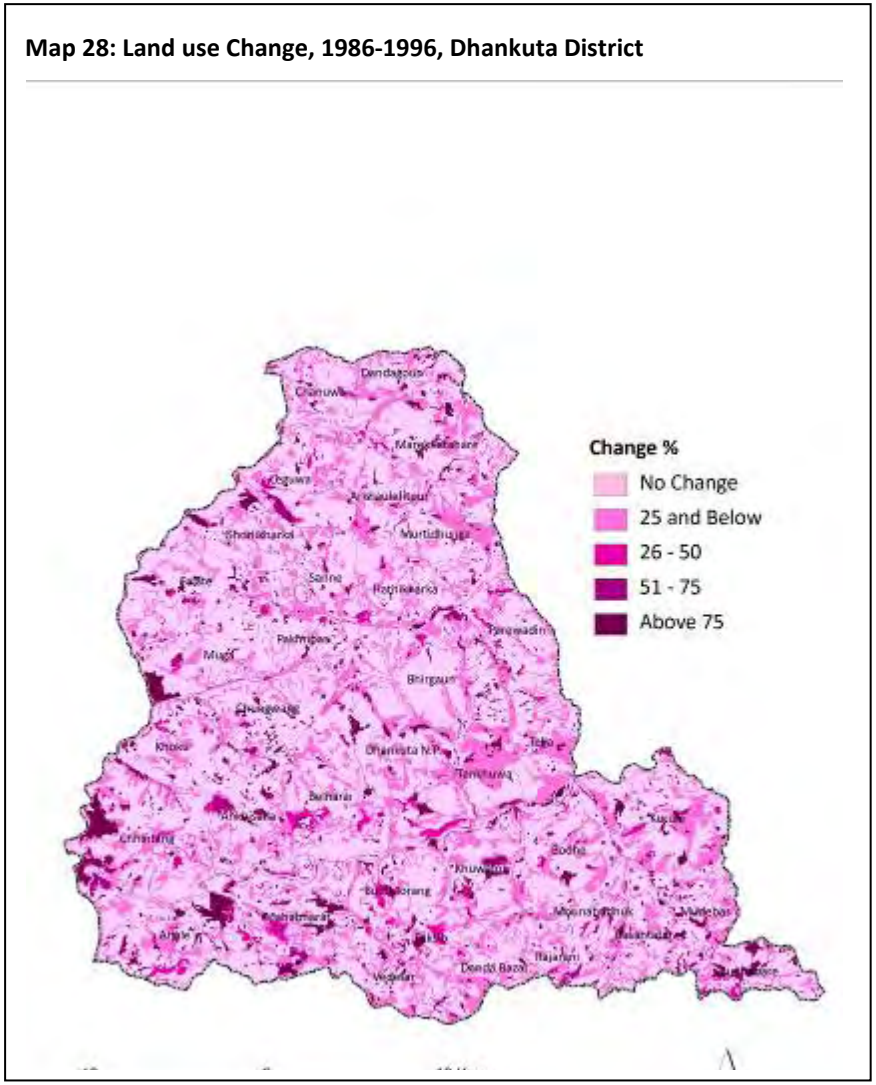
Map 26: Land use, Dhankuta District, 1996



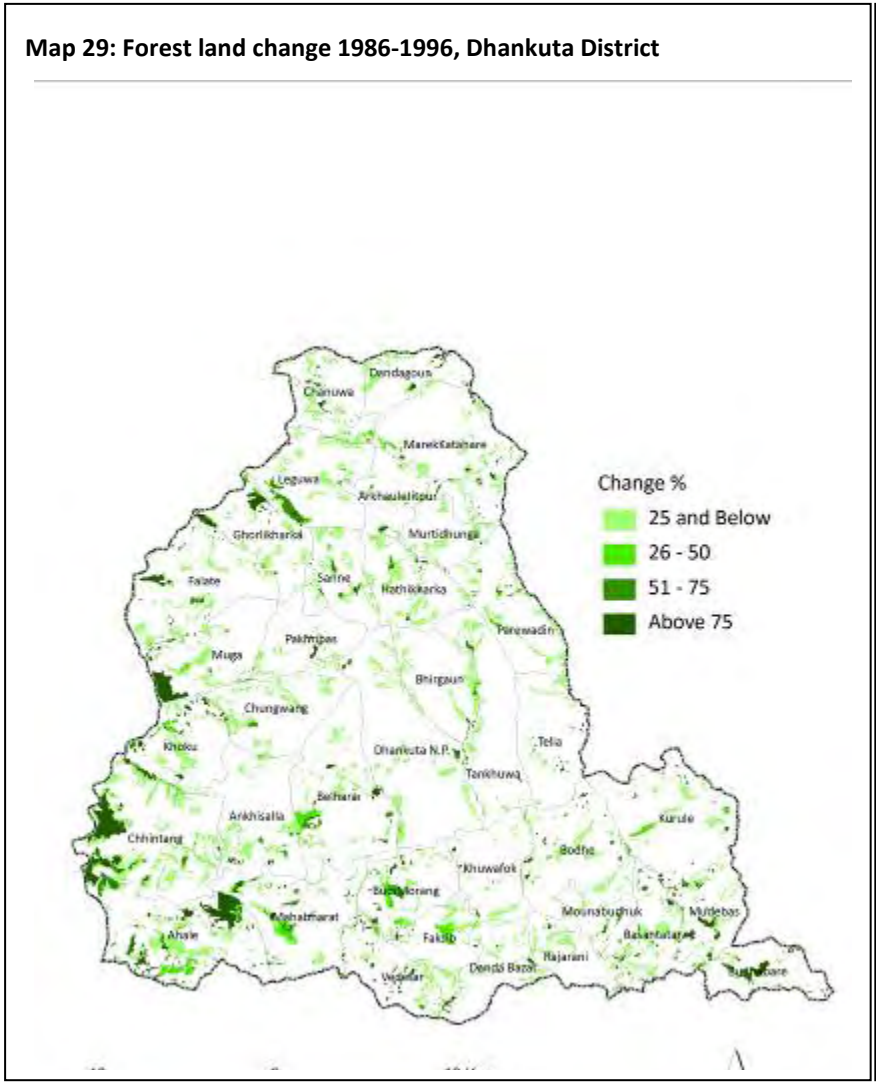
Map 27: Land use, Dhankuta District, 1986



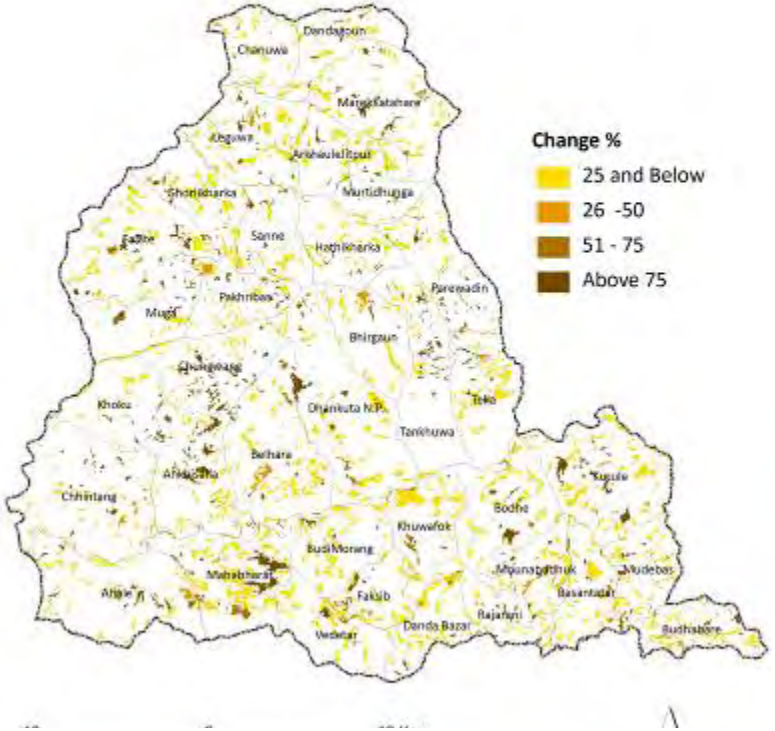
Map 28: Land use Change, 1986-1996, Dhankuta District



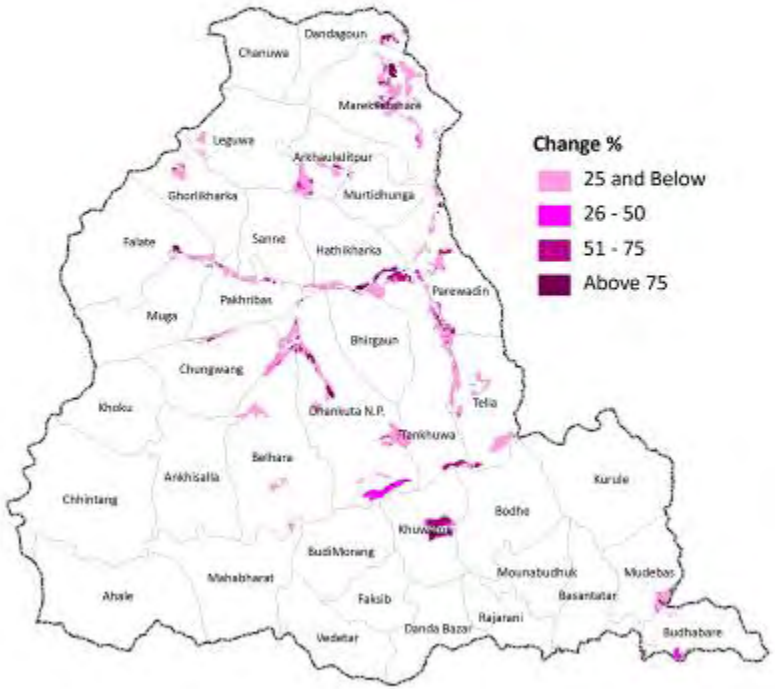
Map 29: Forest land change 1986-1996, Dhankuta District



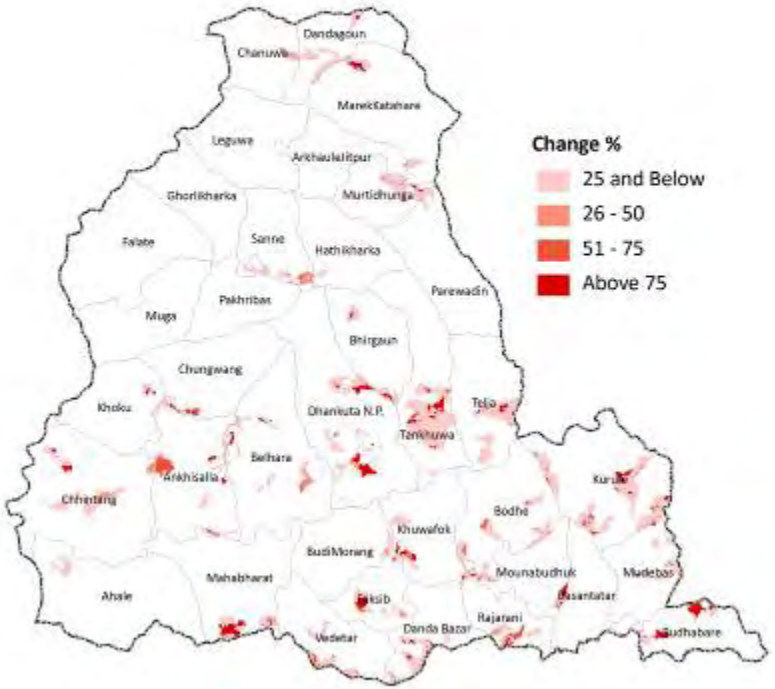
Map 30: Agricultural land change 1986-1996, Dhankuta District



Map 31: Pasture land change 1986-1996, Dhankuta District



Map 32: Shrub land change 1986-1996, Dhankuta District

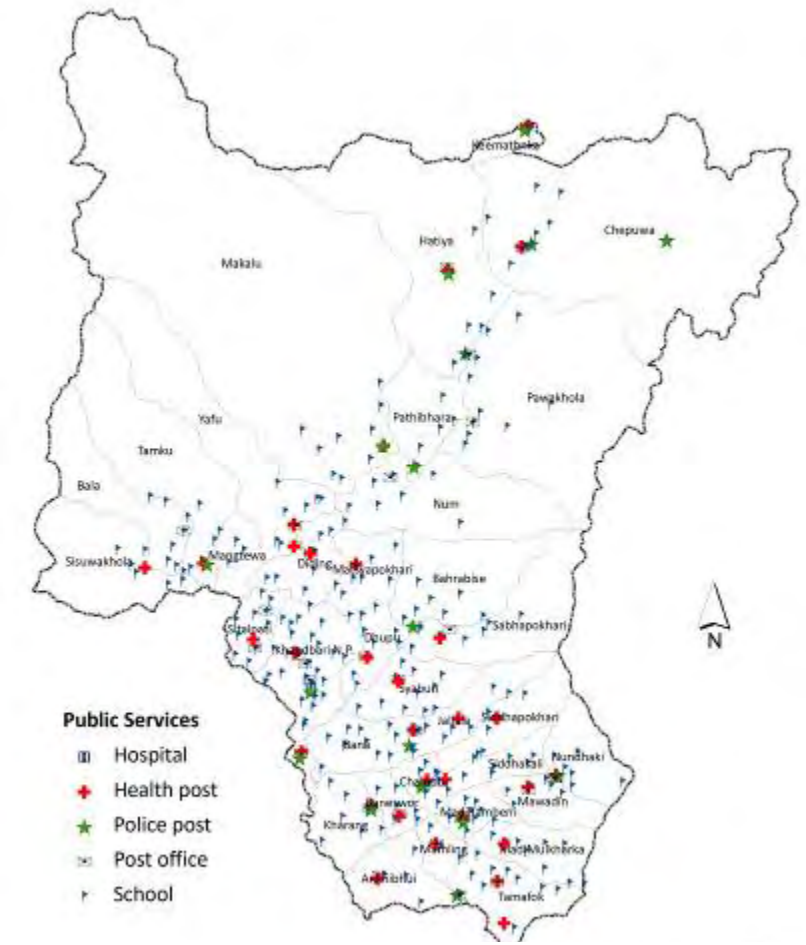


5.1.4 Sankhuwasabha District

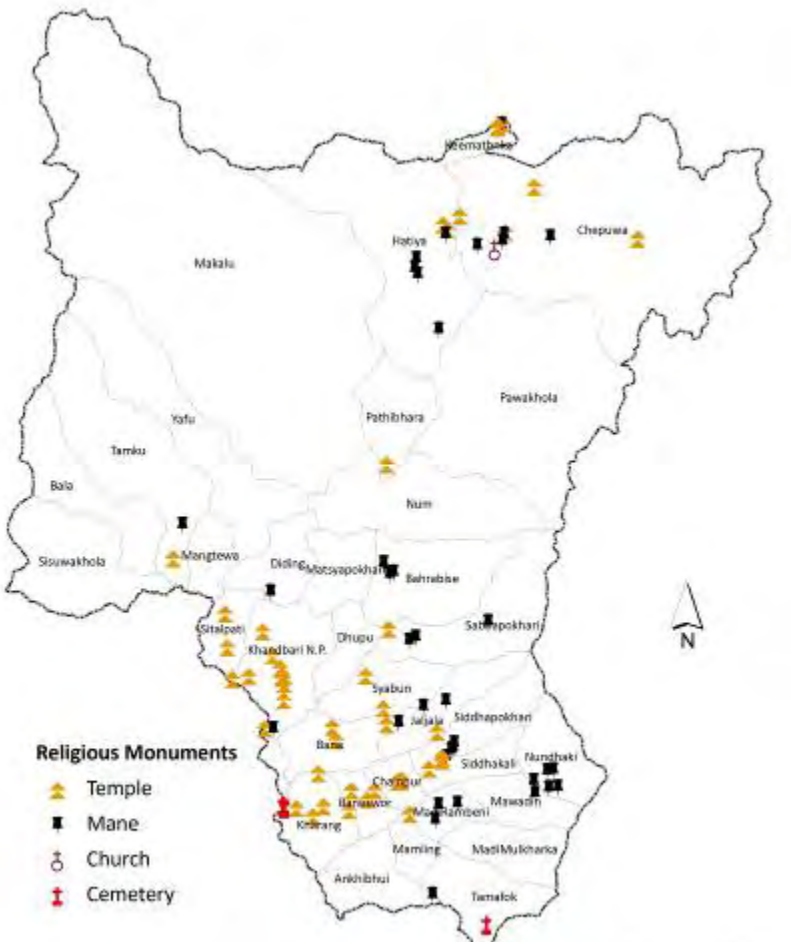
Map 33: Drainage Network, Sankhuwasabha District

Map 34: VDC Boundary, Sankhuwasabha District

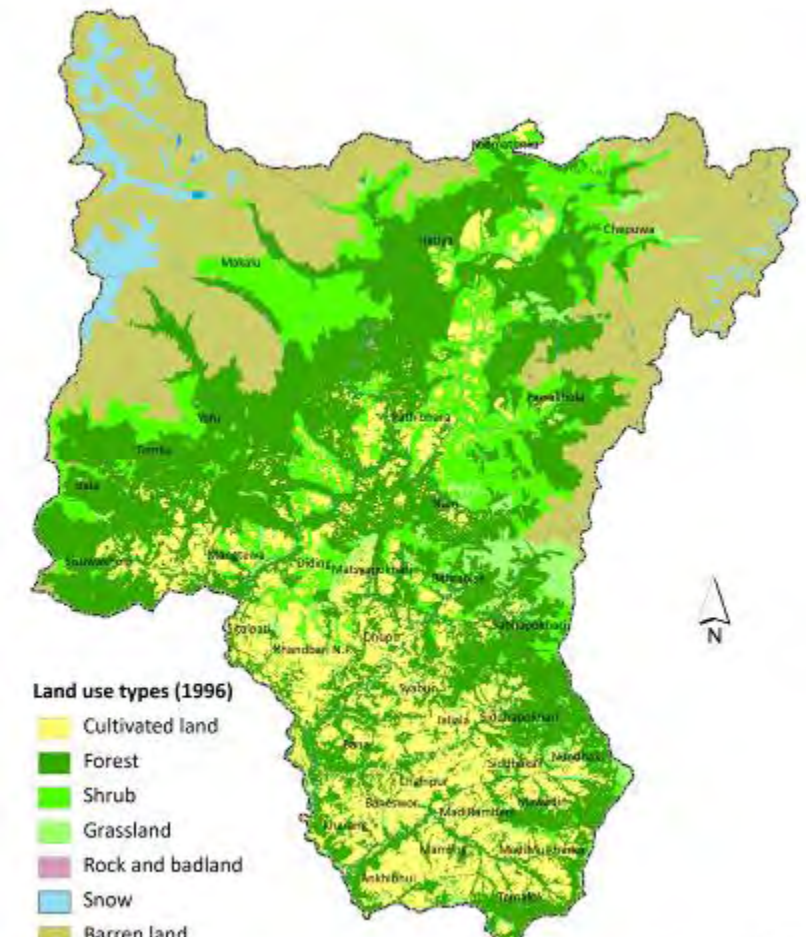
Map 35: Location of Infrastructure and Facilities



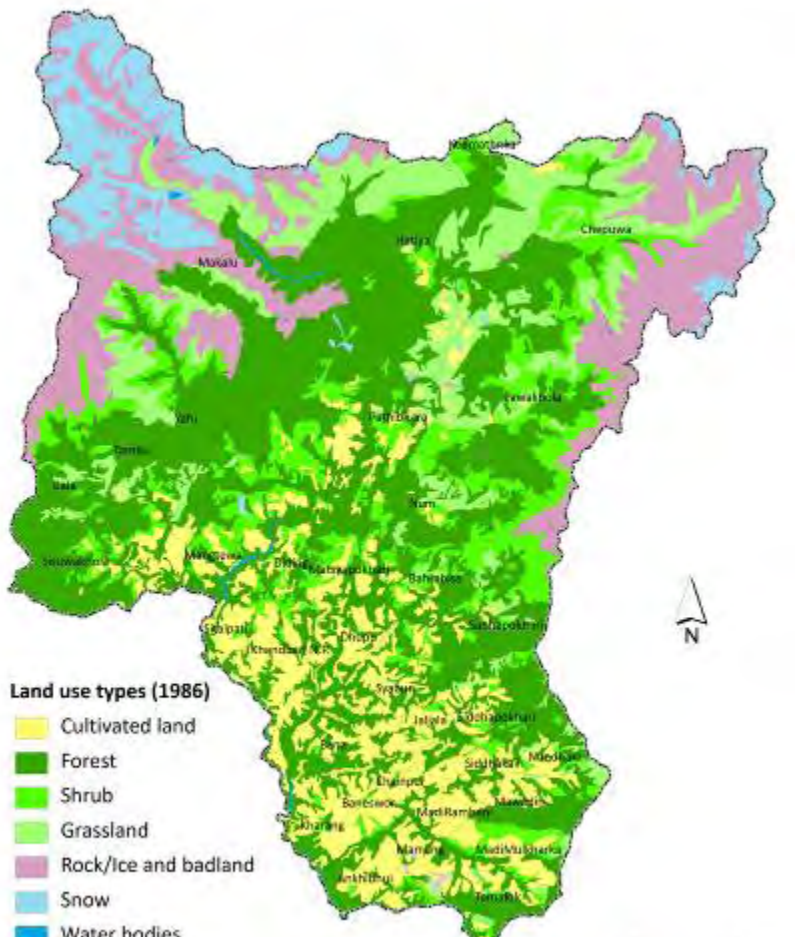
Map 36: Location of religious monuments



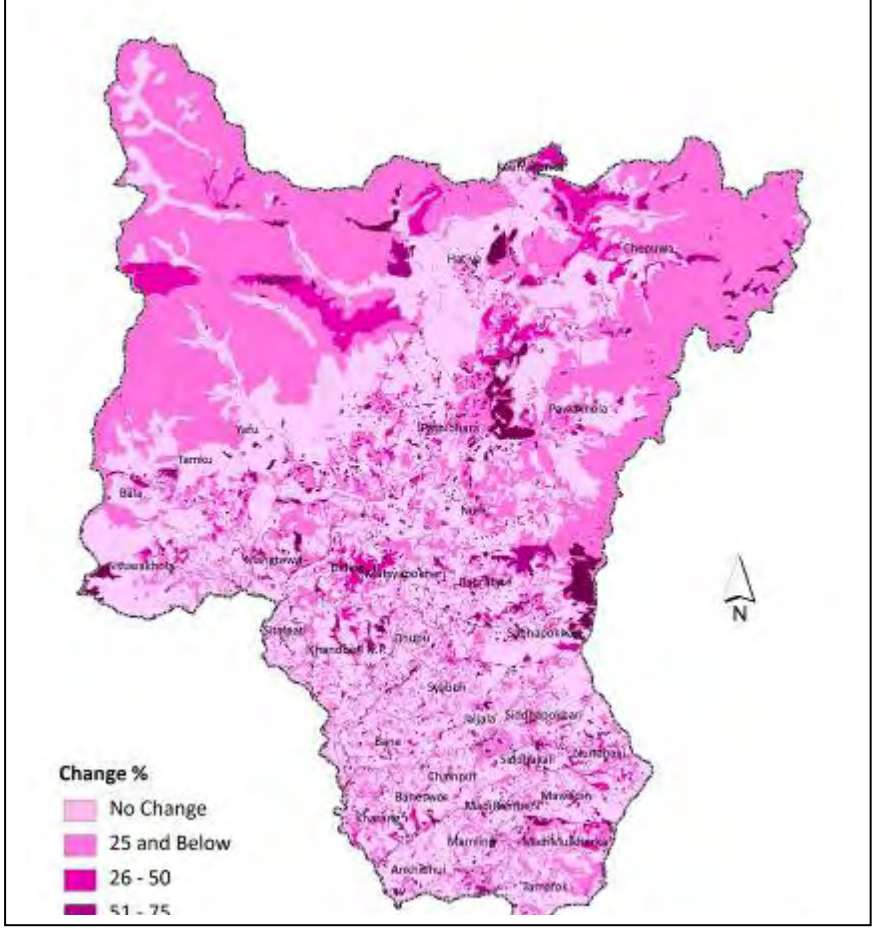
Map 37: Land use, Sankhuwasabha District, 1996



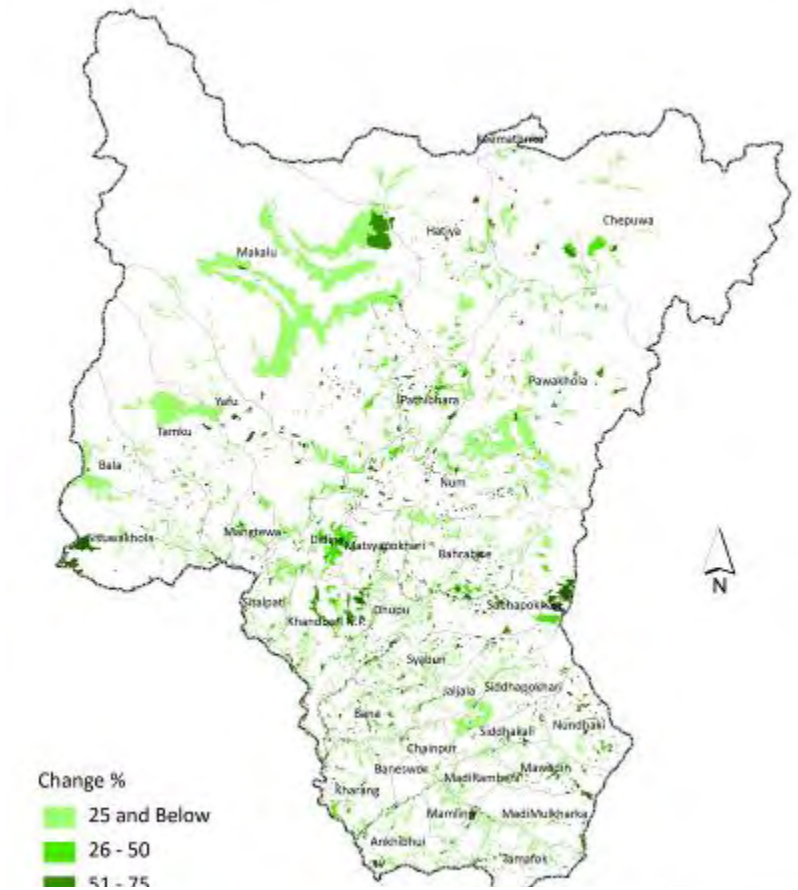
Map 38: Land use, Sankhuwasabha District, 1986



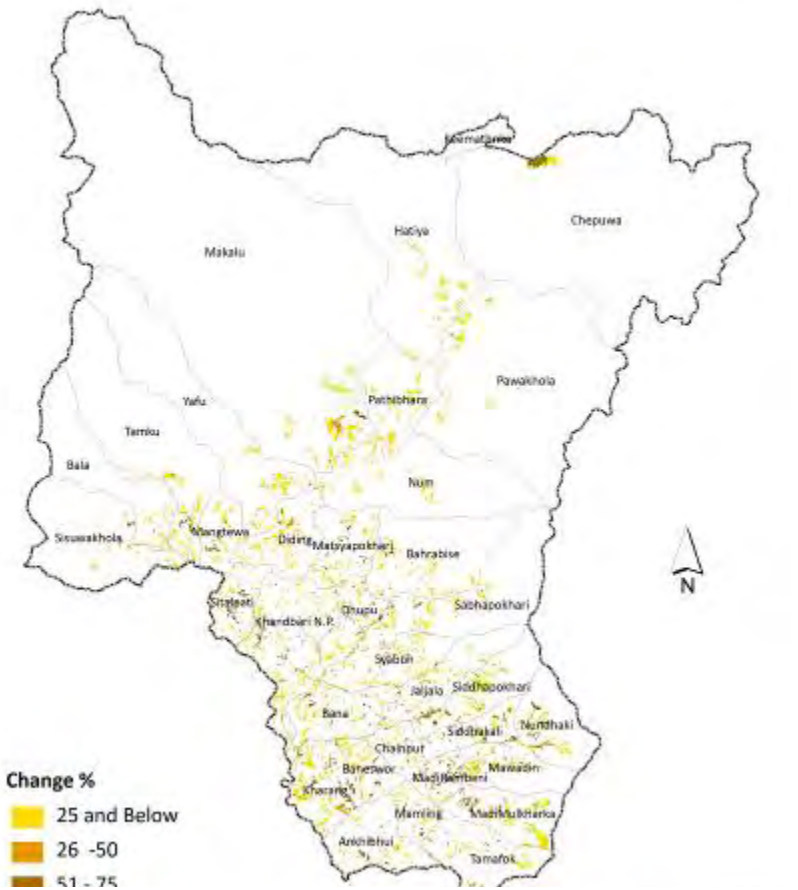
Map 39: Land use Change, 1986-1996



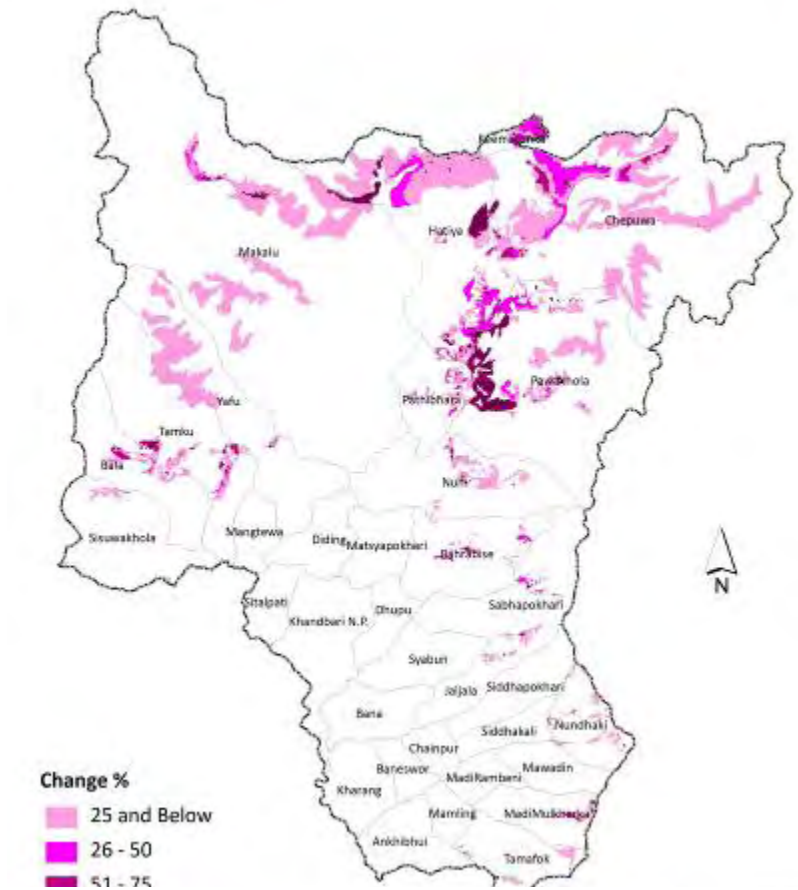
Map 40: Forest land change 1986-1996



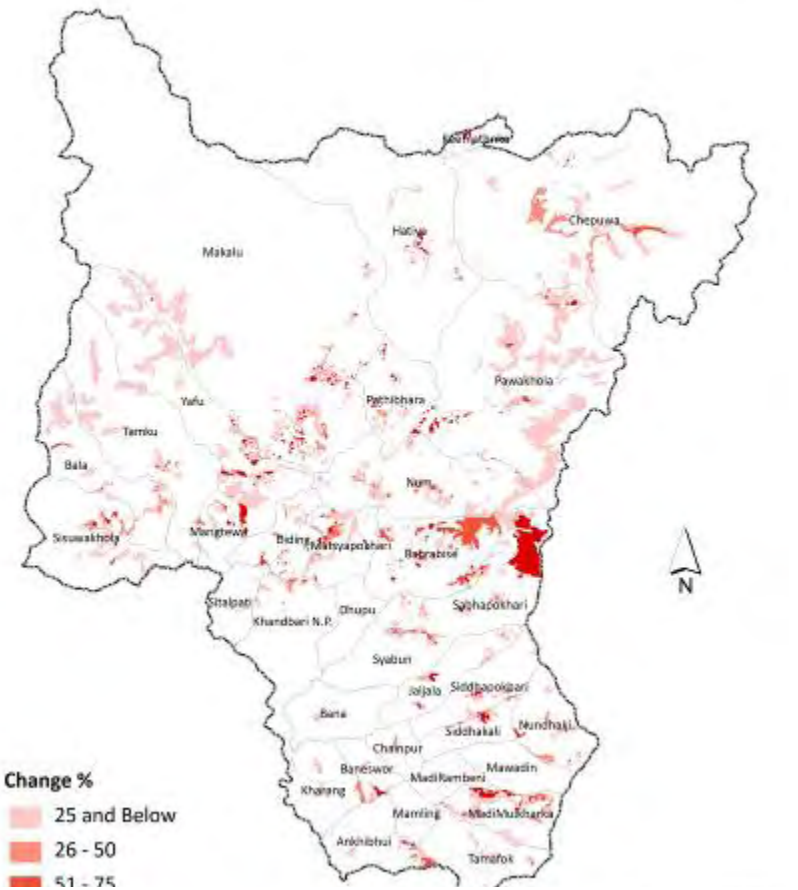
Map 41: Agricultural land change 1986-1996



Map 42: Pasture land change 1986-1996



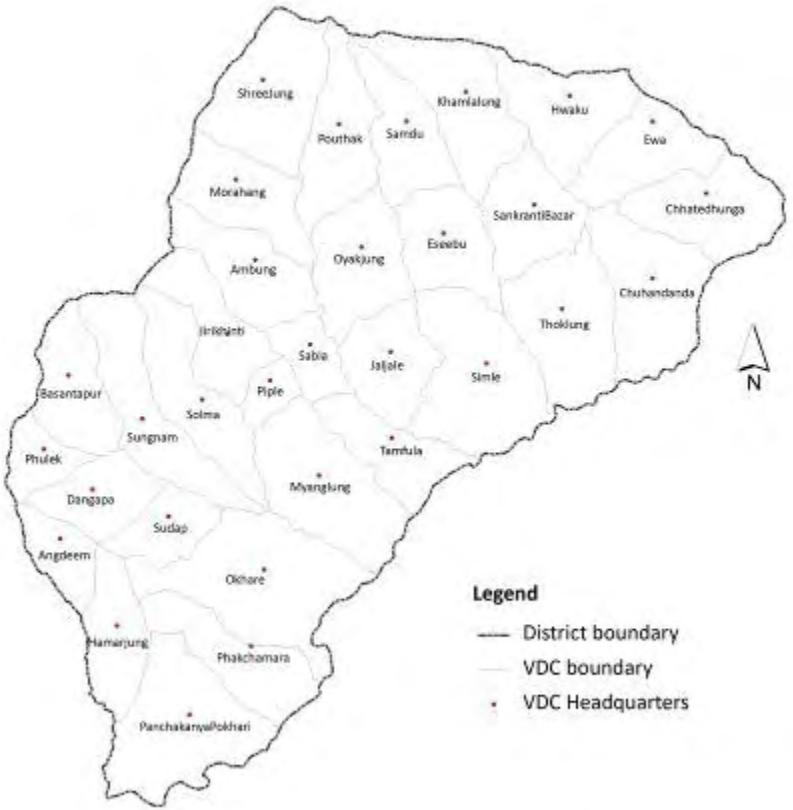
Map 43: Shrub land change 1986-1996



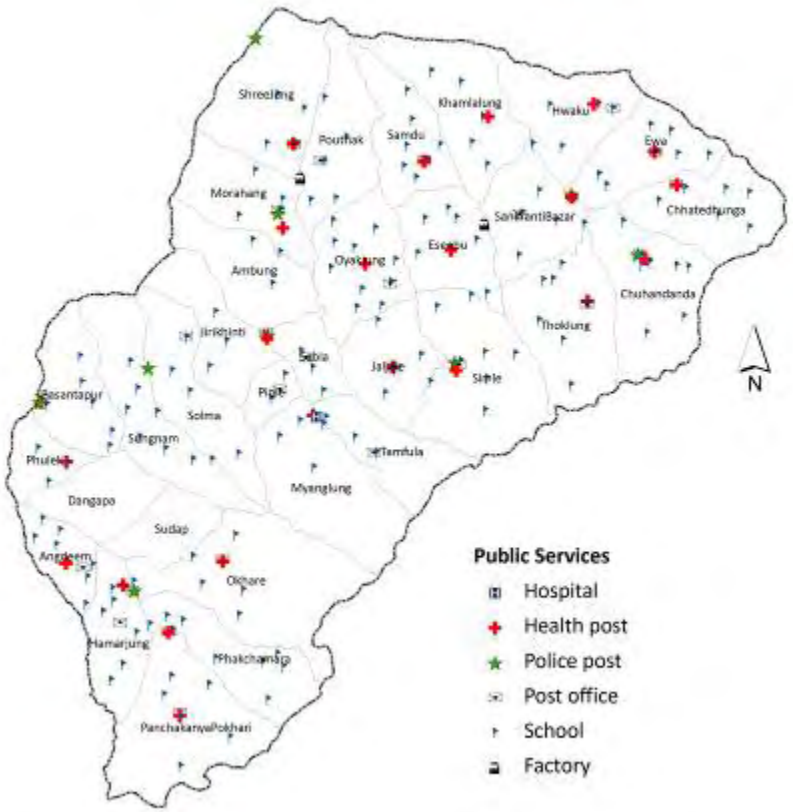
5.1.5 Terhathum Distrit

Map 44: Drainage Network, Terhathum District

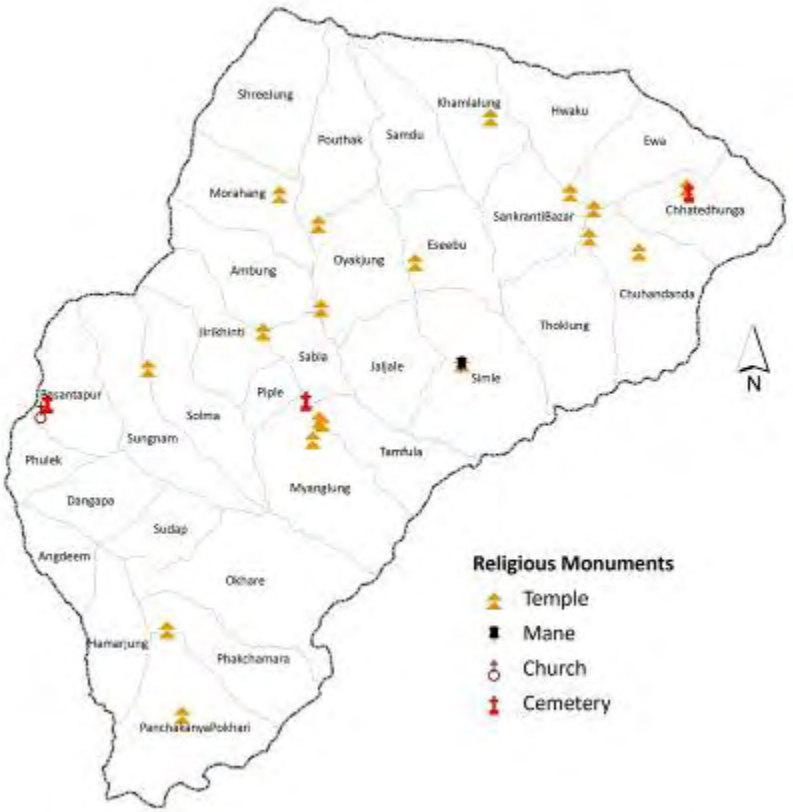
Map 45: VDC Boundary, Terhathum District



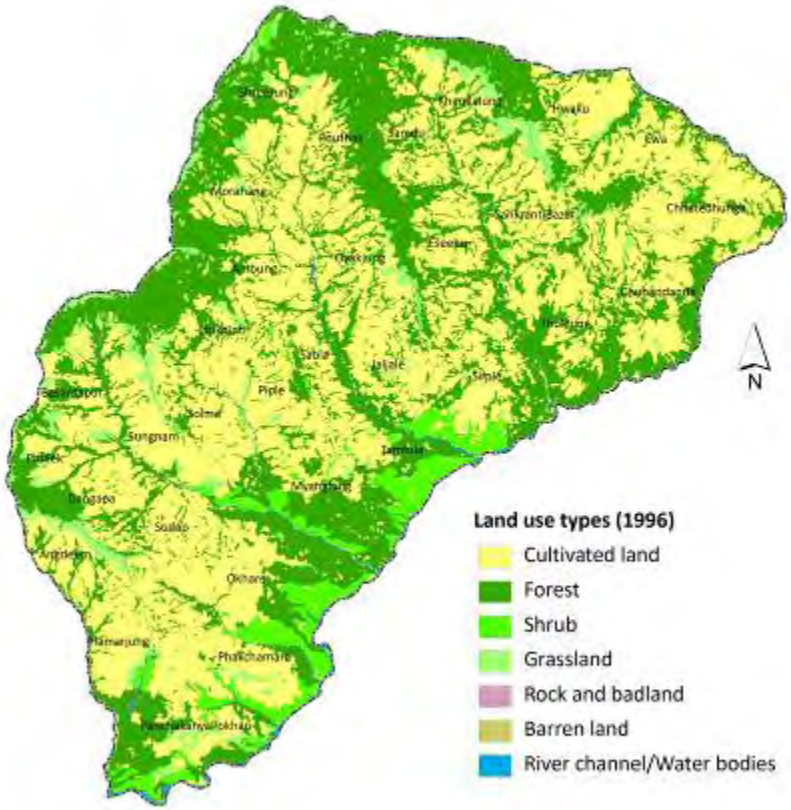
Map 46: Location of Infrastructure and Facilities



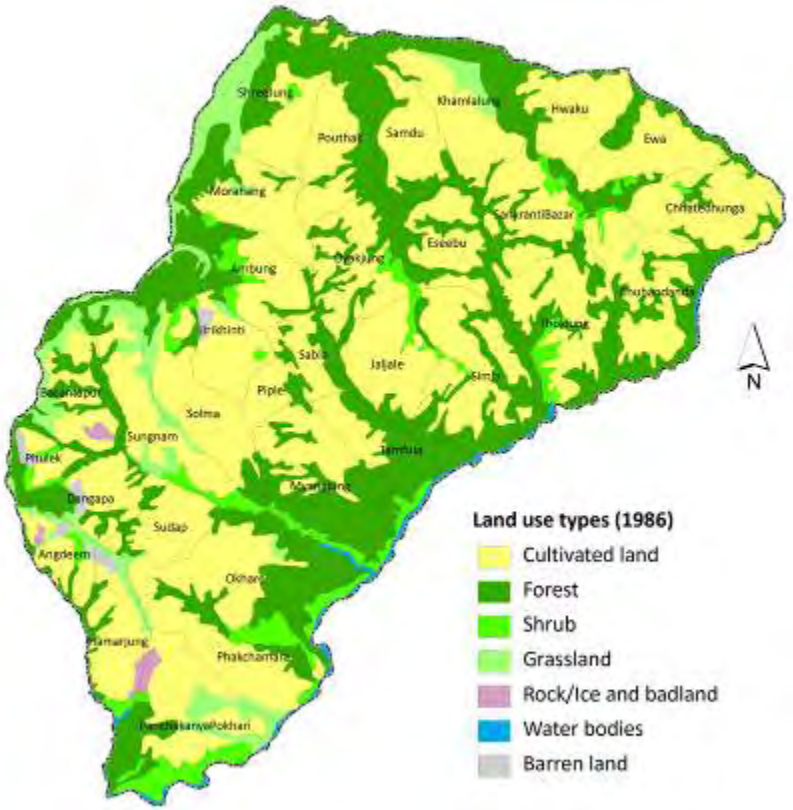
Map 47: Location of religious monuments



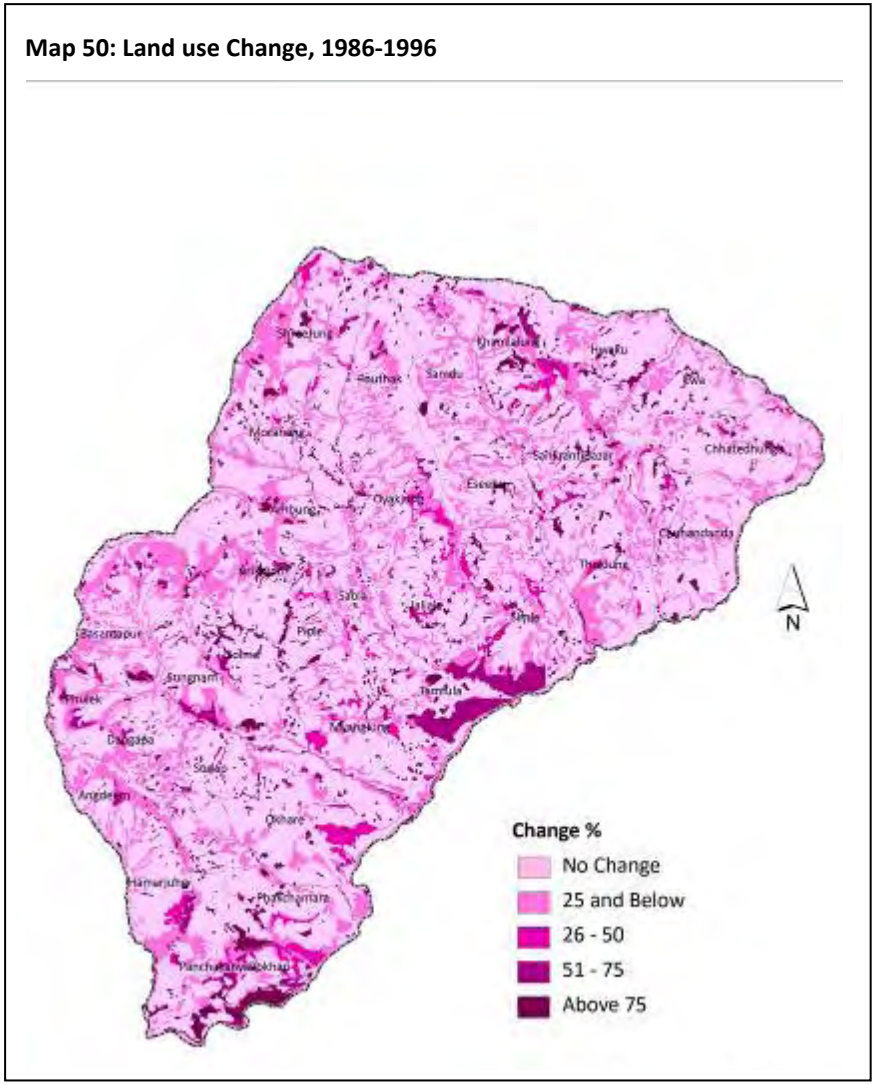
Map 48: Land use, Terhathum District, 1996



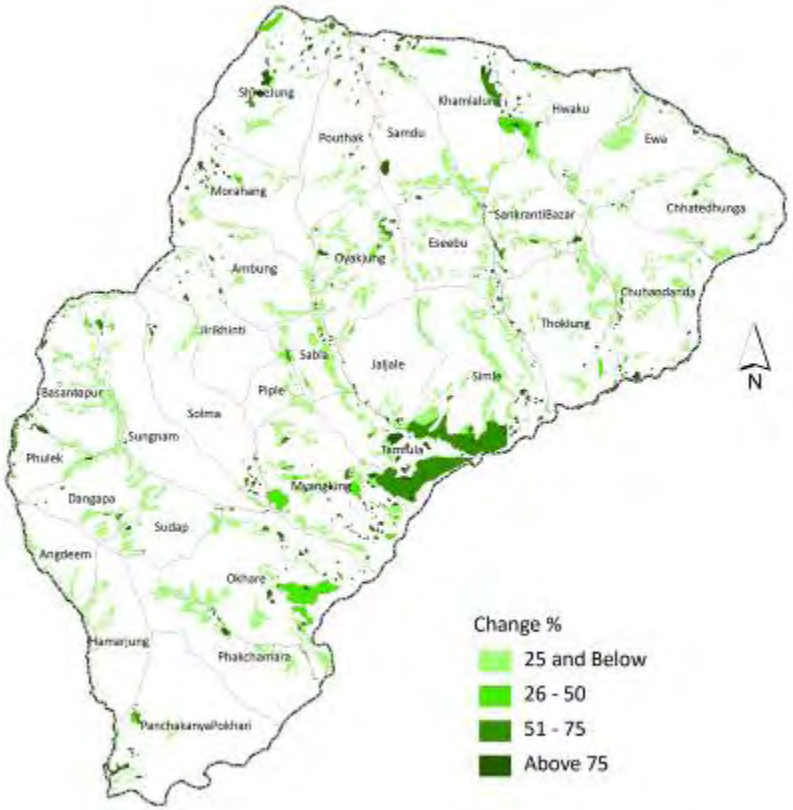
Map 49: Land use, Terhathum District, 1986



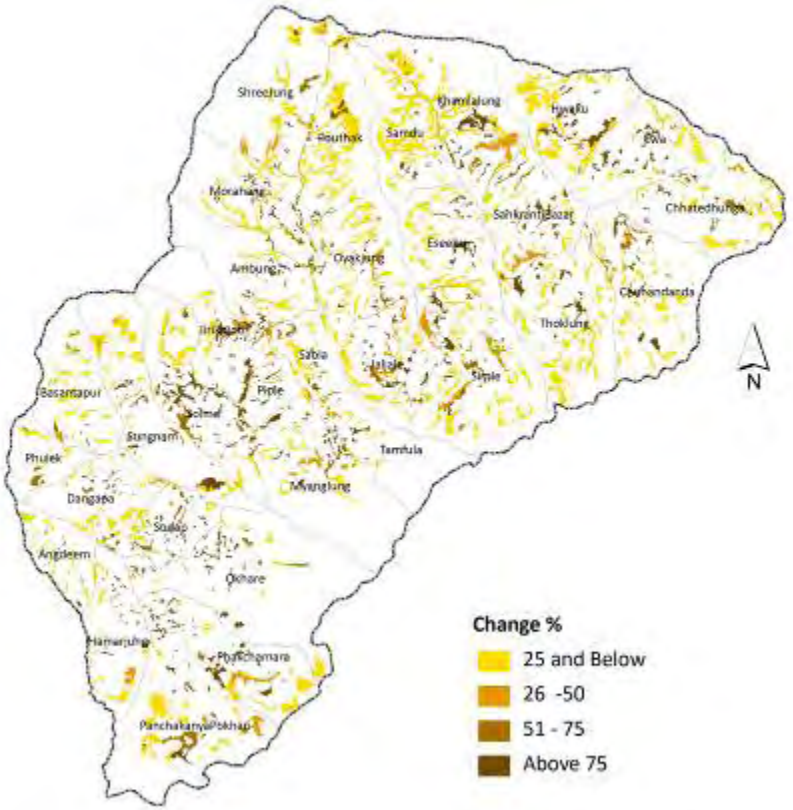
Map 50: Land use Change, 1986-1996



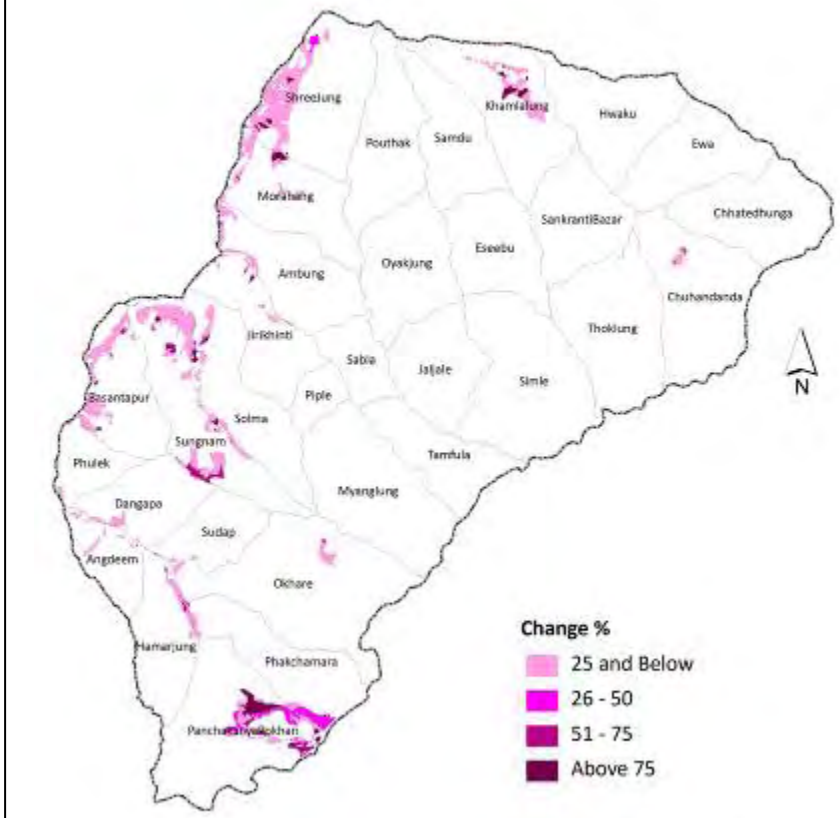
Map 51: Forest land change 1986-1996



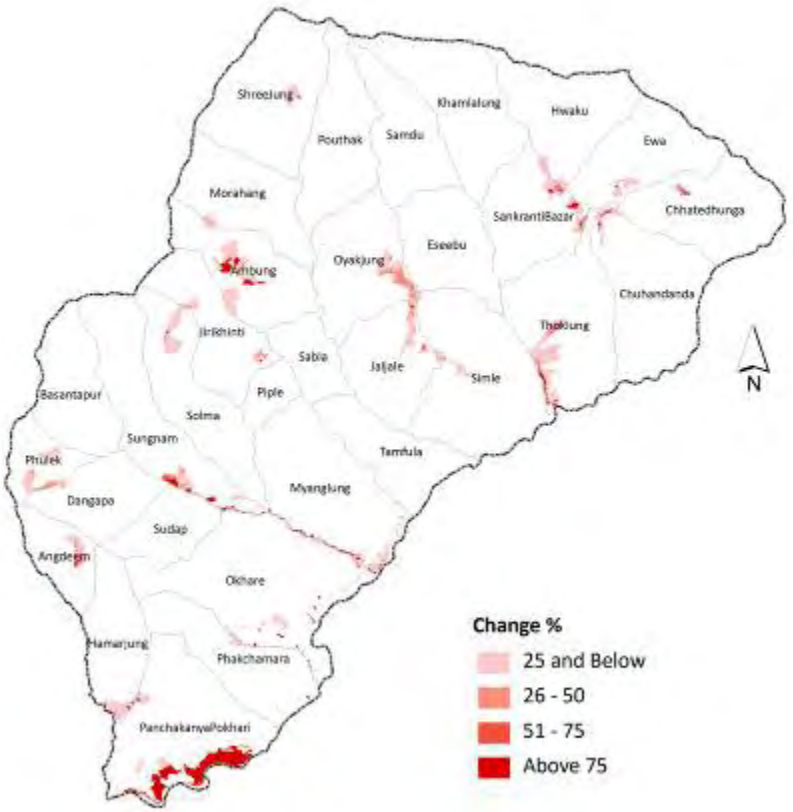
Map 52: Agricultural land change 1986-1996



Map 53: Pasture land change 1986-1996



Map 54: Shrub land change 1986-1996



6 REFERENCES

Acharya, K.P. (2002). “Twenty-four years of community forestry in Nepal”. *International Forestry Review,* 4(2): 149–156.

Adhikari, B. Di Falco, S. and Lovett, JC. (2003). “Household characteristics and forest dependency: evidence from common property forest management in Nepal”. *Ecological Economics*, 48(2): 245-257.

Adhikari, J., C. Bhadra, G. Gurung, B. P. Niraula and D. Seddon (2006). Nepali Women and Foreign Labour Migration. Kathmandu, UNIFEM/NIDS.

Adhikary, S. (1982). *Rural Development in Nepal: Problems and Prospects*. Kathmandu: Sajha Prakashan.

ADRA. (2007a). *Endline Survey Report, Safe Motherhood Innovation Project*. Kathmandu: MITRA Samaj and ODC, and ADRA Nepal.

ADRA. (2007b). *Safe Motherhood Innovation Project Final Evaluation Report*. Submitted by MITRA Samaj and ODC. Kathmandu: ADRA Nepal.

Ageta, Y., Iwata, S., Yabuki H., Naito, N., Sakai, A., Narama, C. and Karma (2000). Expansion of glacier lakes in recent decades in the Bhutan Himalayas. Debris-covered glaciers. IAHS, publ. no. 264, 165-175.

Agrawal, S. (2003). Development and Climate Change in Nepal: Focus on Water Resources and Hydropower. Organisation for Economic Co-operation and Development.

Agriculture Business and Trade Promotion Multi-Purpose Co-operative Ltd (ABTRACO). (2007). The Impact Study on Farmer’s Group Approach Adopted in Agricultural Extension System of Nepal.

ANZDEC. (2003a). Nepal Commercial Agriculture Development Project: Interim Report. His Majesty’s Government Nepal and Asian Development Bank.

ANZDEC. (2003b). Nepal Commercial Agriculture Development Project: Final Report. Ministry of Agriculture and Cooperatives and Asian Development Bank.

APP (1995). Agricultural Perspective Plan, Final Report, National Planning Commission, Agricultural Projects Service Centre, Kathmandu, Nepal.

APROSC/JMA (1995). *Nepal Agriculture Perspective Plan*. Kathmandu: Agricultural Projects Services Centre/National Planning Commission/Asian Development Bank.

Arrighi, G. (2002) 'The African Crisis: World Systemic and Regional Aspects', New Left Review 15(5): 5-3.

Asahi K., Kadota T., Naito N., & Ageta Y. (2006). Variations of small glaciers since the 1970s to 2004 in Khumbu and Shorang regions, eastern Nepal. Data Report 4 (2001-2004). Glaciological Expedition in Nepal (GEN) and Cryosphere Research in the Himalaya (CREH). Nagoya University and Department of Hydrology and Meteorology/GON: 109-136.

Bajracharya, S. R. & Mool, P. K. (2005). Growth of hazardous glacial lakes in Nepal, Proceedings of the JICA Regional seminar on natural disaster mitigation and issues on technology transfer in south and southeast Asia Sep 30-13 October 2004, Department of Geology, Tri-Chandra Campus, Tribhuvan University, Kathmandu, Nepal: 131-148.

Bajracharya, S. R. & Mool, P. K. (2006). Impact of global climate change from 1970s to 2000s on the glaciers and glacial lakes in Tamor Basin, eastern Nepal, ICIMOD.

Bajracharya, S. R. Mool, P. K. and Shrestha, B. R. (2006). The impact of global warming on the glaciers of the Himalaya, Proceedings of the International Symposium on Geo-Disasters, Infrastructure Management and Protection of World Heritage Sites, 25-26 Nov, Nepal Engineering College, Ehime College and National Society for Earthquake Technology Nepal: 231-242.

Bajracharya, S. R., Mool, P. K., & Shrestha, B. R. (2007). Impact of climate change on Himalayan glaciers and glacial lakes: Case studies on GLOF and associated hazards in Nepal and Bhutan. Kathmandu, Nepal: International Centre for Integrated Mountain Development (ICIMOD).

Balassa, B. (1981). Structural adjustment policies in developing economies. World Bank Working Paper 464. Washington D.C., World Bank.

Banskota, P. (1994). The Gurkha Connection: A History of the Gurkha Recruitment in the British Indian Army, Nirala Publications.

Banskota, S. & Pradhan, P.K. (2007). Non-timber forest products-based livelihoods of the rural communities in the Shey Phoksundo National Park, Nepal. Nepalese *Journal of Development and Rural Studies*, Vol. 4, No. 1 (Jan-June): 71-82.

Banskota, S. and Pradhan, Pushkar K. (2007), Non-timber forest products-based livelihoods of the rural communities in the Shey Phoksundo National Park, Nepal. *Nepalese Journal of Development and Rural Studies*, Vol. 4, No. 1 (Jan-June): 71-82.

Baral, J.C. & Subedi, B.R. (2000). "Some community forestry issues in the Terai, Nepal: where do we go from here?" *Forest, Trees and People Newsletter* No. 42:20–25.

Barrow, C.J. (1991). Land Degradation: Development and Breakdown of Terrestrial Environments. Cambridge University Press.

Bartlett, A. & Nurse, M. (1991). *A Participatory Approach to Community Forestry Appraisals.* Nepal-Australia Community Forestry Project Technical Note 2/91.

Bartlett, R., Bharati, L., Pant, D., Hosterman, H. & McCornick, P. (2010). Climate change impacts and adaptation in Nepal. IWMI Working Paper 139. Colombo, Sri Lanka: International Water Management Institute.

Bates, R. H. (1981) 'Markets and States in Tropical Africa'. University of California Press.

Bauman, P., Dev, O.P., Soussan, J., Turton, C. & Yadav, N.P. (1998). *Community Forestry in Nepal: A Framework for Research and Exploration of the Literature*. Leeds: School of Environment, University of Leeds.

Bendaña, A. (2001). PRSP as a product of the new global balance of forces. State to the Jubliee South Pan African PRSP workshop, Kampala, 10-12 May 2011.

Beniston, M. (2003). Climate change in mountain regions: A review of possible impacts. Climate Change 59: 5–31.

Bhadra, C. (2007). International Labour Migration of Nepalese Women: the Impacts of their Remittances on Poverty Reduction. Asian-Pacific Research and Training Network on Trade. Working Paper Series, No. 44.

Bharati MP, SK Regmi & BB Khadka. (1992). Current situation and future strategy for the seed production and seed quality in Koshi Hills. Paper for Second Regional Seed Workshop, June 9-11, 1992. KHAP, Dhankuta.

Bhattachan, Krishna B. (2002). 'Traditional Local Governance in Nepal'. Paper presented in a national seminar on 'Strengthening Decentralization and Good Governance in Nepal' organized by the Political Science Association of Nepal (POLSAN) and Friedrich-Ebert-Stiftung (FES), Kathmandu, April 21, 2002.

Bhuju, U. R. (2007). *Nepal Biodiversity Resource Book*. Kathmandu: International Center for Integrated Mountain Development (ICIMOD).

Bienen, H., Kapur, D., Parks, J., & Riedinger., J. (1990). "Decentralization in Nepal". *World Development*, 18(1):61-75.

Biggs, S.D., Gurung, S.M. & Messerschmidt, D. (2004). "An Exploratory Study of Gender, Social Inclusion and Empowerment through Development Groups and Group-Based Organizations in Nepal: Building on the Positive". (Version 2, November), Report submitted to the *Gender and Social Exclusion Assessment (GSEA) Study*, Kathmandu: DfID and The World Bank.

Blaikie, P., Cameron, J. & Seddon, D. (1980). *Nepal in Crisis*. Oxford: Oxford University Press.

BNMT British Nepal Medical Trust (BNMT). (2008). *Nepal National Tuberculosis Programme: At a Glance*. Kathmandu: BNMT. (118TS).

Borman C. (1990). An Experience of Managing a Multi-discipline Research Station (Pakhribas), 1986-1990.

Boserup, E. (1970). Women's Role in Economic Development. St. Martin's Press. New York, 1970.

Bosma, W. (1996). *Benefits from Community Forestry: A Contribution to the Monitoring and Evaluation Process for FUGs in the Koshi Hills, Kathmandu Vol. I.* Kathmandu: Nepal-UK Community Forest Project (NUKCFP).

Branney, P. & Yadav, K.P. (1998). *Changes in Community Forest Condition and Management 1994-1998: Analysis of Information from the Forest Resource Assessment Study and Socio-Economic Study in the Koshi Hills.* Kathmandu: Nepal-UK Community Forest Project (NUKCFP).

Branney, P. (1994). *Handbook for Baseline Forest Resource Assessment*. Kathmandu: HMG/N and Nepal-UK Community Forest Project (NUKCFP), G/NUKCFP/03.

Brighton, U.K., Dahal, B. M., Nyborg, I., Sitaula, B. K., Bajracharya, R., (2009). Agricultural intensification: food insecurity to income security in a mid-hill watershed of Nepal, *International Journal of Agricultural Sustainability* 7(4): 249–260.

British Nepal Medical Trust (BNMT). (2002a). *Extracts from Programme Evaluation Reports*. Biratnagar: Britain-Nepal Medical Trust. (200 K).

British Nepal Medical Trust (BNMT). (2002b). *An Evaluation of Drug Schemes Programme in the Eastern Nepal. Final Report 2002*. Biratnagar: Britain-Nepal Medical Trust.

British Nepal Medical Trust (BNMT). (2002c). *Community Health and Development Programme. Final Evaluation Report 2002*. Biratnagar: Britain-Nepal Medical Trust.

British Nepal Medical Trust (BNMT). (2003/04). *Preserving in embattled Nepal: An Annual Report*. Biratnagar: Britain-Nepal Medical Trust.

British Nepal Medical Trust (BNMT). (2004). *Health Improvement Programme (HIP): HIP Assessment 2003 Summary Report*. Kathmandu: BNMT/MoH/DoSH /ERHD.

British Nepal Medical Trust (BNMT). (2006). *Empowering women for health: An Annual Report*. Biratnagar: BNMT.

British Nepal Medical Trust (BNMT). (2007). *Translating Human Rights into Health Realities in Nepal: Exploring Rights-Based Approach to Health in the Eastern Development Region*. Kathmandu: BNMT.

British Nepal Medical Trust (BNMT). (2009). *Building a New Nepal: The Britain-Nepal Medical Trust, Annual Report 2008/9*. Kathmandu: BNMT.

British Nepal Medical Trust (BNMT). (2009/10). *Stopping Tuberculosis in Nepal Annual Report 2009/2010*. Kathmandu: BNMT.

Brown, S. & Shrestha, B. (2000). Market-driven land-use dynamics in the middle mountains of Nepal, *Journal of Environmental Management* 59: 217–225.

Bruce, C.G., (1934). Himalayan Wandersons. London: Alexander Maclechose and Co.

Burathoky, J.B.S. (1968). Nepal Himalayas. *The Himalayan Review,* 21st International Geographical Congress Special Issue, Nepal Geographical Society: 21 – 30.

Business Promotion Research and Communication. (2009). Baseline Survey of the Project's Key Indicators (Package A). CADP.

Byers, Alton C. (1996). Historical and contemporary human disturbance in the upper Barun Valley, Makalu-Barun National Park and Conservation Area, East Nepal, Mountain Research and Development, Vol. 16, No. 3 (August): 235-247.

Calpan, L., (1970). Land and Social change in east Nepal: A study of Hindu Tribal Relations. Berkeley: University of California Press.

Caplan, L. (1995). Warrior Gentlemen: Gurkhas in the Western Imagination, Berghahn Books.

CARE. (2011). Governance and Health Case Study: Linking Governance and Empowerment to Improved Maternal and Newborn Health Services in Nepal. Atlanta, Georgia: CARE USA Headquarters.

Carpenter, C., & Zomer, R. (1996). Forest ecology of the Makalu-Barun National Park and Conservation Area, Nepal. *Mountain Research and Development*, 16 (2): 135-148.

Carswell, G. (1997). *Agricultural Intensification and Rural Sustainable Livelihoods: A 'Think Piece'*, IDS Working Paper 64, Institute of Development Studies.

CBS (1976a). National Sample Census of Agriculture, 1971/72, Mechi Zone, 1976. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1976b). National Sample Census of Agriculture, 1971/72, Koshi Zone, 1976. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1976c). National Sample Census of Agriculture, 1971/72, Sagarmatha Zone, 1976. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1981c). National Sample Census of Agriculture, 1981/82, District Sankhuwasabha, 1985. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1986a). National Sample Census of Agriculture, 1981/82, District Bhojpur, 1985. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1986b). National Sample Census of Agriculture, 1981/82, District Dhankuta, 1985. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1986d). National Sample Census of Agriculture, 1981/82, District Terhathum, 1985. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1986e). National Sample Census of Agriculture, 1981/82, District Morang, 1985. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1986f). National Sample Census of Agriculture, 1981/82, District Sunsari, 1985. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1986g). National Sample Census of Agriculture, 1981/82, District Ilam, 1985. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1986h). National Sample Census of Agriculture, 1981/82, District Khotang, 1985. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1986i). National Sample Census of Agriculture, 1981/82, Nepal, 1985. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1987). *Population Monograph of Nepal*. Kathmandu: Central Bureau of Statistics (CBS).

CBS (2003). *Population Monograph of Nepal*. Vol. II. Kathmandu: Central Bureau of Statistics (CBS).

CBS (1987a). *Statistical Year Book of Nepal, 1987*. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1987b). Changes in 1971/72 and 1981/82 Sample Censuses of Agriculture of Nepal at Ecological Belt Level, 1987. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1989). *Statistical Year Book of Nepal, 1989*. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1993a). National Sample Census of Agriculture, 1991/92, District Bhojpur, 1993. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1993b). National Sample Census of Agriculture, 1991/92, District Dhankuta, 1993. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1993c). National Sample Census of Agriculture, 1991/92, District Sankhuwasabha, 1993. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1993d). National Sample Census of Agriculture, 1991/92, District Terhathum, 1993. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1993e). National Sample Census of Agriculture, 1991/92, District Morang, 1993. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1993f). National Sample Census of Agriculture, 1991/92, District Sunsari, 1993. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1993g). National Sample Census of Agriculture, 1991/92, District Ilam, 1993. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1993h). National Sample Census of Agriculture, 1991/92, District Khotang, 1993. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1993i). National Sample Census of Agriculture, 1991/92, Nepal, 1993. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1994). National Sample Census of Agriculture, 1991/92, Analysis of Results, 1994. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (1997). *Statistical Year Book of Nepal, 1997*. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (2004), *Handbook of Environment Statistics-2003*. Kathmandu: Central Bureau of Statistics.

CBS (2004a). National Sample Census of Agriculture, 2001/02, District Bhojpur, 2004. Kathmandu: Central Bureau of Statistics, His Majesty's Government

CBS (2004b). National Sample Census of Agriculture, 2001/02, District Dhankuta, 2004. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (2004c). National Sample Census of Agriculture, 2001/02, District Sankhuwasabha, 2004. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (2004d). National Sample Census of Agriculture, 2001/02, District Terhathum, 2004. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (2004e). National Sample Census of Agriculture, 2001/02, District Morang, 2004. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (2004f). National Sample Census of Agriculture, 2001/02, District Sunsari, 2004. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (2004g). National Sample Census of Agriculture, 2001/02, District Ilam, 2004. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (2004h). National Sample Census of Agriculture, 2001/02, District Khotang, 2004. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (2004i). National Sample Census of Agriculture, 2001/02, Nepal, 2004. Kathmandu: Central Bureau of Statistics, His Majesty's Government.

CBS (2005). *Statistical Year Book of Nepal, 2005*. Kathmandu: Central Bureau of Statistics, Government of Nepal.

CBS (2006). *District Profile: Dhankuta 2062*. Kathmandu: Central Bureau of Statistics (CBS).

CBS (2009). *Statistical Year Book of Nepal, 2009*. Kathmandu: Central Bureau of Statistics, Government of Nepal (CD).

CBS (2006). *Resilience amidst Conflict: An Assessment of Poverty in Nepal 1995-96 and 2003-04*. Kathmandu, Nepal: CBS.

Centre for Economic Development and Administration (CEDA). (1972). *Regional Analysis of Koshi Zone/Eastern Nepal: Working Method for Regional Planning in Nepal Vol. II.* Berlin and Kathmandu: Centre for Economic Development and Administration AND German Development Institute (GDI).

Centre for Economic Development and Administration (CEDA). (1975). Regional Development Study (Nepal): Part IIIa Koshi Zone. Kathmandu, Nepal: Centre for Economic Development and Administration (CEDA).

Centre for Science and Environment. (2002). Melting into Oblivion: Down to Earth, 15 May 2002, China Daily, 23 September 2004.

Centre for Self-Help Development (2011). *Annual Report 2066/67*. Kathmandu.

Chang, H.J. (2010). Institutions and economic development: Theory, Policy and History. Journal of Institutional Economics. Pp 1-26.

Chaulagain, N. P. (2006). Impacts of Climate Change on Water Resources of Nepal: The Physical and Socioeconomic Dimensions. Doctoral Dissertation, University of Flensburg, Germany.

Chemjong, D. (1996). Institutional Processes of Forest User Groups: Case Studies from Dhankuta District, Rajarani Range Post. [Final Draft]. Dhankuta Office: NUKCFP.

Chettry, Laxman K. (…). *EIA as Applied in the Case of the 402 MW Arun-III Hydroelectric Project*, UNEP EIA Training Resource Manual: Future Directions, Case Studies from Developing Countries: 295-304.

Chhetri, P.B. (2007). Mid Term Review of Cardamom Sub Sector Support. SNV.

Chhetri, R.B, Timsina, N.P., Luintel,H., Regmi, R., Bhattarai, B. and Ale Magar, R. (2008). Decentralization and Promotion of Women's Rights in Nepal: Exploring Constraints, Opportunities and Intervention Avenues, Final Scientific Report. Kathmandu: Forest Resources Studies and Action Team (ForestAction), Nepal and HIMAWANTI.

Chitrakar, D. & Singh, L. (2004). Commodity Case Study: Vegetable seeds. In Implications of WTO Membership on the Nepalese Agriculture. HMG/N and FAO.

Choe KyeongAe and Pushkar K Pradhan (2010). Unleashing Economic Growth: Region-Based Urban Development Strategy for Nepal. Manila: Asian Development Bank.

Chris Carpenter & Robert Zomer (1996). Forest ecology of the Makalu-Barun National Park and Conservation Area, Nepal. Mountain Research and Development. Vol. 16, No.2. pp. 135-148.

Classels, C., Wijga, Atv, Pant, M. & Nabarro, D. (1987). Coping Strategies of East Nepal Farmers: Can Development Initiatives Help? KHARDEP.

Cohen, J (2004). The Culture of Migration in Southern Mexico. Austin, Texas, USA: University of Texas Press.

Commercial Agriculture Development Project (CADP). (2008a). An Interaction programme about partnership with NGOs. CADP. Siraha.

Commercial Agriculture Development Project. (CADP). (2003). Interim Report: June 2003. CADP.

Commercial Agriculture Development Project. (CADP). (2008b). Second Annual Progress Report: Fiscal Year (2008/09). CADP.

Commercial Agriculture Development Project. (CADP). (2008b). Second Annual Progress Report: Fiscal Year (2011). Annual Progress Report: July 2010-July 2011. CADP. Kathmandu.

Conlin, S. & Falk, A. (1979). A Study of the Socio-economy of the Koshi Hill Area: Guidelines for Planning an Integrated Rural Development Programme VOL I, KHARDEP Report 3. Tolworth, UK: KHARDEP.

Cromwell E, Gurung S & Urben R. (1992).The Koshi Hills Agriculture project: An Impact Assessment of the Seed Programme. Cambridge, UK. Atkins Land & water Management.

CVST. (2009). Vulnerability through the eyes of the vulnerable: Climate change induced uncertainties and Nepal's development predicaments. Institute for Social and Environmental Transition (ISET), Nepal. Kathmandu, Nepal: Nepal Climate Vulnerability Study Team (NCVST).

Dahal, D. R. & Mishra, C., (1987) Nepali Emigrants in India. CNAS Forum: Current issues Series4. Kathmandu: CNAS, TU.

Davis, K. (1951). The population of India and Pakistan. Princeton: Princeton university press.

DDC. (2010). *District Profile Dhankuta (Jilla Parswachitra 2066)*. Dhankuta: District Development Committee (DDC).

DFRS (1999) Forest Resources of Nepal (1987-1998). Kathmandu: Department of Forest Resource and Survey /HMGN.

Dhakal, B. & Neupane, Ramji P. (2008). Conflict transformation: emerging socioeconomic problems associated with natural resources policies and practices in Nepal. In: Pradhan, Pushkar K. Wastl-Walter, D. & Folmar, S (Eds.). *Public Policy and Local Development: Opportunities and Constraints*. International Geographical Union, Commission on Geography and Public Policy: 131-170.

Dhakal, Maheshwar. *Issues of Implementation of Buffer Zone Concept in Nepal*. Department of National Parks and Wildlife Conservation.

Dhakal, Suresh (2001). *Socio-cultural Study of Makalu Barun Landscape Complex*. Report to the Nepal Bio-Diversity Landscape Project.

Dhakal, T.N. (2007). *Challenges of Civil Society Governance in Nepal*, JOAAG, Vol.2, No.1.

DHM (1996). Glacier lake outburst flood study of the Tama Koshi Basin. Draft Report prepared by BPC Hydroconsult, November 1996 for the Department of Hydrology and Meteorology.

Dixit, Hemang (1999). *The Quest for Health*. Kathmandu: Educational Enterprises P. Ltd.

Dobhal, D.P, Gergan, J.T., Thayyen, R.J. (1999). Recession of Dokriani Glacier, Garhwal Himalaya - An overview. Symp. On snow, ice and glaciers. A Himalayan Perspective. Geol. Survey India: 30-33.

DOH (1996). *Annual Report: Department of Health Services 2051/52 (1994/95), 1996*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (1997). *Annual Report: Department of Health Services 2052/53 (1995/96), 1997*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (1998). *Annual Report: Department of Health Services 2053/54 (1996/97), 1998*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (1999). *Annual Report: Department of Health Services 2054/55 (1997/98), 1999*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2000). *Annual Report: Department of Health Services 2055/56 (1998/99), 2000*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2001). *Annual Report: Department of Health Services 2056/57 (1999/00), 2001*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2002). *Annual Report: Department of Health Services 2057/58 (2000/01), 2002*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2003). *Annual Report: Department of Health Services 2058/59 (2001/02), 2003*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2004). *Annual Report: Department of Health Services 2059/60 (2002/03), 2004*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2005). *Annual Report: Department of Health Services 2060/61 (2003/04), 2005*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2006). *Annual Report: Department of Health Services 2061/62 (2004/05), 2006*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2007). *Annual Report: Department of Health Services 2062/63 (2005/06), 2007*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2008). *Annual Report: Department of Health Services 2063/64 (2006/07), 2008*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2009). *Annual Report: Department of Health Services 2064/65 (2007/08), 2009*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2010). *Annual Report: Department of Health Services 2065/66 (2008/09), 2010*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

DOH (2011). *Annual Report: Department of Health Services 2066/67 (2009/10), 2011*. Kathmandu: Department of Health services, Ministry of Health and Population, Government of Nepal.

Dos Santos, T. (1970). The Structure of Dependence. The American Review. Vol 60.

Dunsmore, J. (1984). *KHARDEP 1977-84: A Review and Progress Report*. Kathmandu: Koshi Hills Area Rural Development Programme (KHARDEP). 82D & CD 8.

Dunsmore, J. (1987). KHARDEP: Rural Development in the Hills of Nepal. Land Resource Study, No. 36, LRDC/ODA, Surbiton, Surrey. (26/106D).

Dutt, P. (1985). *Koshi Hill Area Rural Development Programme: Preliminary and General Conclusions on Livestock in KHARDEP Area*. KHARDEP Report No. 5. Dhankuta: KHARDP.

Easterly, W. (2006). Reliving the 1950s: The Big Push, Poverty Traps and Takeoffs in Economic Development. *Journal of Economic Growth*. Vol. 11(4): 289-318.

Edwards, D.M. (1996). Non-Timber Forest Products from Nepal. Aspects of the Trade in Medicinal and Aromatic Plants. FORESC Monograph 1/96. Kathmandu: Ministry of Forests and Soil Conservation, Forest Research and Survey Centre.

Elis, F. and Biggs, S. (2001). Evolving Themes in Rural Development 1950s- 2000s. Development Policy Review 2001. Vol.19 (4): 437-448.

ENPHO et al (2002), State of Rural Energy in the Mountains, Nepal, Kathmandu: ENPHO WELINK/MOPE.

Eriksson, M.; Jianchu, X.; Shrestha, A. B.; Vaidya, R. A.; Nepal, S.; Sandstorm, K. (2009). The changing Himalayas – Impact of climate change on water resources and livelihoods in the Greater Himalayas. Kathmandu, Nepal: International Centre for Integrated Mountain Development (ICIMOD).

ESCAP. (2005). Women in international trade and migration: Examining the globalized provision of care services. *Gender and Development*. Discussion Paper Series No. 16. Bangkok.

FAO. (2009). *Global Forest Resources Assessment 2010, Nepal Country Report*. Rome: FAO, Forest Resources Assessment Programme.

Faust, E. (2005). Climate Review, Munich Re, Topics Geo, Annual Review: Natural catastrophes. Knowledge Series.

Fei, J. and Ranis, G. (1964). Development of Labour Surplus Economy: Theory and Praxis. New Haven.

Fine, B. (2001). 'Neither the Washington nor the post –Washington Consensus: An introduction', in Fine G., Lapavistsas, C. and Pincus, J. (eds), Development Policy in the Twenty-First Century Beyond the post-Washington Consensus. London: Routledge.

Foundation for Development Management (2010). *Final Evaluation Report on Sustainable Rural Livelihood Project*, Rural Reconstruction Nepal (RRN). Kathmandu.

Frank, A.G. (1967). Capitalism and Underdevelopment in Latin America: Historical Studies of Brazil and Chile. New York: Monthly Review, 1969.

Fraser, A. (2005). Poverty Reduction Strategy Papers: Now Who Calls the Shots?. Review of African Political Economy. Vol 32:317-340.

Full Bright Consultancy. (2008a). Final Report: Product Chain Study of Cardamom. CADP.

Full Bright Consultancy. (2008b). Final Report: Product Chain Study of Tea. CADP.

Full Bright Consultancy. (2008c). Final Report: Product Chain Study of Ginger. CADP.

Full Bright Consultancy. (2008d). Final Report: Product Chain Study of Potato. CADP.

Full Bright Consultancy. (2008e). Final Report: Product Chain Study of Tomato. CADP.

Full Bright Consultancy. (2008f). Final Report: Product Chain Study of Orange. CADP.

Full Bright Consultancy. (2008g). Final Report:Product Chain Study of Cabbage. CADP.

Full Bright Consultancy. (2008h). Final Report: Product Chain Study of Banana. CADP.

Full Bright Consultancy. (2008i). Final Report: Product Chain Study of Mango. CADP.

Full Bright Consultancy. (2008j). Final Report: Product Chain Study of Onion. CADP.

Gautam, A.P., Shivakoti, G.P. and Webb, E.L. (2004). "A review of forest policies, institutions, and changes in the resource condition in Nepal". International Forestry Review, 6(2): 136-148.

Gautam, A.P., Webb, E.L., Shivakoti, G.P. & Zoebisch, M.A. (2003). "Land use dynamics and landscape change pattern in a mountain watershed in Nepal". Agriculture, Ecosystems & Environment, 99: 83–96.

Gautam, T. R., (n/d). Migration and the problem of Old Age people in Nepal, Dhaulagiri Journal of Sociology and Anthropology Vol. 2.

Gayfer, J. (1994). *Terminal Report. Koshi Hills Community Forestry Project, 1987-1993*. Nepal: KHDP. (80).

Ghimire, K. (1992). Forest or Farm? The Policies of Poverty and Hunger in Nepal. Oxford University Press. Delhi 1992.

Ghimirey, Y. & Pal, P. (2009). First camera trap image of Asiatic golden cat in Nepal. *Cat News*. 51: 17.

Gill. J. G. (2003). Seasonal Labour Migration in Rural Nepal: A Preliminary Overview. Overseas Development institute, London, UK.

Goetz, A.M. (1994). From feminist knowledge to data for development: The bureaucratic management of information on women and development. IDS Bulletin 25(2): 2-36.

Goldsmith P. (1981). Land & Soil Resources of KHARDEP Area Vol 1.

Gopal, B; Shilpakar, R; & Sharma, E (2010) Functions and Services of Wetlands in the Eastern Himalayas: Impacts of Climate Change; Climate change impact and vulnerability in the Eastern Himalayas – Technical Report 3. Kathmandu: ICIMOD.

Government of Nepal (GON). (1956). *Draft Five Year Plan. A Synopsis.* Kathmandu.

Government of Nepal (GON). (1962). *Second Three Year Plan.* Kathmandu: GON.

Graner, E. & Gurung, G. (2003). Arab Ko Lahure: Looking at Nepali Labour Migrants to Arabian Countries. Contribution to Nepalese Studies, 30: 295-325.

Graner, E. (1997). *The Political Ecology of Community Forestry in Nepal*. Saarbrucken, Germany: Verlay for Entwicklungs Politik.

Graner, G. & Seddon, D., (2004). Nepal Remittances Economy: A decade of Change (1996-97 to 2003-04), in: M.K. Dahal, ed., Nepalese Economy: Towards Building a Strong Economic nation State, CEDECON and New Hira books Enterprises Kirtipur, Nepal, pp. 29-52.

Gupta, A. (1988). Foreign Aid and Political Economy of Nepal. BHSS Journal 9, 4:400-417. BHSS Journal 9,4:400-417.

Gupta, R.P. (1984). Pakhribas Agriculture Centre: A Review of its Activities. Nepal: PAC.

Gurung, Harka (1968). Geographic foundations of Nepal. *The Himalayan Review,* 21st International Geographical Congress Special Issue: 1 – 10.

Gurung, Harka (1971). Rationale for hill areas development. *Nepal Industrial Digest*: 17-24.

Gurung, Harka. (1984). Nepal, Dimensions of Development. Kathmandu. Sahayogi Press.

Gurung, Harka (1984). Migration and development. In: Harka Gurung, *Nepal: Dimensions of Development,* pp 161-88. Kathmandu: Sahayogi Press.

Gurung, Harka. (1989). Regional patterns of Migration in Nepal. Number 113. Papers of the east-West Population Institute.

Gurung, Harka. (1998). Nepal: Social Demography and Expressions. Kathmandu: New Era.

Gurung, Harka. (2005). Nepal Regional Strategy for Development. ADB Working Paper Series No. 3.

Gurung, Harka. (2005). Nepal Regional Strategy for Development. NRM Working Paper No. 3. Kathmandu, Nepal: Asian Development Bank.

Guthman, J. (1997). Representing Crisis: The Theory of Himalayan Environmental Degradation and the Project of Development in Post-Rana Nepal. Development and Change Vol. 28:45-69.

Hill Agriculture Research Project (HARP) (1996). HARP in Nepal.

Hirschman, A.O. (1958). The Strategy of Economic development. New Haven.

His Majesty's Government of Nepal (HMGN). (1965). *The Third Plan (1965-70)*. Kathmandu: HMGN/National Planning Council, Ministry of Economic Planning, Nepal.

His Majesty's Government of Nepal (HMGN). (2000). Revised Forestry Sector Policy. Kathmandu: HMGN, Ministry of Forests and Soil Conservation.

His Majesty's Government of Nepal/Asian Development Bank/Finnish International Development Agency (HMGN/ADB/FINNIDA). (1988). Master Plan for the Forestry Sector, Nepal: Main Report. Kathmandu, Nepal: HMGN, Ministry of Forests and Soil Conservation, Kathmandu.

Hitchcock, J.T. (1961). A Nepalese Hill Village and Indian Employment. Asian Survey 1(9): 15–20.

HMG (1999). Local Self Governance Regulations-1999. Kathmandu: Ministry of Local Development, Government of Nepal.

HMG. (2031). *Mechi Dekhi Mahakali: Purbanchal Bikas Chhetra (Mechi to Mahakali: Eastern Development Region),* Part I. Kathmandu: Department of Information, Ministry of Communication, His Majesty's Government (HMG): 285 – 543.

Hobley, M. (1985). Common property does not cause deforestation. Journal of Forestry, 83:663–664.

Hobley, M. (1996). Participatory Forestry: The Process of Change in India and Nepal. ODI, London.

Hocking, D., Hocking, A., Subedi, B., Feldmand, D. & Mathema, S. (1995). Social & Economic Impact of Research done at Lumle & Pakhribas Agricultural Centres, Nepal.

Holloway, K. A. & Gautam, B. R. (1999). "Community-based revolving drug funds - The way forward?" Journal of the Institute of Medicine, 21(1 –103).

Howell J. (1984). UK Aid to Koshi Hills. Overseas Development Institute (ODI).

Howell, J. (1984). UK Aid to the Koshi Hills. Overseas Development Institute. London.

IDS. (1981). A Pre-review Assessment: Koshi Hills Area Rural Development Programme. Kathmandu.

International Conference for Women Leaders: Migration and Gender Issues with the Millennium Development Goals, 25-28 September 2005, Haifa, Israel.

International Labour Organisation (ILO). (1976). *Employment, Growth and Basic Needs: A One-World Problem*. Geneva: ILO.

IPCC (1996). Climate Change 1995. Impacts, Adaptation and Mitigation of Climate Change: Scientific and Technical Analyses. Contribution of Working Group II to the Second Assessment Report of the Intergovernmental panel on Climate Change.

IPCC (2001). IPCC Third Assessment Report- Climate Change 2001. Working Group II: Impacts, Adaptation and Vulnerability. Summary for Policy Makers. Geneva, WMO and UNEP.

Ives, J.D. (1986). Glacial Lake Outburst Floods and Risk Engineering in the Himalaya, ICIMOD Occasional Paper No.5, ICIMOD.

Ives, J.D. and Messerli, B. (1989). *The Himalayan Dilemma: Reconciling Development and Conservation*. London: The United Nations University.

Jackson, W.J., Tamrakar, R.M., Hunt, S. and Shepherd, K.R. (1998). Land use changes in two middle hill districts of Nepal. Mountain Research and Development, 18: 193–212.

JFTA (2001), *Information System Development Project for the Management of Tropical Forest: Activity Report of Wide Area Tropical Forest Resources Survey* (Kingdom of Nepal), Kathmandu: Japan Forest Technology Association (JAFTA).

Jha, H.B. (eds) (1995). Nepal- India Border Relations. Centre for Economic and Technical Studies (CETS), Modern Printing Press, Kathmandu.

Jha, S. G. (2003). Linkages between biological and cultural diversity for participatory management: Nepal's experiences with Makalu-Barun National Park and buffer zone. *Journal of the National Science Foundation of Sri Lanka*, 31 (1&2): 41-56.

Jha, Satish C. (1987). "Rural development in Asia: issues and perspectives". *Asian Development Review,* 5(1):83 – 99.

Jodha, N.S. (1989-1992). Mountain perspective and its utility: a framework for development strategies. *The Himalayan Review*, Vol. XX-XXIII, pp: 11-24.

Joint Technical Review of Community Forestry (JTRCF). (2001). Joint Technical Review of Community Forestry: Report of the Joint Technical Review Committee. Kathmandu, Nepal: Ministry of Forest and Soil Conservation.

Jull, C. (2006). The Impact of Agriculture-Related WTO Agreements on the Domestic Legal Framework in the Kingdom of Nepal. FAO Legal papers. June 2006.

Kaini, B. R. (2004). Increasing crops production in Nepal. In: D. P. Sherchan, K. Adhikari, B. K. Basta & D. Sharma (eds), *Proceedings of the 24th National Summer Crops Research Workshop on Maize Research and Production in Nepal*, 28–30 June, NMRP and NARC, Kathmandu, Nepal: 15–19.

Kansakar, V. B. S., (2003). *International Migration and Citizenship in Nepal in Population Monograph of Nepal* (Volume II), Kathmandu: Central Bureau of Statistics.

Kansakar, V.B.S (1985). Land resettlement policy as a population distribution strategy in Nepal. In: Kosinski. L.A. and Elahi, K.M., eds. *Population Redistribution and Development in South Asian*. New York. D. Reidel Publication Company.

Kansakar, V.B.S. (1983). Population distribution policies and planned resettlement in Nepal. In: A. S. Oberoi, ed., *State Policies and Internal Migration: Studies in Market and Planned Economics*: 229-50, New York: St. Martin's Press.

Kapur, D. and Webber, R. (2000). Governance-related Conditionalities of the IFI's. G-24 Discussion Paper Series No. 6. Geneva: UNCTAD.

Karma, Ageta, Y., Naito, N., Iwata, S., and Yabuki, H. (2003). Glacier distribution in the Himalayas and glacier shrinkage from 1963 to 1993 in the Bhutan Himalayas. Bull. Glaciological Research 20, Japanese Society of Snow and Ice, 29-40.

Kattelmann (2003). Glacial lake outburst floods in the Nepal Himalaya: A manageable hazard?' in: Natural Hazards.

KC, B.K., (2003). Internal Migration in Nepal in Population Monograph of Nepal (Volume II), Kathmandu: Central Bureau of Statistics.

KC, B.K., (2003). Migration, Poverty and Development in Nepal. Economic and Social Commission for Asia and the Pacific (for Ad Hoc Expert Group Meeting on Migration and Development), Bangkok.

KC, S., Sharrock, G., & Rood, P.G. (1993). The Outreach Programme at Pakhribas Agricultural Centre (Past Experiences, Lessons and Proposed Future Strategy): PAC Occasional Paper No. 13 Dhankuta, Nepal.

KES (1986). *Land Resources Mapping Project: Land Utilisation Report*. Kathmandu: Department of Survey/Kenting Earth Science (KES), Canadian International Development Agency (CIDA).

Khadka, N. (1991). Foreign Aid, Poverty and Stagnation in Nepal. Ratna Pustak Bhandar, Kathmandu 1991.

Khadka, N. (1994). Politics and Development in Nepal. Jaipur: Nirala.

Khadka, Narayan. (1988). "Nepal's Seventh Five-Year Plan". *Asian Survey*, 28(5): 555-572.

Khanal, N. and Watanabe, T. (2006), Abandonment of agricultural land and its consequences; a case study in the Sikles area, Gandaki basin, Nepal Himalaya, *Mountain Research and Development*, 26 (1): 32-41.

Kollmair, M., Manandhar, S., Subedi, B., & Thieme, S. (2006) New Figures for old stories: Migration and remittances in Nepal. Migration Letters, Vol. 3 No: 2.

Koshi Hills Development Programme (KHDP)(1992). The Koshi Hills Development Programme : An Overview, Kathmandu, Nepal, Koshi Hills Development Programme.

Koshi Hills Development Programme (KHDP). (1992). *Strategy for UK Investment in The Koshi Hills, Nepal. Proposal for a Fourth Phase of the Koshi Hills Development Programme and Community Forestry Project*. Kathmandu: Prepared for ODA by the KHDP Team.

Koshi Hills Development Programme (KHDP). (1992). The Koshi Hills Development Programme: An Overview. KHDP. Kathmandu.

Koshi Hills Development Programme (KHDP).(1991).Annual Report 1991, Cambridge, UK., Atkins Land & water Management.

Koshi Hills Seed & Vegetable Project. (1994). Koshi Hills Seed and Vegetable Project: An Overview. Dhankuta, Nepal: Koshi Hills Seed and Vegetable Project.

Koshi Hills Seed and Vegetable Project (KOSEVEG). (1994). An Overview: Koshi Hills Seed and Vegetable Project. KOSEVEG.

Krueger, A. (1974). The Political Economy of the Rent-Seeking Society. The American Economic Review. Vol. 64 (3): 291-303.

Krueger, A. (1986). Changing perspectives on development economies and World Bank research. Development Policy review 4:195-210.

Kuhn, M. (1993). Possible future contribution to sea level channel from small glaciers. In: R.A. Warrick et al. (Eds.), Climate and Sea Level Change: Observations, Projections and Implications, Cambridge, UK: Cambridge University Press: 134-143.

Kulkarni, A.V., Rathore, B. P. and Alex, S. (2004). Monitoring of glacial mass balance in the Baspa basin using Accumulation Area Ratio method, Current science 86(1): 101-106.

Lal, D. (1983). The poverty of development economics. Cambridge: Harvard University Press.

Lal, M. (2002). Possible impacts of global climate change on water availability in India. Report to Global Environment and Energy in the 21st Century. New Delhi: Indian Institute of Technology.

Lama, Dickey D., D. Battermann, R. Manandhar & Ulli Hoffmann (2003). *Support of Subsistence Farmers in the Arun Valley, Nepal*. EZA-Project No. 1805-00/2002. Final Evaluation, Kathmandu: Eco Himal.

Land Resource Development Centre (LRDC). (1987). KHARDEP Rural Development in the Hills of Nepal. Report No. 36. Tolworth Tower, England: LRDC.

Land Resource Mapping Project (LRMP). (1986). Land System Report. Kathmandu: HMGN/LRMP

Leeson, Francis. (1949). A note on the U.S. expedition to Nepal, *The Himalayan Journal*, 15.

Liu, X. & Chen, B. (2000). Climatic warming in the Tibetan Plateau during recent decades. International Journal of Climatology 20: 1729–1742.

Livelihoods & Forestry Programme (LFP) and Tango International & Development Vision. (2003). *Hill Livelihoods Baseline Study*. Kathmandu: LFP.

Livelihoods & Forestry Programme (LFP). (2010). *The Resilience of Community Forestry User Groups in Conflict: Lessons from Nepal*. Kathmandu: Livelihoods and Forestry Programme.

Livelihoods and Forestry Programme, East.(2006). *Achievements against Indicators (MTR Briefing Note)*. Kathmandu: LFP.

Locke, C. & Koshi Hills Team Members (1999). *Learning about the Impact of Community Forestry Processes between 1994-1998 in the Koshi Hills Districts of the Nepal UK Community Forestry Project*. Kathmandu: NUKCFP.

Locke, C., Subedi, R., Poudyal, L., Khadka, H., & Chapagain, N. (1999). Dhaulagiri follow-up study & household survey: Design, Analysis and Learnings, Process Report. Kathmandu: NUKCFP.

Long, F. (1978). A Basic Needs Strategy for Development of Technology in Low Income Countries. American Journal of Economics and Sociology. Vol 37 (4):261-270.

Loughhead, S., Shrestha, R. & K.C., Drona. (1994). "Social Development Considerations in Community Forestry". Kathmandu, Nepal: Nepal-UK Community Forestry Project (NUKCFP) Working Paper Series No.2.

LRMP (1986), Land System Report. Kathmandu: Land Resource Mapping Project/HMGN.

Luger, Kurt & Narayan Dhakal (2011). *Buffer Zone Development Project, Makalu Barun National Park, Bala and Sisuwa Village Development Committees*. Swiss Agency for Development and Cooperation (SDC) and Eco Himal. Final Report (January 2003 – February 2011). SDC-(7F-06703.01).

Luger, Kurt & Narayan Dhakal (2011). *Buffer Zone Development Project, Makalu Barun National Park, Bala and Sisuwa Village Development Committees*. Swiss Agency for Development and Cooperation (SDC) and Eco Himal. Final Report (January 2003 – February 2011). SDC-(7F-06703.01).

Luintel, H., Ojha, H., Rana, B., Subedi, R. & Dhungana, H. (2009). *Community Forestry in Nepal: promoting livelihoods, community development and the environment*. Kathmandu: LFP.

Lumle Extension Project Study. (1994). Final Report.

Macchi, M., Gurung, Amanda M., Hoermann, B. & Choudhury, D. (2011). *Climate Variability and Change in the Himalayas: Community Perceptions and Responses* Kathmandu: International Centre for Integrated Mountain Development.

MacFarlane, A (1976) Resources and Population: A Study of Gurungs of Nepal. London, UK: Cambridge University Press.

Mahat, Ram Sharan. (2005). In Defence of Democracy Dynamics and Fault Lines of Nepal's Political Economy. New Delhi: Adroit Publishers.

Mahat, T.B.S., Griffin, D.M. & Shepherd, K.R. (1986). "Human Impact on Some Forests of the Middle Hills of Nepal Part 1. Forestry in the Context of the Traditional Resources of the State". *Mountain Research and Development*, 6(3): 223-232.

Malla, Y.B. (2001). "Changing policies and the persistence of patron-client relations in Nepal: Stakeholders' responses to changes in forest policies". Environment History, 6 (2): 287–307.

Manandhar, Madan K. (1982). *The Socio-economic Impact of the Growth Centre on Its Rural Hinterland: A Case Study of Birendranagar, Nepal*. MSc. Thesis. Asian Institute of Technology, Bangkok.

Mandal, U. K. (1995). *The System of Periodic Market Centers: A case Study of Saptari District*. Master's Thesis, Central Department of Geography, TU, Kathmandu.

Mareno, C., 2005. "Gender, remittances and development", in proceedings of the International Conference for Women Leaders: Migration and Gender Issues with the Millennium Development Goals, 25-28 September 2005, Haifa, Israel.

Marsh, D. K. V. (1984). *The Effect of the Opening of the Dharan-Dhankuta-Hile Road on the Movement of Goods and People in the Koshi Hills: Results of the Third Traffic Survey*, KHARDEP Report No. 43, June.

Marsh, D.K.V. & Dahal, R.P. (1984). Evaluation of the Small Farmer Development Programme in the KHARDEP Area.

Martin, R.P. (2001). The design of remedial works to the Dharan-Dhankuta road, east Nepal, *Geological Society*, Engineering Geology Special Publications, 18:197-204.

Matny, L. (2000). Melting of Earth's Ice Cover Reaches New High. Worldwatch News Brief, 06 March.

Maxwell, S. (2005). The Washington Consensus is dead! Long live the meta-narrative. Overseas Development Institute, Working Paper 243, Londond.

Mbilinyi, M. (1984). Women in Development Ideology: The Promotion of Competition and Exploitation. African Review 11 (1).

Mehta, J. & Kellert, S. (1998). Local attitudes toward community-based conservation policy and programmes in Nepal: a case study in the Makalu-Barun Conservation Area. *Environmental Conservation*, 25 (4): 320–333.

Mehta, J. & Kellert, S. (1998). Local attitudes toward community-based conservation policy and programmes in Nepal: a case study in the Makalu-Barun Conservation Area. *Environmental Conservation*, 25 (4): 320–333.

Meier, Ueli, Acharya, H.P., & Shrestha, N.T. (2009). *End Evaluation of the Decentralise Local Governance Support Programme (DLGSP) in Nepal*. Commissioned by UNDP and the Royal Norwegian Embassy Kathmandu. Oslo: Scanteam.

Messerschmidt, Donald A. (1980). Gateway-hinter relations in changing Nepal. *Contribution to Nepalese Studies*, Vol. 8 (1): 21-40.

Metz, John J. (1995). "Development in Nepal: Investment in the Status". *GeoJournal*, 35(2): 175-184.

Mihaly, E.B. (2009). *Foreign Aid and Politics in Nepal, A Case Study*. Second Edition. Lalitpur, Nepal: Himal Books. (Originally published in 1965 by the Oxford University Press and reprinted in 2003 and 2009).

Ministry of Agriculture and Cooperative (MOAC). (2006). Agriculture Biodiversity Policy. MOAC. GON.

Ministry of Agriculture and Cooperative (MOAC). (2007). Agriculture Business Promotion Policy. MOAC. GON.

Ministry of Health [Nepal], New ERA and ORC Macro. (2011). Nepal Demographic and Health Survey 2011 Preliminary Report. Calverton, Maryland, USA: ORC Macro; Kathmandu: Family Health Division, Ministry of Health, New ERA and USAID.

Ministry of Health and Population (MoHP). (2009). Nepal Health Development Partnership. International Health Partnership National 'Compact' between Ministry of Health and Population, Federal Democratic Republic of Nepal and External Development Partners. Kathmandu: MoHP/ Government of Nepal. http://www.mohp.gov.np/english/projects/nhdp2009_signfinal.pdf. Downloaded on Dec. 26, 2011.

Ministry of Health and Population (MoHP). (2010). *Nepal Health Sector Programme-II (NHSP -II) 2010 – 2015*. Kathmandu: MoHP, Government of Nepal. http://www.nhssp.org.np/about/NHSSP%202%20Policy%20Document.pdf. Downloaded 12/26/2011.

Ministry of Local Development (MLD), (2004). *Policy Paper On Decentralization in Nepal and Policy Paper on Service Delivery (NDF-2004)*. Kathmandu: Ministry of Local Development, HMG/Nepal.

Ministry Of Local Development (MLD). (2008). *Local Governance and Community Development Programme (LGCDP), Programme Document*. Kathmandu, Nepal: Government of Nepal (GON), MLDP.

Misra, I. R. and M. R. Satyal (1981). Development of agricultural marketing and the improvements of rural markets in hill Areas. In: *Nepal's Experience in Hill Agricultural Development*. Kathmandu: Ministry of Food and Agriculture/HMG: 84-92.

MLD. 2004. "Policy Paper on Decentralization Prepared for the Nepal Development Forum". Kathmandu: Nepal.

MOAC (2005). *Statistical Information on Nepalese Agriculture, 2004/2005 (2061/2062)*. Kathmandu: Ministry of Agriculture and Co-operatives, Government of Nepal.

MOAC (2006). *Statistical Information on Nepalese Agriculture, 2005/2006 (2062/2063)*. Kathmandu: Ministry of Agriculture and Co-operatives, Government of Nepal.

MOAC (2007). *Statistical Information on Nepalese Agriculture, 2006/2007 (2063/2064)*. Kathmandu: Ministry of Agriculture and Co-operatives, Government of Nepal.

MOAC (2008). *Statistical Information on Nepalese Agriculture, 2007/2008 (2064/2065)*. Kathmandu: Ministry of Agriculture and Co-operatives, Government of Nepal.

MOAC (2009). *Statistical Information on Nepalese Agriculture, 2008/2009 (2065/2066)*. Kathmandu: Ministry of Agriculture and Co-operatives, Government of Nepal.

MOENV (2010). National Adaptation Programme of Action (NAPA) to Climate Change, Kathmandu: Ministry of Environment (MOENV), the Government of Nepal.

MoLTM/UNIFEM/ SAMANATA, 2003. Policies, Service Mechanisms and Issues of Nepali Migrant Women Workers. Kathmandu.

Mool, P. K., Tao, C. & Bajracharya, S.R. (2004). Monitoring of glaciers and glacial lakes from 1970s to 2000 in Poiqu basin, Tibet Autonomous Region PR China. International Centre for Integrated Mountain Development (ICIMOD) and Cold and Arid Region Environmental and Engineering Research Institute (CAREERI), China.

Mool, P. K., Wangda, D., Bajracharya, S.R., Joshi, S. P., Kunzang, K., and Gurung, D.R. (2001). Inventory of Glaciers, Glacial Lakes and Glacial Lake Outburst Floods, Monitoring and Early Warning Systems in the Hindu Kush-Himalayan Region: Bhutan, ICIMOD & UNEP RRC-AP.

Nabarro, D. & McConnell, C. (1990). Evaluation of the Impact of the Koshi Hill Area Rural Development Programme Vol 1 & 2. (ODA Evaluation Report EV 476).

Nabarro, D., Cassels, C., Pant. M., &Wijga, A. (1987). The Impact of Integrated Rural Development: The Koshi Hill Area Rural Development Programme, East Nepal. KHARDEP.

Nabarro, D.N. and Pant, M. A. (1984). Profile of the Small Farmer Development Programme in Bhirgaun Panchayat. KHARDEP Report No. 42.

National Planning Commission (NPC) (1970). Preliminary Report on Regional Development Areas in Nepal. NPC/HMG.

National Planning Commission (NPC). (1970a). *Fourth Plan (1970-1975)*. Kathmandu: NPC/HMGN, Singha Durbar.

National Planning Commission (NPC). (1970b). *Nepal, The Fifth Plan (1975-80) in Brief*. Kathmandu: NPC/HMGN, Singha Durbar.

National Planning Commission (NPC). (1980). *The Sixth Plan (1980-1985). Part – I (A Summary)*. Kathmandu: NPC/HMGN, Singha Durbar.

National Planning Commission (NPC). (1985). *The Seventh Plan*. Kathmandu: NPC/HMGN, Singha Durbar.

National Planning Commission (NPC). (1992). *The Eighth Plan (1992-1997)*. Kathmandu: NPC/HMGN, Singha Durbar.

National Planning Commission (NPC). (1997). *Ninth Plan (1997-2002)*. Kathmandu: NPC/HMGN, Singha Durbar.

National Planning Commission (NPC). (2002). *The Tenth Plan (2002-2007)*. Kathmandu: NPC/ HMGN, Singha Durbar.

National Planning Commission (NPC). (2007). *Three Years' Interim Plan (2007-2010)*. Kathmandu: NPC/Government of Nepal (GON), Singha Durbar.

National Planning Commission (NPC). (2010). *Three Year Plan Approach Paper (2010-2013)*. Kathmandu: NPC/Government of Nepal (GON), Singha Durbar.

National Tuberculosis Centre (NTC). (2007/2008). Nepal National TB Programme Annual Report 2064/65 (2007/2008). Bhaktapur: Ministry of Health and Population, Department of Health Services, National Tuberculosis Centre.

Natural Resources Institute (NRI).(1993). Mid-Term Review of Pakhribas Agricultural Center Nepal. (NRI).

Nepal National Planning Commission (2001). *Road Transportation,* The Tenth Plan, Chapter 18, http:www. npc.gov. np/tenthplan/docs_in_english.htm, Accessed April 2004.

Nepal Nature dot Com (2006), *Khaptad National Park Management Plan Preparation,* Project Report Submitted to Department of National Park and Wildlife Conservation, Kathmandu.

Nepal, R. & Thapa, G. B. (2009). Determinants of agricultural commercialization and mechanization in the hinterland of a city in Nepal. *Applied Geography* 29: 377–389.

Nepal-UK Community Forestry Project (NUKCFP). (2000). *Nepal-UK Community Forestry Project Annual Report 1999/2000.* HMG/N Department of Forests, assisted by Department for International Development (DFID), (UK). Kathmandu: NUKCFP.

Neupane, H. R. and Yadav, K. P (1995). Preliminary Report on Baseline Forest Resource Assessment of the Koshi Hills. Kathmandu: NUKCFP.

New Era (2008). *An Analytical Report on Female Community Health Volunteers of Selected Districts of Nepal, October 2008*. Kathmandu: New Era.

NGO Federation Nepal (2006). *Jilla Gairsarkari Sanstha Profile: Bhojpur District* (2062 B.S). Jilla Sakha. Bhojpur.

NGO Federation Nepal (2006). *Jilla Gairsarkari Sanstha Profile: Dhankuta District* (2062 B.S). Jilla Sakha Dhankuta.

NGO Federation Nepal (2006). *Jilla Gairsarkari Sanstha Profile: Sankhuwasabha District* (2062 B.S). Jilla Sakha Sankhuwasabha.

NGO Federation Nepal (2006). *Jilla Gairsarkari Sanstha Profile: Terhathum District* (2062 BS). Jilla Sakha Terhathum.

Nickson, A. (1992). Foreign Aid and Foreign Policy: The Case of British Aid to Nepal. University of Birmingham.

Nickson, R. Andrew. (1992). *Foreign Aid and Foreign Policy: The Case of British Aid to Nepal*. Birmingham: University of Birmingham, Development Administration Group, Papers in the Administration of Development No.48.

No-Frills (1989), *Importance of Trails and Central Places for Nepal's Hill Economy: a Geographical Perspective*. Kathmandu: No-Frills Development Consultants.

NPC (2007). *Three Year Interim Plan (2007 – 2010)*. Kathmandu: National Planning Commission, Government of Nepal.

NPC (2010). *The Food Security Atlas of Nepal*. Kathmandu: National Planning Commission, Government of Nepal.

NPC (2011). *Three Year Plan (2010-2013)*. Kathmandu: National Planning Commission, Government of Nepal.

NPC/UNDP (2006). *Millennium Development Goals: Needs Assessment for Nepal*. Kathmandu: National Planning Commission/United Nations Development Programme.

Nurkse, R. (1963). Problems of Capital Formation in Underdeveloped Countries. Oxford.

Oerlemans, J. (1994). Quantifying global warming from the retreat of glaciers. Science 264:243 – 245.

Ojha, D.P. (1983). History of Land settlement in Nepal Tarai. Contribution to Nepalese Studies. 11:21-44.

Ojha, H., Persha, L. and Chhatre, A. (2009). *Community Forestry in Nepal. A Policy Innovation for Local Livelihoods*. International Food Policy Research Institute (IFPRI) Discussion Paper 00913.

Overseas Development Administration (ODA). (1989). Submission to ODA Projects and Evaluation Committee Nepal.

Overseas Development Administration (ODA). Hill Agriculture Research Project (HARP) (1996). HARP in Nepal.

Overseas Development Institute (ODI). (2000). European Aid for Poverty Reduction in Nepal. ODI Working Paper Series 123.

Pachauri, R.K. and Reisinger, A. 'eds. (2007). *Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Climate Change 2007: Synthesis Report, Geneva, Switzerland: IPCC.

Padfield, N.N.W. (1980). *Report of the Health Advisor, 1980*. KHARDEP Report No. 13. Dhankuta: KHARDEP.

Pakhribas Agricultural Center (PAC). (1989). Annual Report, Pakhribas Agricultural Centre, Dhankuta District, Koshi Anchal, Nepal. Kathmandu: PAC.

Panday, D.R. (1983). "Foreign Aid in Nepal's Development: An Overview". In *Foreign Aid and Development in Nepal*, Proceedings of a Seminar, October 4-5, 1983. Kathmandu: Integrated Development Studies.

Pande, S.R. Tropp, S., Sharma, B. & Khatiwada, Y.R. (Eds). (2006). *Nepal: Readings in Human Development*. Kathmandu, Nepal: UNDP.

Pandey, T.R. (1995). *Social Processes and Institutionalisation Patterns of Forest User Group Activities in the Koshi Hills*. Kathmandu: NUKCFP.

Pant, M., Wijga, A., Cassels, C., & Nabarro, D. (1986). Results of the KHARDEP Impact studies (1980-1985): Final report on the Use of Agriculture Inputs and Extension Services by farmers in the Koshi Hill Area, East Nepal. KIS Supplementary report No. 4. Liverpool, 1986.

Pant, M.P. (2002). Changing Faces of Poverty in East Nepal. (Doctoral dissertation). University of Sussex.

Pant, T. N. and G. B. Thapa (1981). *Development potentials of Nepal's hill agriculture. In Nepal's Experience in Hill Agricultural Development*. Kathmandu: Ministry of Food and Agriculture.

Pant, T.N. & Thapa, G.B. (1981). Development Potentials of Nepal's Hill Agriculture. In Nepal's Experience in Hill Agricultural Development (pp.19-28). Ministry of Food and Agriculture. HMG/N.

Pardo, R. (1995). "Community forestry comes of age". Journal of Forestry, 93(11): 20–25.

Philip, G. & Sah, M. P. (2004). *Mapping Repeated Surges and Retread of Glaciers Using IRS-1C/1D Data: A Case Study of Shaune Garang Glacier, Northwestern Himalaya*. International Journal of Applied Earth Observation and Geoinformation Vol. 6(2), 127-141.

Pigg, S.L (1992) 'Inventing Social Categories Through Place: Social Representations and Development in Nepal.' Comparative Studies in Society and History 34(3): 491–513.

Pingyi, Z. & Tianchi, L (2001). Flash Flooding Caused by Landslide Dam Failure. ICIMOD Newsletter No. 38, Winter 2000/2001:4-5.

Pokharel, B.K. &. Tumbahamphe, N. (1999). *Community Forestry Development Action: A Synthesis of NUKCFP Reports and Publications*. Kathmandu: Nepal-UK Community Forest Project (NUKCFP).

Poudel K (2004a). Agricultural perspective plan: plan in uncertainty. *Spotlight*, Vol 23, No. 28, www.nepalnews.com.np/contents/englishweekly/spotlight, Accessed December 2004.

Pradhan, B. and Shrestha, I. (1983). "Foreign Aid and Women". In *Foreign Aid and Development in Nepal*, Proceedings of a Seminar, October 4-5, 1983. Kathmandu: Integrated Development Studies.

Pradhan, B.B. (1983). Two ways planning process in agriculture and rural development planning in Nepal. Prashasan. The Nepalese Journal of Public Administration. Year 15, No. 1, 38th Issue.

Pradhan, B.B. (1985). *Integrated Rural Development Projects in Nepal – A Review*. Kathmandu: ICIMOD. Occasional Paper No. 2.

Pradhan, Pushkar K (2012). *Concepts and Methods: Urbanisation in Nepal*. Kathmandu: Nepal Science and Technology (edited volume – forthcoming).

Pradhan, Pushkar K & Sunil K Karn (2004). *Periodic Markets and Accessibility of Rural Development Services in Nepal*. Conference of the IGU Commission of Evolving Issues of Marginality, University of Stirling, Scotland (10 – 14 Aug).

Pradhan, Pushkar K (1982). A study of traffic flow on Siddartha and Prithvi highways. *The Himalayan Review*. Vol. XIV: 38-51.

Pradhan, Pushkar K (1988). Development of market centres and their functional base in Chitwan district, Nepal. *Journal of Development and Administrate Studies*. Vol. 10. Nos. 1 & 2 (June-Dec): 87-103.

Pradhan, Pushkar K and Jayant K Routray (1992). *Market Centre and Rural Development in Chitwan District, Nepal*. Bangkok: Asian Institute of Technology.

Pradhan, Pushkar K. & Bandana Pradhan (2006). *Environment and Natural Resources: Concepts, Methods, Planning & Management.* Kathmandu: New Hira Books Enterprises.

Pradhan, Pushkar K. & Pradhan, B (2008). Forest resources and rural development in Nepal. *Nepalese Journal of Development and Rural Studies*. Vol. 5 (1), Jan-Jun.

Prebish, R. (1959). The Role of Commercial Policies in Underdeveloped Countries. American Economic Review. Vol. 49: 251-273.

Prindle, P. H. (1983) Tinglatar: Socio-Economic Relationship of a Brahmin Village in Eastern Nepal. Kathmandu: Ratna Pustak Bhandar.

Rana, R.S. & Thapa, Y. S., (1975). Population Migration: Nature and Scope. Population and Development in Nepal. Kathmandu: Centre for Economic and Development Administration.

Ranjitar, S B (1996). *Development Efforts in Nepal: A Historical Perspective*. Kathmandu: Ekata Books.

Rankin, K N (2004). *The Cultural Politics of Markets: Economic Liberalisation and Social Change in Nepal*. London: Pluto Press.

RAP (2002). *Assessment of Rural Transport Impacts in Nepal, 1950-2000*. Evaluation Paper One, Kathmandu: Rural Access Programme (RAP).

RAP (2003). *Baseline Survey of the Hile-Bhojpur Road*. Kathmandu: Rural Access Programme (RAP).

RAP (2004). *Overview*. Kathmandu: Rural Access Programme (RAP) www.rapnepal.com, Accessed June, 2004.

RAP (2011). *Implementing the Rural Access Programme Phase-2, Nepal: Trimester Progress Report* (16 November 2010 - 15 March 2011), Kathmandu: Rural Access Programme.

Rasaily, L. (1996). *Benefits from Community Forestry: A Contribution to the Monitoring and Evaluation Process of Forest User Groups in the Koshi Hills. Volume 2: Benefit Sharing and Social and Institutional Decision-making Processes within Selected FUGs*. Dhankuta: NUKCFP.

Rathaur, Kamal Raj Singh, "British Gurkha Recruitment: A Historical Perspective," Voice of History, 2001, 16(2), 19–24.

Rathgeber, E. (1990). WID, WAD, GAD: Trends in Research and Practice. The Journal of Developing Areas. Vol 24(4): 489-502.

Raut, Nani, Bishal K. Sitaula, Jens B. Aune, and Roshan M. Bajracharya (2011). Evolution and future direction of intensified agriculture in the central mid-hills of Nepal. *International Journal of Agricultural Sustainability*. 9 (4): 537-550.

Raya, Rajendra (2007). *Periodic Market Centres and Rural Development in Eastern Hills: A Case Study of Sanihāt and Bihibarehāt of Dhankuta and Sombarehāt of Tehrathum District*. Master's Thesis, Central Department of Rural Development, Tribhuvan University Kathmandu.

Razavi, S. and Miller, C. (1995). From WID to GAD: Conceptual Shifts in the Women and Development Discourse. UNRISD Occasional Paper 1. 1995.

Regmi, M.C. (1978). *Thatched Huts and Stucco Palaces*. New Delhi: Vikash Publishing House.

Regmi, M.C. (1979). "Dharan Town". In Regmi Research Series, Cumulative Index for Year 11, January-December 1979.

Regmi, Mahesh C. (1971). *A Study in Nepali Economic History (1768-1846)*. New Delhi: Manjusri Publishing House.

Regmi, Mahesh C. (1988). *An Economic History of Nepal, 1846-1901*.Varanasi: Nath Publishing House.

Richards M., Kanel K., Maharjan M. & Davies J. (1999). *Towards Participatory Economic Analysis by Forest User Groups in Nepal*. Overseas Development Institute in collaboration with the Nepal-UK Community Forestry Project.

Richards, M., Kanel K., Maharjan M. & Davies J. (1999). *Towards Participatory Economic Analysis by Forest User Groups in Nepal*. Overseas Development Institute in collaboration with the Nepal-UK Community Forestry Project.

Roderik, D. (2006). Goodbye Washington Consensus, Hello Washington Confusion? Journal of Economic Literature. Vol. XLIV: 973-987.

Rose, L.E. & Scholz, J.T. (1980) *Nepal: Profile of a Himalayan kingdom*, Boulder, Colorado: Westview Press.

Rosentein-Rodan, P.N. (1943). The problem of industrialization of eastern and south-eastern Europe. Economic Journal. Vol 53: 202-211.

Ross, J. L., (1981) immigrant Labour in Nepali Manufacturing Industries", Occasional papers in the humanities and Social Sciences. Tribhuvan University, 2:79-104.

Rostow, W.W. (1960). The Stages of Economic Growth. Cambridge.

RUPP(1998). *Regional Market Linkage Study Biratnagar Market Region*. SAPPROS-Nepal, Volume XIV.

Rural Reconstruction Nepal (2010). Annual Report 1995-2010. Kathmandu.

SAARC, 2006. *SAARC Regional Poverty Profile 2005: Poverty Reduction in South Asia through Productive Employment*. Kathmandu, SAARC Secretariat.

Sachs, J. (2005). The End of Poverty: Economic Possibilities of Our Time.

Sainju, M.M. & KC, R.B. (1981) Hill Labour Migration: Issues and Problems. Nepal's experience in Hill Agriculture Development. Ministry of Food and Agriculture. Kathmandu Nepal. His Majesty Government of Nepal.

Schroeder, M. C. W. and D. G. Sisler (1980). *The Impact of the Sunauli-Pokhara Highway on the Regional Income and Agricultural Production of Pokhara Valley, Nepal*. Department of Agricultural Economics, Occasional Papers No. 32. Ithaca: Cornell University.

Seddon, D (1987). *Nepal: A State of Poverty*. New Delhi: Vikas Publishing House.

Seddon, D (2003). Social Aspects of Transport. DFID: Transport for Development. www.transport-links.org/transport links, Accessed April 2004.

Seddon, D and Shrestha, A (2002). Gender and rural transport development. In: Porter G and Fernando P (eds.) *Balancing the Load: Women, Gender and Transport*. London: Zed Press.

Seddon, D. (2011), Agrarian Change and the Long-term Transformation of Rural Livelihoods in Nepal. Sustainable Mountain Development No. 59, ICIMOD, Kathmandu.

Seddon, D., Adhikari, J. & Gurung, G. (2000). *Foreign Labour Migration and the Remittance Economy in Nepal*. Report to DFID, Kathmandu, Nepal.

Seddon, D., Adhikari, J., & Gurung, G. (2001), *The New Lahures: Foreign Employment and Remittance economy in Nepal.* Nepal Institute of Development Studies, Kathmandu.

Seed Sector Support Project (SSSP). (2003). Participatory Impact Study of SSSP Groups in the East: Main Report. HMG/N and DFID.

Seed Sector Support Project (SSSP). (2004). Final Report 1998-2004. HMG/N and DFID.

Shakya, S, (2002). The squandering of a promise economy. In: Kanak Mani Dixit and Shastri Ramachandaran (eds.), *State of Nepal*. Kathmandu, Himal Books.

Sharma, Chandra K. (1977). *River Systems of Nepal*. Kathmandu: Sangeeta Sharma.

Sharma, Keshab K (2011). *Status Paper on Road Safety in Nepal, 2011*. The fourth meeting of the Working Group on the Asian Highway and Export Group Meeting on Progress on Road Safety Improvement in Asia and the Pacific, Bangkok, Thailand, 27 to 29 September.

Sharma, P. (1985) Migration and Employment Generation in Nepal. an unpublished manuscript.

Sharma, P. (2006). Introduction to Human Development. In Pande, S.R. Tropp, S., Sharma, B. & Khatiwada, Y.R. edited *Nepal: Readings in Human Development*. Kathmandu, Nepal: UNDP.

Sharma, Pitamber (1989). *Urbanisation in Nepal. Papers of the East-West Population Institute*, No.110 (May). Hawaii: East-West Centre.

Sharma, Pitamber. (1980). “Development Strategies, Basic Needs and the Sixth Plan: Some Issues”. *The Himalayan Economist*, 7(1):1-24.

Sharma, R. J. (2011). Culture of migration in the middle hills in Nepal, *Sustainable Mountain Development.* No. 59 ICIMOD, Kathmandu.

Sharma, S. (2009). Half a Century of Foreign Aid. Introductory Chapter in Mihaly, E.B. *Foreign Aid and Politics in Nepal, A Case Study*. (Originally published in 1965 by the Oxford University Press and reprinted in 2003 and 2009).

Sherpa, Ang R. (2006). How tourism can help isolated communities, *National Park International Bulletin*, May.

Sherpa, A. R. (2002). Management of community-based mountain tourism: Case study of Makalu-Barun National Park, Nepal. The Mountain Institute, USA.

Sherpa, Yangji D. & Rijan Bhakta K. (2009). A study of livestock management patterns in Sagarmatha National Park, Khumbu region: trends as affected by socio-economic factors and climate change, *Kathmandu University Journal of Science, Engineering and Technology*, Vol. 5, No. II, September, pp: 110- 120.

Sherpa, Yangji Doma & Rijan Bhakta Kayastha (2009). A study of livestock management patterns in Sagarmatha National Park, Khumbu region: trends as affected by socio-economic factors and climate change, *Kathmandu University Journal of Science, Engineering and Technology*, Vol. 5, No. II, September, pp: 110- 120.

Shrestha, A.B. & Devkota, L.P. (2010). Climate change in the Eastern Himalayas: Observed trends and model projections; Climate change impact and vulnerability in the Eastern Himalayas – Technical report 1. Kathmandu: ICIMOD.

Shrestha, A.B., Wake, C.P., Dibb, J.E. & Mayewski, P.A. (2000). ‘Precipitation fluctuations in the Nepal Himalaya and its vicinity and relationship with some large-scale climatological parameters.’ International Journal of Climatology 20(3):317-327.

Shrestha, A.B., Wake, C.P., Mayewski, P.A. & Dibb, J.E. (1999). Maximum Temperature Trends in the Himalaya and its Vicinity: an Analysis Based on Temperature Records from Nepal for the Period 1971-94. Journal of Climate, 12:2775-2767.

Shrestha, B. (1981). An Introduction to Nepalese Economy. Ratna Pustak Bhandar, Kathmandu 1981.

Shrestha, Bivuti (2011). *Backward and Forward Linkages in Bhojpur Bazaar and its Surrounding Villages of Bhojpur District*, Master's Degree Thesis, Central Department of Rural Development, Tribhuvan University, Kathmandu, Nepal.

Shrestha, Chandra B. & Uma N Rijal (1979*).* Spatial pattern of periodic and permanent market centres in Nepal. *Geographical Journal of Nepal*, Vol. 2, pp: 1 - 13.

Shrestha, Chandra B. (1973-74). The system of central places in the Arniko Rajmarg area of Nepal. *The Himalayan Review*. Vol. 5-6: 19 -39.

Shrestha, Chandra B. (1982). Strategy for rural development in Nepal. *Himalayan Research and Development*: 306-314.

Shrestha, Gita (2006), *Change and Development of Market Towns along the Dhankuta-Basantapur Road.* Masters’ Degree Research Project, Central Department of Rural Development, Tribhuvan University.

Shrestha, K.B. (1996). *Community Forestry in Nepal: An Overview of Conflicts*. Discussion Paper Series No. MNR 96/2. Kathmandu, Nepal: International Centre for Integrated Mountain Development.

Shrestha, R.K. (2010). Fertilizer Policy Development in Nepal. Journal of Agriculture and Environment. Vol 11. June 2010.

Shrestha, S. A., (2011). Human Capital Investment Response to Skilled Migration Prospects: Evidence from a Natural Experiment in Nepal. Department of Economics. University of Michigan, USA.

Shrestha, T.B. (1989). *Development Ecology of the Arun River Basin*. Kathmandu: International Centre for Integrated Mountain Development.

Shrestha, T.B., Sakya R. & Nepali, H.S. (1990*). Scientific Report on Field Survey of 1989*, General and Phyto-ecology Working paper No. 8, Makalu-Barun Conservation Project, Kathmandu, Nepal.

Shrestha, T.B., Sakya R. & Nepali, H.S. (1990*). Scientific Report on Field Survey of 1989*, General and Phyto-ecology Working paper No. 8, Makalu-Barun Conservation Project, Kathmandu, Nepal.

Shrestha, T.B., Sakya R. & Nepali, H.S. (1990). *Scientific Report on Field Survey of 1989: General and Phyto-ecology Working paper No. 8*, Makalu-Barun Conservation Project, Kathmandu, Nepal.

Shukla, S.P. & Siddiqui, M.A. (1999). Recession of the snout front of Milam Glacier, Goriganga valley, District Pithoragah, Uttar Pradesh. Symp. on snow, ice and glaciers. A Himalayan Perspective. Geol. Surv. India, (In: Abst. Vol.), 27-29.

Sill, Michael and Kirkby, John. (1991). *The Atlas of Nepal in the Modern World*. London: Earthscan Publication Ltd.

Singh, P. & Bengtsson, L. (2004). 'Hydrological sensitivity of a large Himalayan basin to climate change.' Hydrological Processes 18(13):2363-2385.

Smarika (2062 BS). *Sagarmatha Milk Chilling Centre and Distribution Cooperative P. Ltd*. Sidhuwa.

Soussan J., Allsop, N. & Amatya, S. (1991). *An Evaluation of the Koshi Hills Community Forestry Project*. Cambridge, UK: KHDP.

Soussan, J., Shrestha, B.K., & Uprety, L.P. (1995). *The Social Dynamics of Deforestation: A Case Study from Nepal.* The Parthenon Publishing Group, London.

Soussan, J., Springate-Baginski, O., Dev, O.P., Yadav, N. P. & Kiff, E. (2001). *Community Forestry in Nepal: Progress and Potentials, Final Report of the Leeds University/ NUKCFP/NRI Collaborative Research Project*. Kathmandu: University of Leeds and NUKCFP.

South East Asia Development Division (SEADD). (1989). SEADD review of the Koshi Hills Development Programme: 5-12 November 1989. SEADD.

South East Asian Development Division (SEADD) (1994). Economic and Social Impact of Agricultural Research in the Mid-Hills of Nepal. SEADD.

Springate-Baginski, O. & Blaikie, P.M. (Eds). (2007). *Forests, People and Power: The Political Ecology of Reform in South Asia.* UK and USA: Earthscan.

Springate-Baginski, O., Soussan, J.G., Dev, O.P., Yadav, N.P. & Kiff, E. (1999). *Community Forestry in Nepal: Impacts on Common Property Resource Management*. *Environment and Development Series No.3*. UK: University of Leeds.

Springate-Banginski, O .J. Soussan, O. P. Dev, N. P. Yadav, & E. Kiff. (2001). *Community Forestry in Nepal: Progress and Potentials.* Final Report of the Leeds University / NUKCFP / NRI Collaborative Research Project. Project Report G/NUKCFP/ 71.

Steward, M. (1987). *A guide to the mapping of forest and land use types in the Koshi Hills, Eastern Nepal*. Land Resources Development Center, Project Report 180. Surbiton, Surrey: Land Resource Development Center/ODA.

Stiller, L.F. (1976), The Silent Cry: The People of Nepal. 1816-39. Kathmandu: Sahayogi Prakashan.

Sugden, Fraser (2004). *Road Building, Neo-liberalism and Market Access in Nepal*. MA Dissertation, University of Edinburgh.

Sunkel, O. (1972). Big Business and Dependencia: A Latin Americal View. Foreign Affairs 50(3): 517-531.

Thakur, V.C., Virdi, N.S., Gergan, J.T., Mazari, R.K., Chaujar, R.K., Bartarya, S.K., & Philip, G. (1991). Report on Gaumukh: the snout of the Gangotri glacier (Unpublished Report submitted to DST, New Delhi.

The Netherlands Development Agency (SNV). (2010a). Enhancing Competitiveness of Nepal's Large Cardamom Value Chain. SNV.

The Netherlands Development Agency (SNV). (2010b). Adding Value to Nepal's Orthodox Tea Industry. SNV.

Thieme, S. and S. Wyss (2005), "Migration Patterns and remittance transfer in Nepal: a case study of Sainik Basti in Western Nepal," International Migration, Vol. 43(5): 59-98.

Thieme, S., (2006). Social Networks and Migration: Far West Nepalese migrants in Delhi. Culture, Society, Environment, 7, LIT Publishing house, Munster.

Thieme, S., (2006). Social Networks and Migration: Far West Nepalese migrants in Delhi. Culture, Society, Environment, 7, LIT Publishing house, Munster.

Tilman, H. W. 1952. *Nepal Himalaya*. London: Cambridge University Press.

Timsina, N.P. (2011). *Climate Change Phenomenon in Nepal*. Paper Presented at the South Asian Climate Conference, 1-2 January. http://www.ngofederation.org/

Tinker, I. (1990). Persistent Inequalities. Oxford University Press, 1990.

Toye, J. (1994), Structural adjustment: context, assumptions, origin and diversity, in Hoeven, R.V.D.; Kraaij, F.V.D., (eds) Structural adjustment and beyond in sub-Saharan Africa. Netherlands.

Tse-ring, K., Sharma, E., Chhetri, N. & Shrestha, A. Eds. (2010). Climate Change Impact and Vulnerability in the Eastern Himalayas – Synthesis Report Climate Change Vulnerability of Mountain Ecosystems in the Eastern Himalayas. Kathmandu: International Centre for Integrated Mountain Development, Kathmandu, Nepal, June.

UNDP/NPC (2006). Millennium Development Goals: Needs Assessment for Nepal. Kathmandu: National Planning Commission, Government of Nepal/United Nations Development Programme.

United Nations (UN). (2005). Human Development Report 2005. UN.

United Nations Development Programme (UNDP) (1998). *Nepal Human Development Report 1998*. Kathmandu, Nepal: UNDP.

United Nations Development Programme (UNDP) (2004). *Nepal Human Development Report 2004: Empowerment and Poverty Reduction*. Kathmandu, Nepal: UNDP.

Unity Service Cooperation Nepal (USCN). (2010). *Baseline Survey Report. Final Report Volume I. (Main Text). Submitted to Ministry of Local Development Local Governance and Community Development Program*. Kathmandu, Nepal: Unity Service Cooperation Nepal.

UNRISD. (1994). Structural Adjustment in a Changing World. UNRISD Briefing Paper No. 4. World Summit for Social Development. 1994.

Upadhyaya, H K (2004). Nepal's agro-ecological diversity offers comparative advantages, *Spotlight*. Vol 24, No. 22.

Upadhyaya, H. (1999). Poverty, Food-Security and Agricultural Research in Nepal. Keynote paper presented at the National Convention of the Society of Agricultural Scientists (SAS) held at Kathmandu 9-11 June 1999.

Upadhyaya, M P(1984). An evaluation of Koshi Hill Area Rural Development Programme (KHARDEP), Kathmandu, Nepal, Centre for Economic Development and Administration (CEDA).

Uprety, Singha Raj (1985). *Farmers' Perceptions of Middle Men's Performance in Agricultural Marketing: A Case Study of Duhubi Adarsha Village Panchayat, Sunsari District, Nepal*. M. Sc. Thesis. Bangkok: AIT.

USAID. (2011). Value Chain/Market Analysis of the Orthodox Tea Sub-sector in Nepal. USAID.

Virgo, K.J. & Subba, K.J. (1994). "Land-use change between 1978 and 1990 in Dhankuta District, Eastern Nepal". Mountain Research and Development, 14: 159–170.

Vohra, C.P. (1981). Note on recent glaciological expedition in Himachal Pradesh Geol. Survey of India Spec. Publ., 6, 26-29.

Wade, R. (2002) 'The System of Administrative and Political Corruption: Canal Irrigation in South India'. EBSCO Publishing.

Ward, N.A. (1985). Report on visit to Nepal (March 1985) of ODA Principal Medical Advisor.

WECS (1999). Basin wise water resources and water utilization study of the Koshi River Basin. Water and Energy Commission Secretariat (WECS), Government of Nepal.

Whelpton, J (2005) A History of Nepal. Cambridge, UK: Cambridge University Press.

Wildavsky, Aaron. (1972). "Why Planning Fails in Nepal." *Administrative Science Quarterly*, 17(4): 508-528.

World Bank (2010). Development and Climate Change: Overview, World Development Report to Climate Change Impacts. Kathmandu: WWF Nepal Programme Office.

World Bank. (1979). *Country Report Nepal: Development Performance and Prospects*. Washington DC: The World Bank (South Asia Regional Office).

World Bank. (1990). World Development Report 1990: Poverty . World Bank, Washington DC.

World Health Organization (WHO). (2007). *Policy Papers on Health, Nepal*. Kathmandu: WHO, Country Office for Nepal.

WS Atkins Land & Water Management. (1991). Koshi Hills Development Programme: The Koshi Hills Livestock Project: A Rapid Rural Appraisal. In association with Overseas Development Group, International Forest Science Consultancy and Metcon Consultancy. Dhankuta: KHDP.

WS Atkins Land & Water Management. (1992a). Koshi Hills Development Programme: Programme Management Office Terminal Report. In association with Overseas Development Group, International Forest Science Consultancy and Metcon Consultancy. Dhankuta: KHDP.

WS Atkins Land & Water Management. (1992c). Koshi Hills Development Programme: Uttarpani Agricultural Technical School Terminal School. In association with Overseas Development Group, International Forest Science Consultancy and Metcon Consultancy. Dhankuta: KHDP.

WS Atkins Land & Water Management. (1993). Koshi Hills Development Programme: Agriculture Project Terminal report. In association with Overseas Development Group, International Forest Science Consultancy and Metcon Consultancy. Dhankuta: KHDP.

WWF (2001). The Eastern Himalayas – Nepal: Adaptation Case Studies for Responding. Kathmandu: World Wild Life Fund (WWF).

WWF Nepal Office (2011). *Sustainable Livelihoods: A Sustainable Livelihoods Mainstreaming Strategy*. Kathmandu: WWF-World Wide fund for Nature.

World Bank (2010). *Report on Nepal Migration Survey 2009*, Kathmandu: World Bank Nepal/Central Department of Geography, Tribhuvan University/Nepal Institute of Development Studies.

www.wafed-nepal.org.

Wysocki, Jay. (1998). *Consultants Review of the Nepal-United Kingdom Community Forestry Project*. Prepared for the NUKCF Output to Purpose Review Team. Kathmandu: NUKCFP.

Xu, J., Grumbine, R. Edward, Shrestha, A., Eriksson, M., Xuefei, Y., Wang, Y. and Andreas W. (2009). The melting Himalayas: cascading effects of climate change on water, biodiversity, and livelihoods, *Conservation Biology*, Volume 23, No. 3: 520–530.

Yadav, R.P. & Rawal, T. (1981). *Institutional Innovations for Hill Agricultural Development. In Nepal's Experience in Hill Agricultural Development* (pp. 130-134). Ministry of Food and Agriculture. HMG/N.

Yadav, R.P. (1987). *Agriculture Research in Nepal: Resource Allocation, Structure and Incentives.* International Food Policy Research Institute (IFRI). Research Paper 62.

Young, K. (1993). *Planning Development with Women: Making a World of Difference*. London. Macmillian

Zaman, M.A. (1973). *Evaluation of Land Reform in Nepal*. Ministry of Land Reforms. HMG/N.

7 BIBLIOGRAPHY

PART A: Koshi Hills Programme/Project Documents

PART B: Development Interventions (apart from Koshi Hills) and Impact Evaluations in Nepal

PART C: Databases for Different Sectors in Nepal

PART D: Theoretical Frameworks: Social and Economic Changes, Development Theory

7.1 Part A: Koshi Hills Programme/Project Documents

---------- Before 1980 ----------

Agriculture

1. APROSC. (1978). A study of hill agriculture credit in the Koshi Hills. Agriculture Projects Services Center. Kathmandu.
2. Howarth, S.E. (1976). Report on preliminary survey for irrigation scheme. Dhankuta District. PAC. Dhankuta.
3. Howarth, S.E. (1980). Considerations of some non-technical aspects of hill irrigation in the Koshi Zone. KHARDEP Report No. 12. Kathmandu.
4. Humphrey, C. (1980). Report on a field study in North Sankhwasabha. September – November 1979. KHARDEP Report No. 7. Kathmandu.
5. Conlin, S. (1978). Notebook on Pilot test for farm management study (along with some of the Nepali monitors notebooks, and my notebook for monitoring the monitors).

Forestry

1. Abel, T.M.B. (1979). KHARDEP Phase 2: Draft forestry sector programme for first year, 1979/80. KHARDEP Planning Document No 5. Kathmandu. (Unpublished report).

Health

1. Padfield, N.N.W. (1978). Nepal: Koshi Hill Area Development Programme. Report of the Health Advisor. London Ministry of Overseas Development. (Missing).
2. Conlin, S. (1977/78). Nutrition Health Survey (Koshi 1/9) (Conlin Office file).

Infrastructure: Roads, Trails and Bridges

1. Dowling, J.W.F. & Tasker, T.M. (1979). Improved communications in the Kosi Hill area, Eastern Nepal: proposals for the construction of foot trails, foot bridges and motorable tracks. Transport and Road Research Laboratory.
2. HMG/N (1973). Proposal for the design of the Road from Dharan to Dankhuta. O'Sullivan & Partners, for HMG/N Ministry of Works and Transport. September 1973.

Natural Resources

1. Abel, T. & Dutt, p. (1979). KARDEP Phase 2: Draft forestry sector programme for the first year 1979-80. KHARDEP Planning document no. 5. Kathmandu.

Regional Baselines/Planning

1. Balbernie, B.C., Jenkin R.N. & Conlin, S. (1977a). Nepal: Koshi Hill Area Rural Development Programme Proposals. Report of the reconnaissance Mission, 1976. UK Ministry of Oversees Development, London.
2. Balbernie, B.C., Jenkin R.N. & Conlin, S. (1977b). Nepal: Koshi Hill Area Rural Development Programme Proposals. Background Information. UK Ministry of Oversees Development, London.
3. Centre for Economic Development and Administration (CEDA). (May 1973-July 1975). *Regional Development Study (Nepal): Part IIIa Koshi Zone*. Kathmandu, Nepal: Centre for Economic Development and Administration (CEDA).
4. Conlin, S. & Falk, A. (1979). *A Study of the Socio-economy of the Koshi Hill Area: Guidelines for Planning an Integrated Rural Development Programme VOL I*, KHARDEP Report 3. Tolworth, UK: KHARDEP.
5. Conlin, S. & Falk, A. (1979). *A Study of the Socio-economy of the Koshi Hill Area: guidelines for planning an integrated rural development programme. VOL II Appendixes*. KHARDEP Report 3. Land Resources Development Centre Tolworth, UK: KHARDP.

6. ISC.(1979). Cotage Industry development Study for Kosh Hill Area Rural Development Programme. Final Report. Industrial Services Center. Kathmandu. Nepal. (Missing).

7. Jenkin, R.N. & Baird, A. (1978). KHARDEP Phase 2 Plan 1979/82. KHARDEP Planning Document No. 1. Kathmandu.

8. Jordan, A. (1978). *KHARDEP Survey design for the sociological component of the programme*. Project Report No. 47. Land Resources Development Centre: UK Ministry of Overseas Development.

9. National Planning Commission (NPC) (1970). Preliminary Report on Regional Development Areas in Nepal. NPC/HMG.

10. Ojha, Durga Prashad & Dieter Weiss and Collaborators. (1972). *Regional Analysis of Koshi Zone / Eastern Nepal: Working Method for Regional Planning in Nepal Vol. II.* Berlin and Kathmandu: German Development Institute (GDI).

11. Ojha, Durga Prashad & Dieter Weiss and Collaborators. (1972). *Regional Analysis of Koshi Zone / Eastern Nepal: Working Method for Regional Planning in Nepal*. Berlin and Kathmandu: German Development Institute (GDI).

12. Thompson, Brian. (1979). *KHARDEP Nutrition Survey*. KHARDEP: Dhankuta, Nepal.

---------- 1981- 1990 ----------

Agriculture and Livestock

1. Borman C. (1990). An Experience of Managing a Multi-discipline Research Station (Pakhribas), 1986-1990. CD 8.

2. Campbell, L. (1991). The Kosi Hills Livestock Project: a rapid rural appraisal. Atkins Land and Water Management/Overseas Development Group/International Forest Science Consultancy/Metcon Consultants.

3. Classels, C., Wijga, Atv ., Pant, M. & Nabarro, D. (1987). Coping Strategies of East Nepal Farmers: Can Development Initiatives Help?. KHARDEP.

4. Drake Hocking, D., Hocking, A.E., Rockliffe-King, G. and Subedi, B. (n.d.). Lumle Extension Impact Study Final Report. Pokhara, Nepal: Lumle Agricultural Research Centre.

5. Dunsmore, J. (1987). KHARDEP: Rural Development in the Hills of Nepal. Land Resource Study, no. 36, LRDC/ODA, Surbiton, Surrey.

6. Dutt, P. (1985). Koshi Hill Area Rural Development Programme: Preliminary and General Conclusions on Livestock in KHARDEP Area. KHARDEP Report No. 5. Dhankuta: KHARDP.

7. Goldsmith P.(1981). Land & Soil Resources of KHARDEP Area Vol 1. CD 8.

8. Jones, S.F. (1980). KHARDEP Agricultural Marketing Study. Phase 2 (Dhankuta District). 1980a Volume 1. Survey design. 1980b. Volume 2. Description and preliminary conclusions. London: Tropical Products Institute Report.

9. Jones, S.F. & Innes, J.B. (1981). Koshi Hill Area Rural Development Programme: Agricultural Marketing Study Phase 2 (Dhankuta District). Dhankuta: KHARDP.

10. Jones, S.F. and J.B. Innes. (1981). Agriculture Marketing Study Phase 2 (Dhankuta District) Volume 4. Agricultural marketing opportunities. Kathmandu: Koshi Hills Area Rural Development Programme Report No. 27.

11. Jones , S.F., Innes, J.B., Pant, M. and Subba, S. (1982). Agricultural Marketing Study. Phase 2 (Dhankuta District). Volume 3 Survey Results. KHARDEP Report 32.

12. Koshi Hills Area Development Programme (KHARDEP). (1982). Report of the 1981 Mid-Term Review Mission, Nepal, KHARDEP.

13. Koshi Hills Area Development Programme (KHARDEP). (1983). A profile of the Small Farmer Development Programme in Bhirgaun Panchayat, Dhankuta District, East Nepal in 2040 (1983). KHARDEP Impact Studies Supplementary Report 2.

14. Koshi Hills Area Development Programme (KHARDEP). (1984). Use of Labour, Agricultural Inputs and Services by Households in the Koshi Hill Area 2039-40 (1982-83). KHARDEP Impact Studies Supplementraly Report 2. 1984. KHARDEP.

15. Koshi Hills Area Development Programme (KHARDEP). (1985). Use of Labour, Agricultural Inputs and Services by Households in the Koshi Hill Area 2040-41 (1983-84). KHARDEP Impact Studies Supplementraly Report 3. 1985. KHARDEP.

16. Marsh, D.K.V. & Dahal, R.P. (1984). Evaluation of the Small Farmer Development Programme in the KHARDEP Area.

17. Marsh, DKV. (1985). Koshi Hill Area Rural Development Programme: Livestock Production in the Koshi Hills. A compilation of published and unpublished data. KHARDP Evaluation Section. Kathmandu: KHARDP.

18. Mitchelhill, B.K, Y.R. Joshi, A.R. Sharma, & Rai, U.P. (1989). Baseline Surveys in the Seven New Districts of the PAC Research Commando Area. A Discussion Paper, PAC, Socio-Economic Section. Kathmandu: PAC.

19. Nabarro, D.N. and Pant, M. A. (1984). Profile of the Small Farmer Development Programme in Bhirgaun Panchayat. KHARDEP Report No. 42.

20. Nabarro, D., Cassels, C., Pant. M., &Wijga, A. (1987). The Impact of Integrated Rural Development: The Koshi Hill AreaRural Development Programme, East Nepal. KHARDEP.

21. ODA. (1989). Submission to ODA Projects and Evaluation Committee Nepal: Pakhribas Agricultural Centre 1989-95. Vol 1. ODA.

22. Pakhribas Agricultural Center (PAC). (1989). Annual Report, Pakhribas Agricultural Centre, Dhankuta District, Koshi Anchal, Nepal. Kathmandu: PAC.

23. Pant, M., Wijga, A., Cassels, C., & Nabarro, D. (1986). Results of the KHARDEP Impact studies (1980-1985): Final report on the Use of Agricultre Inputs and Extensionn Services by farmers in the Koshi Hill Area, East Nepal. KIS Supplementray Report No. 4. Liverpool, 1986.

24. Gupta, R.P. (1984). Pakhribas Agriculture Centre: A Review of its Activities. Nepal: PAC.

25. SEADD. (1989). Review of Koshi Hills Development Programme.

26. SEADD. (1989). Review of the Koshi Hills Development Programme: South East Asia Development Division (SEADD), Overseas Development Administration. Kathmandu: KHDP.

27. Upadhyaya, M P(1984). An evaluation of Kosi Hill Area Rural Development Programme (KHARDEP), Kathmandu, Nepal, Centre for Economic Development and Administration (CEDA).

28. White, P. & McCourt, G. (1989). Final Report on Survey of 2046/47 (1989) Monsoon Plantations.

29. Conlin, S. (1977) Proposal for a Livestock Survey (Koshi 1/7).

Infrastructure: Roads, Trails and Bridges

1. Atkins Land & Water Management. (1988). *Koshi Hills Development Programme Roads Project. Annual Report 1988*. Kathmandu, Nepal: Atkins Land & Water Management in association with ODG, University of East Anglia, International Forest Science, Edinburgh, and Metcon Consultants, Kathmandu.

2. Harding, P. (1992). Nepal Eastern Region Roads Literature Review of Social Impact of Roads. Centre for Development Studies, University of Swansea, November 1992, pp. 59.

3. Henley, J.M. (1980). Report on the Construction of the Dhankuta to Hile Road. July 1980, KHARDEP, ODA/SWKP.

4. Khanal, N. R. (1991). Trade and Traffic Survey. Arun III Management of Basin-Wide Environment Impact Study. King Mahendra Trust for Nature Conservation & The World Bank.

5. Koshi Hills Area Development Project (KHARDEP). (1985). *Effect of the opening of the Dharan-Dhankuta Hile road of the movement of goods and people in the Koshi Hills: Results of third traffic survey*. Report No.43. Kathmandu, Nepal: KHARDEP.

6. Marsh, D.K.V. and G.A .Taylor (1982). *The movement of goods and people in the Koshi Hills.* KHARDEP Report 37. Dhankuta: KHARDEP.

7. Marsh, D.K.V. (1984). *The effect of opening of the Dharan-Dhankuta road on the movement of goods and people in the Koshi Hills.: Results of the third traffic survey*. KHARDEP Report 43. (Softcopy available AT).

8. ODA (1987). Nepal: Kosi Hills Area Road Project. January, SEADD, Bangkok.

9. Taylor, G.A. (1982). An Examination of the Costs of the Dhankuta-Hile Road. KHARDEP Report no. 36.

10. TechEcon, Scott Wilson Kirkpatrick & Partners, and East Consult. (1988). *Kingdom of Nepal Transport Sector Profile Study Final Report*. London, UK: TechEcon Economic and Transport Consultants.

Natural Resources and Ecology

1. Abell, T.M.B. (1981). *Land use and forestry development in the Koshi in the Koshi Hills of Eastern Nepal*. Report No. 25. London: Land Resources Development Centre: KHARDEP.

2. Atkins Land & Water Management, & Metcon Consultants. (1988). *Koshi Hill Development Programme Community Forestry Project: Annual Report 1988*. Kathmandu, Nepal: Kathmandu, KHDP.

3. Atkins Land & Water Management, & Metcon Consultants. (1989). *Koshi Hills Development Programme. Briefing Notes for SEADD Monitoring Visit 5-13 November, 1989.* Dhankuta: KHDP.

4. Banskota, K., Upadhyay, M. and Sharma, B. (1991). Environmental Management and Sustainable Development in the Arun Basin. Volume 5 – Sustainability and Economic Growth. Arun III Management of Basinwide Environmental Impacts Study, King Mahendra Trust for Nature Conservation. October 1991.

5. Begg, J. (1985). *Community Forestry in Dhankuta district 1979-85*. Dhankuta: Forest Department.

6. Dunsmore, John R. (1988). *Mountain Environmental Management in the Arun River Basin of Nepal*. ICIMOD Occasional Paper No. 9. Kathmandu, Nepal: Makalu Barun Conservation.

7. Shrestha, B.D. and K.M. Sthapit. (1984). *Watershed Management Plan for Dhankuta area (Belhara, Bhirgaon and Tankhuwa Village Panchayat and Dhankuta Town Panchayat).* Kathmandu: Department of Soil Conservation and Watershed Management (DSCWM), Report No. 20.

8. Shrestha, T.B. (1989). *Development Ecology of the Arun River Basin in Nepal*. Kathmandu, Nepal: Makalu Barun Conservation Project.

Ovearll Impact Assessments and Plans

1. Atkins Land & Water Management. (1989). Koshi Hills Development Programme. Briefing Notes for SEADD Monitoring Visit 5-13 November, 1989. Cambridge, UK: Atkins Land & Water Management. K-DS Cassels et al.(1987). Report on the household profiles: In-depth interviews with farmers in the Kosi Hills, East Nepal.

2. Conlin, S. (1981). Koshi Hill Area Rural Development Programme (KHARDEP), Nepal. KHARDEP Report No: 8. Dhankuta: KHARDP.

3. Dunsmore, J. (1984). *KHARDEP 1977-84: A Review and Progress Report*. Kathmandu: Koshi Hills Area Rural Development Programme (KHARDP).

4. Dunsmore, S. (1985). *The Nettle in Nepal: A Cottage Industry*. Land Resources Development Centre (LRDC): Tolworth Towers, Surbiton, Surrey, KT6 7DY, UK (ISBN 0 86182 008 8).

5. Dunsmore, S. (n.d). *Weaving in Nepal: Dhaka-Topi Cloth*. Land Resources Development Centre (LRDC), Tolworth Towers, Surbiton, Surrey, KT6 7DY, UK (Probably published in 1985).

6. Howell J. (1984). *UK Aid to Koshi Hills*. Overseas Development Institute (ODI).

7. Koshi Hill Area Development Programme (KHARDEP). (1982). *Monitoring and Evaluation of the Koshi Hill Area Rural Development Programme*. KHARDEP Coordinator's Office, Kathmandu. Dhankuta: KHARDP.

8. Koshi Hill Area Development Programme (KHARDEP). (1982). *Report of the 1981 Mid-Term Review Mission*. Nepal: KHARDEP.

9. Koshi Hill Area Development Programme (KHARDEP). (1985). *Koshi Hill Area Development Programme*. KHARDEP Confidential Report No. 51. Dhankuta: KHARDP.

10. Koshi Hill Area Rural Development Programme (KHARDEP). (1983). *Monitoring and Evaluation of the Koshi Hill Area Rural Development Programme*. Coordinator's Office KHARDP, Kathmandu: KHARDP.

11. Koshi Hills Development Programme (KHDP). (1989). KHDP REVIEW. Kathmandu: KHDP.

12. MASDAR. (1995). *The Social and Economic Impact of Research done at Lumle and Pakhribas Agricultural Centres in Nepal. Main Report.* UK: MASDAR and ODA. CD 8.

13. MASDAR. (1995). *An Analysis of Research management at Lumle and Pakhribas Agricultural Centres in Nepal. Annexes to the Impact Research Report.* UK: MASDAR and ODA.

14. Nabarro D et al. (1986). *KHARDEP Impact Studies Final Report.*

15. Nabaro, D., Cassels, C., Pant, M. & Wijga, A. (1987). *The Impact of Integrated Rural Development: The Koshi Hill Area Rural Development Programme, East Nepal*. Dhankuta: KHARDP.

16. Nabarro, D. & McConnell, C. (1990). *Evaluation of the Impact of the Kosi Hill Area Rural Development Programme* Vol 1 & 2. (ODA Evaluation Report EV 476). CD 8.

17. Nabarro, D., McConnell, C., Pant, M. & Wijga, A.(1990). *A Preliminary Evaluation of the Kosi Hill Area Rural Development Programme*. CD 8.

18. Nabarro, D. (1981). *The Development of the Methods for the Assessment of the Impact of KHARDEP, Volume 1, MAIN REPORT*. Dhankuta: Koshi Hill Area Rural Development Programme (KHARDP).

19. Nabarro, D. & Innes. (1982). *Monitoring and Evaluation of the Kosi Hill Area Rural Development Programme*. Dhankuta: KHARDP.

20. Nabarro, D. & Pant, M. (1983). *The Impact of the Koshi Hill Area Rural Development Programme: Description of the Data Collected in the Second Year of the KHARDEP Impact Studies – 2038-39 (1981-82).* KHARDEP Impact Report No. 3. Dhankuta: KHARDEP.

21. Nabarro, D., Cassels, C. & Pant, M. (1989) 'Coping strategies of households in the hills of Nepal: can development initiatives help?' IDS Bulletin, vol.20, no. 2, pp. 68-74.

22. Pant, Mahesh & Nabarro, D. (1985). *KHARDEP Impact Studies: Use of Labour, Agricultural Input and Services by Households in the Koshi Hill Area (2040/041).* KHARDEP Impact Studies Supplementary Report 3. Dhankuta: KHARDP.

23. Sharan KC, Sen, NP., Mahato, SN., and Rood, PG. 1995. *An Analysis of Research Management at Lumle and Pakhribas Agricultural Centres in Nepal*. ODA/PAC Research Impact Study.

24. Upadhyaya, M.P. (1984). *An evaluation of Kosi Hill Area Rural Development Programme (KHARDEP)*. Kathmandu, Nepal: Centre for Economic Development and Administration (CEDA).

Women's Development

1. Baer, Dagmar. (1988). *Production Credit for Rural Women Project and its Impact on the Situation of Rural Women in Nepal*. Kathmandu: International Centre for Integrated Mountain Development (ICIMOD).

2. Nepal, Usha. (1988). A field perspective of women's development in the eastern hills of Nepal. Kathmandu: Ministry of Supply (manuscript).

Health

1. KHARDEP: NNW Padfield (1980), Report of Health Adviser, KHARPED report no. 14 185k.

---------- 1991-2000 ----------

Agriculture and Livestock

1. Atkins Land & Water Management. (1991). *Koshi Hills Development Programme: The Koshi Hills Livestock Project: A Rapid Rural Appraisal.* In association with Overseas Development Group, International Forest Science Consultancy and Metcon Consultancy. Dhankuta: KHDP.
2. Blackshaw, U. (1997).Nepal Hill Agriculture Research Project: Report on 4th Visit by Change Management Specialist.
3. Bharati MP, SK Regmi & BB Khadka. (1992). Current situation and future strategy for the seed production and seed quality in Koshi Hills. Paper for Second Regional Seed Workshop, June 9-11, 1992. KHAP, Dhankuta.
4. Cromwell E, Gurung S & Urben R. (1992).*The Koshi Hills Agriculture project: An Impact Assessment of the Seed Programme*. Cambridge, UK.Atkins Land & water Management.
5. Dear, C. (1991). Women's extension in the Eastern Hills of Nepal – Issues and Methodologies. Pakhribas Agricultural Centre, August 1991.
6. Floyd, C.N., Harding, A.H., Paddle, K.C., Rasali, D.P., Subedi, K.D., & Subedi, P.P. (1999). The Adoption and Associated Impact of Technologies in the Western Hills of Nepal. AgREN. Network Paper no. 90.
7. Hill Agriculture Research Project (HARP) (1996*). HARP in Nepal.*
8. HMG Ministry of Agriculture & Winrock International. (1992). *Research Report Series, Seed Diffusion Mechanisms in Small Farmer Communities: A Case Study from Eastern Nepal*. HMG Ministry of Agriculture and Winrock International Policy Analysis in Agriculture Related Resource Management: Kathmandu.
9. Gurung, MB & PK Sambyu. (1994). The commodity group extension approach into Eastern Hills of Nepal: Initial findings based on the Participatory Group Extension Approach Workshop and from the past experiences of Pakhribas Agricultural Centre's past group extension approach (Progress Report No.1). Working Paper No.103. Pakhribas Agricultural Centre, Dhankuta.
10. Koshi Hills Development Programme (KHDP).(1991).Annual Report 1991, Cambridge, UK., Atkins Land & water Management.
11. Koshi Hills Development Programme (1992). The Koshi Hills Development Programme : An Overview, Kathmandu, Nepal, Koshi Hills Development Programme.
12. Koshi Hills Development Programme (KHDP) (1992). Livestock Project: Terminal Report. , Cambridge, UK, Atkins Land & water Management.
13. Koshi Hills Development Programme (KHDP) (1992). Uttarpani Agricultural Technical School: Terminal Report. , Cambridge, UK., Atkins Land & Water management.
14. Koshi Hills Development Programme (KHDP) (1987-1992). Local Development Support Project (MLD) Achievement 1987-1992 : Terminal Report, Nepal, KHDP.
15. Koshi Hills Development Programme (KHDP) (1992). Strategy for UK Investment in the Koshi Hills, Nepal. Proposals for a Fourth Phase of the Koshi Hills Development Programme and a Community Forestry Project. Prepared for ODA by the KHDP Team, Kathmandu, January 1992. (Missing).
16. Koshi Hills Development Programme (KHDP). (1992). Local Development (MLD) Support Project: Terminal report. , Cambridge, UK., Atkins Land & Water Management.
17. Koshi Hills Development Programme (KHDP). (1992). Programme Management Office: Terminal Report & Appendices., Cambridge, UK, Atkins Land & Water Management.

18. Koshi Hills Development Programme (KHDP) (1993). Agriculture Project: Terminal Report. , Cambridge, UK, Atkins Land & water Management.

19. Koshi Hills Seed & Vegetable Project. (1994). Koshi Hills Seed and Vegetable Project: An Overview. Dhankuta, Nepal: Koshi Hills Seed and Vegetable Project.

20. Lumle Extension Project Study. (1994). Final Report.

21. Loughhead, S., Shrestha, R. & KC., Drona Raj. (1994). "Social Development Considerations in Community Forestry". Kathmandu, Nepal: Nepal-UK Community Forestry Project (NUKCFP) Working Paper Series No.2.

22. Hocking, D., Hocking, A., Subedi, B., Feldmand, D. & Mathema, S. (1995). Social & Economic Impact of Research done at Lumle & Pakhribas Agricultural Centres, Nepal. CD 8 (Also referred as MASDAR 1995). x.

23. Maunder, N (1992). KHDP : An Evaluation of the Milk Collection Scheme, Cambridge, UK, Atkins Land & water Management.

24. Ministry of Agriculture and Cooperatives (MOAC) (2011). The Journal of Agriculture and Environment Vol 12, June 2011.

25. Overseas Development Administration (1997). Final review of the Koshi Hills Seed & Vegetable Project (KOSEVEG). , London, UK, ODA.

26. Overseas Development Administration, South East Asia Development Division 1997 Nepal Seed Sector Support Project : Project Memorandum, Nepal, South East Asia Development Division, ODA.

27. KC,S., Sharrock, G., & Rood, P.G. (1993). The Outreach Programme at Pakhribas Agricultural Centre (Past Experiences, Lessons and Proposed Future Strategy) : PAC Occasional Paper No. 13, Dhankuta, Nepal.

28. KC, S., Sen, N.P., Mahata, S.N, & Rood, P.G. (1995). An Analysis of Research Management at Pakhribas Agricultural Centre. CD 8.

29. Thapa, B., Gurung, M.B., Sherchan, D.P., K.C., T & Rood, P.G. (1995). Pakhribas Agricultural Centre : Perspective Plan For 1996-2001 PAC '96, Kathmandu, Nepal Pakhribas Agricultural Centre.

30. Uttarpani Agric Tech School. (1992).Terminal Report.

31. Virgo K. (n.d.). Report on Mapping Activities 1987-92.

32. Virgo, KJ & Subba, KJ. (1994). Land use Change between 1978 & 1990, Dhankuta Dist, Koshi Hills. Mtn Res & Dev 14, 159-170.

33. Mid-Term Review of Pakhribas Agriculture Centre (1993). Natural Resource Insitute, Nepal 2L.

34. Anthony J. Bebbington, (1993).The challenge of Demand Led Natural Resources Research: The Research Continuum at Pakhribas Agricultural Centre, Eastern Hills of Nepal. ODA.4L.

35. ODA. (1994). Assessing the potential for ODA Assistance to Agriculture in the Middle hills of Nepal, ODA.

Ecology and Natural Resources

1. Banskota, Kamal. (1991). *Environmental Management and Sustainable Development in the Arun Basin (Vol. 5)*. Kathmandu, Nepal: Makalu-Barun Conservation Project. 33 K.

2. Branney, P and Yadav, K P (1998). Changes in Community Forest Condition and Management 1994-1998 : Analysis of Information from the Forest Resource Assessment Study and Socio-Economic Study in the Koshi Hills, Kathmandu, Nepal, NUKCEF(e).

3. Branney, P. (1994). *Handbook for baseline forest resource assessment*. Kathmandu: HMG/N and Nepal-UK Community Forest Project (NUKCFP), G/NUKCFP/03.

4. Branney, P. (1996). *Discussion on baseline forest resource assessment, 19-23 September, 1996.* Kathmandu: HMG/N and Nepal-UK Community Forest Project (NUKCFP), G/NUKCFP/28.

5. Branney, P. & Yadav, K.P. (1998). Changes in Community Forest Condition and Management 1994-1998: Analysis of Information from the Forest Resource Assessment Study and Socio-Economic Study in the Koshi Hills. Kathmandu, Nepal: NUKCFP.

6. Dahal, D.R. (1994). *A Review of Forest Users Groups: Case studies from Eastern Nepal*. Kathmandu, Nepal: International Centre for Integrated Mountain Development. K_Elec.

7. Devtec Ltd. (1991). Dhankuta District Resource Analysis Study. DEVTEC Ltd., Kathmandu.

8. DFID. (1998). Action research for community forestry: sharing experiences from Nepal. London: Department of International Development.

9. Euroconsult, SGA, UTTHAN, HMG of Nepal. (1995). Makalu-Barun Conservation Project Nepal : Project Evaluation, Arnhem, The Netherlands, Euroconsult.

10. Gayfer, J. (1994). Koshi Hills Community Forestry Project: Terminal Report. Nepal: KHDP.

11. Loughhead, Susan. (1995). *Community and power: community forestry policy in Nepal*. UK: University of East Anglia.

12. Maharjan M.R. (1996). Participatory and self-assessment, monitoring and evaluation of community forestry in the Koshi Hills (FUG "Health Check"). Kathmandu, Nepal: NUKCFP.

13. Maharjan M R, NUKCFP(e) (1997).Self-Monitoring and Assessment of Community Forestry Using Pictures and Symbols : A Discussion Paper, Dhankuta, Nepal, NUKCEF(e).

14. Makalu-Barun Conservation Project. (1990). Working Paper Publication Series, Report 6, Department of National Parks and Wildlife Conservation, HMG. Sankhuwasabha: Makalu-Barun Project.

15. Nepal-UK Community Forestry Project. (1993). *Koshi Hills Community Forestry Project. 1992-1993. ANNUAL REPORT*. Nepal-UK Community Forestry Project, c/o BAPSO, P.O Box 106, Lazimpat, Kathmandu: NUKCFP.

16. Nepal-UK Community Forestry Project. (1994). *Social Development Considerations in Community Forestry. NUKCFP Working Paper Series.* Nepal-UK Community Forestry Project Coordinator's Office Kathmandu Nepal. Kathmandu: NUKCFP.

17. Nepal-UK Community Forestry Project. (1995). *ANNUAL REPORT. HMG/N Department of Forests*, assisted by Overseas Development Administration (UK). Kathmandu: NUKCFP.

18. Nepal-UK Community Forestry Project. (May 1995). *Social Processes and Institutionalisation Patterns of Forest User Group Activities in the Koshi Hills*. Nepal-UK Community Forestry Project Coordinator's Office Kathmandu Nepal. Kathmandu: NUKCFP.

19. Nepal-UK Community Forestry Project. (1996). Nepal-UK Community Forestry Project: HMGN, Department of Forest, assisted by Overseas Development Administration (UK): Nepal –UK Community Forestry Project, Dhankuta, Office: NUKCFP.

20. Nepal-UK Community Forestry Project. (1998). *Community Forestry Programme in the 7 NUKCEFP Districts*. HMGN, Department of Forest, assisted by Department for International Development (DFID, UK), Support by the Area Offices & PCO. Kathmandu: NUKCFP.

21. Nepal-UK Community Forestry. (1998). *Nepal- UK Community Forestry Project: HMGN Department Forest*. Assisted by Department for International Development (UK). Kathmandu: NUKCFP.

22. Neupane, H.R. and Yadav, K.P. (1995). *Preliminary report on baseline forest resource assessment of the Koshi Hills.* Kathmandu: HMG/N and Nepal-UK Community Forest Project (NUKCFP), B/NUKCFP/15.

23. ODA - Overseas Development Administration. 1993,.Community Forestry Project, Nepal: Project Memorandum. Bangkok, Thailand. SEADD.

24. Pandey, Tulsi Ram. (1995). NEPAL-UK Community Forestry Project: Social Processes and Institutionalisation Patterns of Forest User Group Activities in the Koshi Hills. Nepal-UK Community forestry Project Coordinators' Office Kathmandu Nepal: NUKCFP.

25. Sharma, Pitamber. (1992). *Population Dynamics, Environment, and Development in the Arun Watershed, Nepal*. Kathmandu, Nepal: Makalu Barun Conservation Project.

26. Sharma, C. and Khatri Chhetri, J. (1995). Slash and Burn Agriculture in Makalu and Yaphu VDCs of MBCPA (The Makalu - Barun Conservation Project Area). The Makalu - Barun Conservation Project Series. Report 27.

27. Thapa, S., Shrestha, R.N., and Yadav, K.P.. (1998). *Socio-economic aspects of the follow-up forest resource assessment study*. Kathmandu: HMG/N and Nepal-UK Community Forest Project (NUKCFP), B/NUKCFP/15.

28. Virgo K. Report on Mapping Activities 1987-92. CD 8.

29. White, P. (1991).Development of Methods for Forest Plantation Assessment in Nepal.

30. Badri P. Sah 2003. Role of Community Forestry for the Improvement of Socio-economic Condition of Users Group: (A Case Study of Aaitabare Rani Community Forestry User Group, Dhankuta Municipality-1,Hille.). Tribhuvan University Institute of Forestry Hetauda Campus Hetauda, Nepal.

Health

1. Koirala, Arun Kumar. (2000). Community Health Development Programme: An Analytical Report on Baseline Survey. Kathmandu: Britain-Nepal Medical Trust, CHDP/BNMT.

2. New Era (1993). Nepal Fertility, Family Planning and Health Survey (NFHS, 1991). New Era.

Infrastructure: Roads, Trails and Bridges

1. DFID & HMGN. (2000). Rural Access Programme Nepal: Rural Access Impact Review. Kathmandu, Nepal: RAP.

2. Marsh, D.V.K. & Taylor. (1992). The Movement of goods and people in the Kosi Hills. Kathmandu, Nepal: KHDP.

3. Rural Acccess Programme (RAP).(2000). Rural Access Impact Review: Annex1. RAP. Kathmandu.

4. ODA (1990). Nepal: Eastern Region Roads Maintenance and Rehabilitation (Second Interim Project). Project Memorandum, June 1990, SEADD, Bangkok.

5. SIDEF (1998). Approach Paper for the Construction of Tumlingtar-Chyangkuti Rural Road in Sankhuwasabha District. Bhojpur-Sankhuwasabha Poverty Alleviation Through Self-Help Promotion Project. GTZ, Kathmandu.

6. Tuladhar, A.R. (1999). Main Trail Investigation, Sankhuwasabha District. June 1999, DEFT Consults, Kathmandu.

7. Myanglung -Ishibu Section of Tehrathum district road, Rural Access program, Completion Report, Socio Economic Development Programme, Deurali Society 2006.

8. Ishibu- Sakranti Section, Rural Access program, Completion Report, Socio Economic Development Programme, Deurali Society, 2006.

9. Basabtapur- Myanglung Feeder Road Project, Social Economic Development programme, Completion Report People's Awareness Campaign.

Overall Impact Assessments and Plans

Atkins Land & Water Management. (1991). Annual Report 1991. Cambridge, UK: KHDP. 55

Atkins Land & Water Management. (1992). Koshi Hills Development Programme: Programme Management Office: Terminal Report & Appendices. Cambridge, UK: KHDP.

Atkins Land & Water Management. (1992). Koshi Hills Development Programme: Livestock Project: Terminal Report. Cambridge, UK: KHDP.

Atkins Land & Water Management. (1992). Local Development (MLD) Support Project: Terminal Report. Cambridge, UK: KHDP.

Atkins Land & Water Management. (1992). Uttarpani Agricultural Technical School: Terminal Report. Cambridge, UK: KHDP.

Atkins Land & Water Management. (1993). Koshi Hills Development Programme Agriculture Project Terminal Report. South East Asia Development Division Overseas Development Administration

Bangkok, Thailand, in association with International Forest Science Consultancy, Metcon Consultants, Overseas Development Group. Kathmandu: KHDP.

Atkins Land & Water Management. (1993). Agriculture Project: Terminal Report. Cambridge, UK: KHDP.

Cromwell E., Gurung S. & Urben, R. (1992). The Koshi Hills Agriculture Project: An Impact Assessment of the Seed Programme. Cambridge, UK: KHDP.

Kievelitz, U. (1997). Participatory, Environmentally Sound Access Infrastructure Approach for 'Bhojpur-Sankhuwasabha Poverty Alleviation Through Self-Help Promotion Project (Arun Valley)': a concept paper and proposal. GTZ, Kathmandu.

Koshi Hills Development Programme (KHDP). (1987-1992). Local Development Support Project (MLD) Achievement 1987-1992: Terminal Report. Nepal: KHDP.

Koshi Hills Development Programme (KHDP). (1992). Strategy for UK Investment in The Koshi Hills, Nepal. Proposal for a Fourth Phase of the Koshi Hills Development Programme and Community Forestry Project. Kathmandu: KHDP.

Koshi Hills Development Programme. (1992). The Koshi Hills Development Programme: An Overview. Kathmandu, Nepal: KHDP.

Maunder, N. (1992). KHDP: An Evaluation of the Milk Collection Scheme. Cambridge, UK: KHDP.

Overseas Development Administration. (1997). Final Review of the Koshi Hills Seed & Vegetable Project (KOSEVEG). London, UK: KOSEVEG.

Sharma A.R., Ojha P.R., and Wagle U.P. (1997). Baseline Study of Terhathum outreach site (Household resources, food situation, food strategies and priority problem) : PAC Working Paper No. 183 Dhankuta, Nepal, PAC.

Soussan J., Allsop, N. & Amatya, S. (1991). An Evaluation of the Koshi Hills Community Forestry Project. Cambridge, UK: KHDP.

Women's Development

1. Khadka, S S & Puri, B. (1995). Production Credit for Rural Women (PCRW) Programme: A Benchmark-Cum-Evaluation Study. Kathmandu, Nepal: PCRW.

Others

1. Huntington, R., Evans,H. & Malla, U. (1999). Nepal Rural Urban Partnership Programme (Rupp): Report of the Evaluation Mission.

2. Rural Urban Partnership Programme (RUPP)(2001). Report of Contextual Evaluation of Rural Urban Partnership Programme. RUPP. Kathmandu.

3. 2065. A Report on impact of foreign employment on households of Dhankuta Municipality Branch Statistics Office Dhankuta. 21.

---------- After 2001 ----------

Agriculture and Livestock

1. ANZDEC. 2003. *Nepal Commercial Agriculture Development Project*. Final Report Submitted to ADB. Kathmandu, Nepal (TA 3949-NEP).

2. Commercial Agriculture Development Project (CADP). (2008). *An Interaction Program about Partnership with NGOs in Siraha.* Biratnagar, Nepal: Commercial Agriculture Development Project (CADP).

3. HTS Development, SAC International, University of Edinburgh & Metcon Consultants. (2004). *Final Report of the Seed Sector Support Project*. UK: SSSP.

4. Pahribas Agricultural Centre (PAC). (2001). *Study on Large Cardamom Marketing in Nepal and India*. Nepal Agricultural Research Council Agricultural Research Station Pakhribas, Dhankuta, Nepal. Dhankuta: PAC.

Ecology and Natural Resources

1. Development Vision–Nepal (DVN). (2004). *Livelihoods Baseline Study: Main Report, Dhankuta District*. Kathmandu, Nepal: DVN.
2. DFID Nepal. (2005). Livelihoods and Forestry Programme: Annual Review Report. Kathmandu: LFP.
3. Dunsmore, S. (2006). *The Nettle in Nepal: Tradition and Innovation*. Nepalese Textile Trust, UK. (ISBN 0- 9552900-0-7) (First published in 1985 and updated and expanded by John Dunsmore in 2006).
4. Livelihoods & Forestry Programme (LFP) and Tango International & development Vision. (2003). Hill Livelihoods Baseline Study. Kathmandu, LFP.
5. Livelihoods and Forestry Programme (LFP)(2005). *Achievements against Indicators (MTR Briefing Note)*. Kathmandu: LFP.
6. Livelihoods and Forestry Programme(LFP). (2005). *FUG Categorisation Cross Table of Koshi Hills District.* Dhankuta: Livelihoods & Forestry Programme District Office, Dhankuta.
7. Livelihoods and Forestry Programme (LFP). (2006). *ANNUAL REPORT Livelihoods and Forestry Programme*. Kathmandu: Livelihoods and Forestry Programme.
8. Livelihoods & Forestry Programme (LFP) (2008). Seven Years of the Livelihoods and Forestry Programme: Contributions and Achievements, Kathmandu, Nepal, LFP.
9. Livelihoods & Forestry Programme (LFP) (2009). Community Forestry for Poverty Alleviation: How UK aid has increased household incomes in Nepal's middle hills 2003-2008. Kathmandu, Nepal: LFP.
10. Livelihoods & Forestry Programme (LFP).(2010). Forest Resource Assessment 1994-2008: Assessing Forest Conditions. Nepal: LFP.
11. Luintel, H., Ojha, H., Rana, B., Subedi, R. & Dhungana, H. (2009). Community Forestry in Nepal: promoting livelihoods, community development and the environment. Kathmandu: LFP.
12. Rizal, Kanta & Adhikari, G.C. (2003). Livelihoods and Forestry Programme: Gender Review of LFP Activities in the Hills. LFP.
13. Ryan, R.,Sharma,P. and Gurung, C. (2002). Makalu-Barun Conservation Program Phase 2, Community Partnership Programme : Final Assessment, Kathmandu, Nepal, Royal Netherlands Embassy, Delhi, Dept of National Parks & Wildlife Conservation, TMI in Nepal.
14. Tribhuvan University. (2003). Role of Community Forestry for the Improvement of Socio-economic Condition of Users Group: (A Case Study of Aaitabare Rani Community Forestry User Group, Dhankuta Municipality-1, Hile). Hetauda, Nepal: Tribhuvan University Institute of Forestry Hetauda Campus.

Health

1. British Nepal Medical Trust (BNMT).. (2003/04). *Preserving in embattled Nepal: An Annual Report*. Biratnagar: Britain-Nepal Medical Trust.
2. British Nepal Medical Trust (BNMT).2060/61(2003/04). *Health Improvement Programme (HIP) Annual Report*. Bhojpur: BNMT.
3. British Nepal Medical Trust (BNMT). (2004). *Bi-annual Progress Report.* Dhankuta: BNMT, District Office Dhankuta.
4. British Nepal Medical Trust (BNMT).. (2006). *Empowering women for health: An Annual Report*. Biratnagar: BNMT.
5. DFID/CSP. (2007). Samudayik Sangalo: A Collection of Case Study Part 3. Terhathum: DDID/ CSP.
6. DFID/CSP. (2008). Samudayik Sangalo A Collection of Case Study Part 2. Terhathum: DFID/CSP.

7. DFID/CSP. (2009). Samudayik Sangalo: Collection of Case Study Part 3. Terhathum: DFID/CSP.

8. MOH/ERHD/BNMT/AC/NEILSEN. (2003). Health Improvement Programme (HIP): Assessment of Health Status of Eastern Region. MOH/ERHD/BNMT/AC/ NEILSEN.

Infrastructure: Roads, Trails and Bridges

1. Rural Access Programme(RAP). (2003). Implementing the Rural Access Programme Nepal: Evaluation Paper 6: Findings of the Baseline Survey of the Bhojpur-Chyandanda Road Corridor, November 2003. RAP/WSP. Kathmandu, Nepal.

2. Rural Access Programme (RAP)(2004). Accessibility Planning Report: Sankhuwasabha District VOL I. RAP 15. (Missing).

3. Rural Access Programme (RAP)(2004). Accessibility Planning Report: Sankhuwasabha District VOL II. RAP 16. (Missing).

4. Rural Access Program (RAP). (2008). Compilation Report. RAP, Terhathum, 10 Aug. 2006- 30 Jun 2008. Terhathum: RAP.

5. Rural Access Programme (RAP). (2008). Basantapur-Myanglung Feeder Road Project, Social & Economic Department Programme: A Completion Report. District Office Terhathum: Rural Access Programme (RAP).

6. Rural Access Programme (RAP). (2008). *Social & Economic Development Programme, Issibu-Sakranti Section: Completion Report*. District Office Terhathum: Rural Access Programme.

7. WSP, ODG, OPM & Helvetas Nepal. (2003). *Baseline Survey of the Hile-Bhojpur Road Corridor*. Kathmandu, Nepal: RAP.

8. WSP, Helvats &RAP. (2005). Evaluation paper 9:Findings of the Baseline Survey of Sankhuwasabha District. RAP.

9. WSP, Helvats &RAP. (2008). Implementing the Rural Access programme Nepal: Livelihood Impact Assessment Study. RAP.

10. WSP, ODG, OPM & Helvetas Nepal. (2008). Implementing the Rural Access Programme: Project Completion Report. Kathmandu, Nepal: RAP.

Overall Impact Assessments and Plans

1. Coffey & Metcon Consultants. (2010). *Research into the Long Term Impact of Development Interventions in the Koshi Hills: Data Collection Phase*. Kathmandu, Nepal: Department for International Development (DFID).

2. DFID/ Consultants. (2004). Impact of the Kosi Hill Area Rural Development Programme, Nepal. CD8.

3. District Development Committee Sankhuwasabha. (2004). District Transport Master Plan (Updated - F/Y 2003/2004) VOL I, Kathmandu, Nepal, Rural Access Programme (RAP).

4. Effective Development Group (EDG)/GRM International. (2011). Part B-General and Technical Tender. Research into the Long Term Development Interventions in the Koshi Hills of Nepal. London: EGD, GRM International.

Others

1. Gurkha Welfare Scheme Nepal. (2003). *Director's Annual Report 2002/03*. Pokhara, Nepal: Gurkha Welfare Scheme.

2. Branch Statistics Office Dhankuta. 2064. A Report on Indigenous - Economic Situation of Dhankuta Municipality, Statistics Office Dhankuta.

7.2 Part B: Development Interventions (Apart from Koshi Hills)

Agriculture and Livestock

1. Asian Development Bank (ADB). 2004. *Second Agriculture Program (Loan 1604-NEP[SF]) in Nepal.* Manila: ADB, Operations Evaluation Department.
2. Department of Agriculture. (2008). *Annual Progress Report 2007/08 (Barshik Pragati Pustika F/Y 2064/65).* Kathmandu, Nepal: HMG/Department of Agriculture.
3. Department of Livestock Services, 2007 (2065 BS), Annual Progress Report 2006/07, Kathmandu, Nepal, Department of Livestock Services.
4. DFID. (2001). Contribution of Irrigation to Sustaining Rural Livelihoods: Literature Review. KAR Project R 7879, MDS 0537 Report OD/TN 109, DFID.
5. District Agriculture Development Office. (2008). *Annual Program Report 2007/08 (Barshik krishi Bikas Karyakram tatha Tathyank Pustika 2064/65).* Kathmandu, Nepal: Department of Agriculture, District Agriculture Development Office.
6. Ministry of Agriculture and Co-operatives (MOAC). (2004) (2062 BS). *Annual Report of Ministry of Agriculture and Co-operatives 2003/2004*. Kathmandu, Nepal: Ministry of Agriculture and Co-operatives, Monitoring and Evaluation Division.
7. Ministry of Agriculture and Co-operatives. (2008) (2065 BS). *Agricultural Policy 2008/09*. Kathmandu, Nepal: Ministry of Agriculture and Co-operatives.
8. Misra, I. R. & Satyal, M. R. (1981). Development of agricultural marketing and the improvements of rural markets in hill Areas. In: *Nepal's Experience in Hill Agricultural Development*. Kathmandu: Ministry of Food and Agriculture/HMG.
9. Pant, T. N. & Thapa, G. B. (1981). Development potentials of Nepal's hill agriculture. In: Nepal's Experience in Hill Agricultural Development. Kathmandu: Ministry of Food and Agriculture.
10. Thapa, G. Koirala, G.P., Gill, G. J. & Thapa, M.B. (1995). *Constraints on Agricultural Marketing in Nepal*. Winrock International, Research Report Series, No. 29, Winrock International, Kathmandu, March 1995.
11. Upreti, S. R. (1985). Farmers' Perceptions of Middle Men's Performance in Agricultural Marketing: A Case Study of Duhubi Adarsha Village Panchayat, Sunsari District, Nepal. M. Sc. Thesis, HSD, AIT, Bangkok.
12. Misra, I.R. and Satyal, M.B. (1981), Development of agricultural marketing and the improvements in rural markets in hill areas. In: *Nepal's Hill Experience in Hill Agricultural Development*. Kathmandu: Ministry of Food and Agriculture, HMG: 84-92.
13. UNDP (1988), *Development of Rural Small Industrial Enterprises: Lessons from Experience*, A Joint Study by United Nations Development Programme (UNDP), The Government of the Netherlands, International Labour Organization (ILO), and United Nations Industrial Development Organization (UNIDO).

Development Approaches in Nepal

1. Agrawal, A., Britt, C., and Kanel, K. (1998). *Decentralization in Nepal: A Comparative Analysis. A Report on the Participatory District Development Program.* Oakland, California: The International Center For Self-Governance, ICS Press Institute For Contemporary Studies.
2. Bhattachan, Krishna B. 2002. "Traditional Local Governance in Nepal". Paper presented at national seminar *Strengthening Decentralization and Good Governance in Nepal* organized by the Political Science Association of Nepal and Friedrich-Ebert-Stiftung, Kathmandu, April 21, 2002. Downloaded on 3/31/2011 http://www.nepaldemocracy.org/institutions/traditional_local-governance.htm
3. Amatya, S.L. (1998). "The Divergent Approaches of the IRDPs and Problems of Implementation in Nepal". *Contributions to Nepalese Studies*, 16(1), 43-54.
4. Okada, F.E. (1970). Preliminary report on Regional Development Areas in Nepal. National Planning Commission (NPC)/HMG. Kathmandu. 1970.

5. ICIMOD. (1985). Integrated rural development projects in Nepal: A review. Kathmandu, Nepal: ICIMOD.

6. Shrestha, B.P. (1968). Regional Planning in Nepal. Vasudha XI. 1968.

7. Mathema, S.B., (1999) Strategy of Sustainable Rural livelihoods and Social Exclusion for Nepal: a review of Literature.

8. Blaikie, P. M., and Z. Sadeque. (2000). *Policies in high places: environment and development in the Himalayas*. Kathmandu: International Centre for Integrated Mountain Development.

9. Blaikie, P. M., J. Cameron, and D. Seddon. (1983). *Centre, periphery and access in West Central Nepal: approaches to social and spatial relations of inequality*. Monographs in development studies (vol. 5). Norwich, East Anglia: School of Development Studies, University of East Anglia.

10. Blaikie, P. M., J. Cameron, and D. Seddon. (2000). *The Struggle For Basic Needs In Nepal.* Delhi: Adroit Publishers [Originally published by the OECD Development Centre, Paris, 1980].

11. Blaikie, P. M., J. Cameron, J. and Seddon, D. (1980). *Nepal in crisis: growth and stagnation at the periphery*. Oxford: Clarendon Press [Reprinted by Adroit Pub., Delhi, 2001].

12. Gurung, H.B. (2005). *Nepal Regional Strategy For Development*. NRM Working Paper No. 3. Kathmandu, Nepal: Asian Development Bank.

13. Hagen, T. (1959). Observations on Certain Aspects of Economic and Social Development Problems in Nepal. UNDP, July 1959 (reprinted in 1997).

14. Klatzel, F and Peniston B. (2006). An Analysis of NGO Service Delivery Capacities in Nepal during Times of Conflict & Uncertainty. The Mountain Institute.

15. Mohsin, M. (1978). "Mechanism for Encouraging People's Participation in Nepal". In Report of Seminar-Cum-Workshop on People's Participation in Rural Development in Nepal. Kathmandu: APROSC.

16. Pradhan, B.B. (1982). *Rural Development in Nepal: Problems and Prospects*. Report to Ministry of Panchayat and Local Development/UNDP, Kathmandu, Nepal.

17. Pradhan, B.B. (1985). *Integrated Rural Development Projects in Nepal – A Review*. Kathmandu: ICIMOD. Occasional Paper No. 2.

18. Pradhan, P. K. & Karn, S. (2007). Periodic Markets and accessibility of rural development services in Nepal: the case of Dhanusha district. In: Gareth Jones, Walter Leimgruber, Etienne Nel (Eds.), *Issues In Geographical Marginality*. International Geographical Union.

19. Pradhan, P. P. (1980). *Local Institutions and People's Participation in Rural Public Works in Nepal*. Rural Development Committee, Center for International Studies, Cornell University, New York.

20. Regmi, M. C. (1971). *A Study in Nepali Economic History*. Manjusri Publishing House, New Delhi.

21. Regmi, M. C. (1978). *Thatched Huts and Stucco Palaces. Peasants and Landlords in 19th Century Nepal*. Vikas Publishing House, New Delhi (reprinted Adroit Publishers).

22. Seddon, D. (1993). Nepal – A State of Poverty (2nd edition with additional chapter). Vikas Press, Pvt., New Delhi.

23. UNDP (1998). *Nepal Human Development Report 1998*. Kathmandu, Nepal: UNDP.

24. UNDP (2004). *Nepal Human Development Report 2004: Empowerment and Poverty Reduction*. Kathmandu, Nepal: UNDP.

25. UNFPA. (2007). Gender Equality and Empowerment in Nepal. Kathmandu, Nepal: UNFPA.

Development Interventions in Nepal

1. APROSC (1980). Feasibility Study of Rapti Zone Integrated Rural Development Project, 5 Vols. Kathmandu: APROSC.

2. APROSC (1980). Report on Rapti Baseline Survey, 2 Vols. Kathmandu: APROSC.

3. APROSC (1990). Household Income Survey: Integrated Rural Development Project, Rapti, 2 vols. Kathmandu: APROSC.

4. Kannav, K. (1997). Project Completion Report of the Seti Zone Rural Development Project. ADB, October 1997.

5. North, W.H. et al. (1985). Nepal Rapti Zone Rural Area Development Project: Mid-Term Evaluation Report, USAID, Kathmandu.

6. Axinn, George H. and Nancy W. Axinn. 1997. Collaboration in International Rural Development: A Practitioner's Handbook. SAGE Publications, Incorporated.

7. Barber, Jennifer S., G.P. Shivakoti, William G. Axinn and Kishore Gajurel. 1997. "Sampling Strategies for Rural Settings: A Detailed Example from Chitwan Valley Family Study, Nepal". Nepal Population Journal 6(5):193-203.

8. Blaikie, P., J. Cameron and D. Seddon. 1980. Nepal in Crisis: Growth and Stagnation at the Periphery. Clarendon Press: Oxford.

Development: Impact Evaluations in Nepal

1. Baer, Dagmar. (1988). *Production Credit for Rural Women Project and its Impact on the Situation of Rural Women in Nepal*. Kathmandu: International Centre for Integrated Mountain Development (ICIMOD).

2. Baron, A.R. et al. (1985). *Final Evaluation – Rapti Zone Rural Development Project, No. 367-0129*. Kathmandu: New Era, Devres.

3. Bhusal, N. P. (2000). *Government and NGO 'Food for Work' Programmes as a Source of Employment for the Rural Poor*. Report to the Overseas Development Group in the context of a project on 'Employment and the Rural Poor', directed by David Seddon for DfID, Nepal.

4. Blaikie, P.M. (1979). 'Porters', in Seddon, D, Blaikie, P.M. & Cameron, J. (1979). Peasants and Workers in Nepal. Aris & Phillips, Warminster and Vikas Pvt. New Delhi.

5. Blaikie, P.M., Cameron, J. & Seddon, D. (1977). *Centre, Periphery and Access: social and spatial relations of inequality in west central Nepal*. Overseas Development Group, University of East Anglia, Norwich.

6. Blaikie, Piers, John Cameron and David Seddon. 2002. "Understanding 20 Years of Change in West-Central Nepal: Continuity and Change in Lives and Ideas." *World Development* 30(7): 1255-1270. K-DS.

7. Cameron, John, Piers Blaikie, and David Seddon. (1998) "Patterns of Change in Western Nepal: Rural Households of the 1970s and 1980s Compared," *Himalaya, the Journal of the Association for Nepal and Himalayan Studies*: Vol. 18: No. 2, Article 9.

8. DEFT Consultants (1994). *SBD Impact Study, Vol.1.* DEFT Consultants, Lalitpur, Kathmandu, November 1994.

9. DEFT Consultants (1995). *SBD Impact Study, Vol.2*. DEFT Consultants, Lalitpur, Kathmandu, June 1995.

10. ICIMOD. (1997). *Districts of Nepal, Indicators of Development.* Kathmandu, Nepal: ICIMOD. 64.

11. IDS (1982). *Integrated Hill Development Project: an evaluation*. Kathmandu: IDS.

12. IHDP (1980-85). *Market Surveys. Various Reports*. Dandepakhar & Kathmandu: IHDP.

13. IHDP (1990). *Achievement Assessment of IHDP*. Prepared by the PME Sector of IHDP. Dandepakhar.

14. INFRAS & CEDA. (1991*). Impact Status Report No. 2. Impact Monitoring Project LJRP/IHDP*. Zürich/Kathmandu: Swiss Development Cooperation (SDC).

15. INFRAS. (1995). Development Trends in Dolakha and Sindhupalchok, Nepal (1975 – 1995). Development Status Report 1995: Synthesis. Zürich/Kathmandu: Swiss Development Cooperation (SDC).

16. Khadka, S.S. & Puri, B. (1995). Production Credit for Rural Women (PCRW) Programme: A Benchmark-Cum-Evaluation Study. Kathmandu, Nepal: WDD, MLD.

17. Manandhar, M. K. (1982). *The Socio-economic Impact of the Growth Centre on Its Rural Hinterland: A Case Study of Birendranagar, Nepal*. (Unpublished M.Sc. Thesis). Asian Institute of Technology, Thailand.

18. Messerschmidt, D. A. (1987). *Observations and Recommendations on People's Participation Based on the User Group Concept in the Dhading District Development Project (DDP)*. DDDP/GTZ, Kathmandu.

19. Messerschmidt, Donald A. (1980). Gateway-hinter relations in changing Nepal. *Contribution to Nepalese Studies*, 8 (1), 21-40.

20. PADCO, Inc. (1985). Rapti Zone Regional Assessment. Ministry of Panchayat & Local Development, HMG/N, and USAID Nepal, Kathmandu.

21. Shepherd, R. (1989). "Socio-economic change in far west Nepal: a town in the Doti valley". *Asian Survey*, 29, 6: 573-79.

22. Stiller, S. J. (1989). *Integrated Rural Development Projects In Nepal: An Analysis Based On Project Evaluation Reports*. Canadian Cooperation Office, Kathmandu.

23. Tuladhar, A.R. (1994). *SBD Impact Study, Vol.1*. DEFT Consults, Kathmandu, November 1994.

24. Tuladhar, A.R. (1995). *SBD Impact Study, Vol.2*. DEFT Consults, Kathmandu, June 1995.

25. Tuladhar, B. R. (1972). *Notes on Rapti Valley Development Project*. Kathmandu: Food and Agricultural Division/USAID.

26. UNICEF. (2003). *A Qualitative Analysis of Production Credit for Rural Women (PCRW) and the Federation Process*. Kathmandu, Nepal: UNICEF. 95.

27. UNICEF, 2003, Realising Change : Best Practices of Community Action Processes, Kathmandu, Nepal, UNICEF. 96.

28. Zurcher, D. (1994/95). *Final Report of the Palpa Development Program*. Kathmandu & Zurich: Helvetas/GTZ.

29. Central Bureau of Statistics (CBS). (2006). *Resilience Amidst Conflict: An Assessment of Poverty in Nepal 1995-96 and 2003-04*. Kathmandu, Nepal: CBS.

30. Shrestha, R N. (2009) In the name of Development- A reflection on Nepal, Educational Publishing house, Kathmandu 191k.

31. Shrestha, A. M. (1999). Bleeding mountains of Nepal: A story of corruption, greed, misuse of power and resources, Ekta Books. 190k.

32. Adhikary, S. P. (2000). Rural Development in Nepal problems and Prospects, Sajha Prakashanko Chhapakhana, Lalitpur 192k.

Economy, Labour and Migration

1. Seddon, D., (2005) "Nepal's Dependence on Exporting Labor," Migration Policy Institute, Washington, DC.

2. Seddon, D., and Subedi, B.P. (2000). *Labour markets and the poor in Nepal*. Report to DFID, Nepal. Norwich: Overseas Development Group.

3. Seddon, D., Blaikie, P.M. and Cameron, J. (1979). *Peasants and Workers in Nepal*. Aris & Phillips, Warminster; Vikas Pvt., New Delhi.

4. Seddon, D., Gurung, G., & Adhikari, J. (1998). "Foreign Labour Migration and the Remittance Economy of Nepal". *Himalayan Research Bulletin*, XVIII(2), 3-10.

5. Seddon, D., J. Adhikari, and G. Gurung. (2000). *Foreign labour migration and the remittance economy of Nepal: A report to DFID, Nepal*. Norwich: Overseas Development Group.

6. Seddon, D., J. Adhikari, and G. Gurung. (2001). The New Lahures: foreign labour migration and the remittance economy of Nepal. Kathmandu: IDS Publishers.

7. Seddon, D., P.M. Blaikie, and J. Cameron. (1979). *Peasants and Workers in Nepal.* Warminster: Aris and Phillips [Reprinted by Adroit Pub., Delhi, 2002].

8. Sharma, P. & Khanal, N. (1996). Assessing the Potentials of Market Towns in the Mountains: case studies from the Hindu Kush – Himalayas. ICIMOD Occasional Paper, no. 25, ICIMOD, Kathmandu.

9. Nepal Institute of Development Studies (NIDS). (2009). Nepal Migration Year Book 2009. NIDS. Kathmandu.

10. Sharma, J.R. & Sharma, Sanjay. (2011). Enumerating Migration in Nepal. A Review. Working Paper 1. Centre for the Study of Labour and Mobility. Kathmandu.

11. Aoki, C. & Pradhan, P.K. (2010). Impact of Microfinance Services on Socio-Economic Empowerment of the Mahila Samuha (Women's Group) in Nepal. *Nepalese Journal of Development and Rural Studies*. Vol.7. No.1. 2010.

Education

1. Ministry of Education. (2009). *School Sector Reform Plan 2009-2015*. Kathmandu, Nepal: Ministry of Education.

2. Buchmann, Claudia and Emily Hannum. 2001. "Education and Stratification in Developing Countries: a Review of Theories and Research." *Annual Review of Sociology* 27: 77-102.

3. Sharma, G.N. (2010) (2066 BS). Reports of Nepal's Education Commission (Nepalka Shiksha Aayogka Pratibedanharu). Kathmandu, Nepal, Makalu Publication Group. 85.

Environment and Ecology

1. Griffin, J. (1999). Terminal Evaluation of the UNDP-GEF Project entitled "Biodiversity Conservation in Nepal". NEP/92/G31/A/1G/99. 50.

2. KMTNC (1991). Environmental Management and Sustainable Development in the run Basin, Vols. I & II. August 1991, Draft.

3. Land Resources Mapping Programme (LRMP). (1986). Land System Report. Land Resources Mapping Programme, Kathmandu: LRMP.

4. Lawrance, C.J. (1993). 'Comments on "Green Roads" in Nepal', International Group of Bio-Engineers Newsletter, no. 2, April 1993.

5. Pohl, C. (2005). Trans-disciplinary collaboration in environmental research. Futures, 37(10), 1159–1178.

6. Sharma, P. (1992). Population Dynamics, Environment, and Development in the Arun Watershed, Nepal. Kathmandu, Nepal: ICIMOD. 51.

7. Carson, B. (1985). Erosion and Sedimentation Processes in the Nepalese Himalaya. ICIMOD Occasional Paper No.1. Kathmandu: ICIMOD.

8. Elder, Joseph W., Mahabir Ale, Mary A. Evans, David P. Gillespie, Rohit K. Nepali, Sitaram P. Poudyal, Bryce P. Smith. 1976. Planned Resettlement in Nepal's Terai. Kathmandu, Nepal: Tribhuvan University Press.

9. Carson, B. (1992). The Land, the Farmer and the Future – a Land Fertility Management Strategy for Nepal. ICIMOD Occasional Paper No. 21. Kathmandu: ICIMOD.

10. Ives, D.J. and Messerli, B. (1989). The Himalayan Dilemma: Reconciling Development and Conservation. New York.

11. Upreti, B.R. (2004). Resource conflicts and conflict resolution in Nepal. Mountain Research and Development. Vol 24. Issue 1. pp: 60-66.

12. State of the Environment Nepal (2001). United Nations Environment Programme, Thailand. 170k.

13. Dr. Kurt Luger, Narayan Dhakal, Final report (2003 to 2011) (2011) Swiss Agency for Ddevelopment and Cooperation (SDC) and Eco Himal, Bufferzone Development project Makalu Barun National Park. 174k.

14. Ulli Hoffman, Dickey Dolama Lama, Dorit Battermann, (2003).Support of Subistence Farmers in the Arun Valley Nepal Final Evaluation, Eco Himal. 175k.

15. Uphoff N. and CM Wijayaratna. 2000. "Demonstrated benefits from social capital: the productivity of farmer organizations in Gal Oya, Sri Lanka". World Development 28: 1875-1890.

16. Caplan, L. (1970). Land and Social Change in East Nepal: A study of Hindu-Tribal relations. Berkeley. Los Angeles. 1970.

17. Zamanm M.A. (1973). Evaluation of Land Reform in Nepal. HMGN. Kathmandu.

18. Regmi, M.C. (1978). Thatched huts and stucco palaces. Vikash Publishing House. New Delhi.

19. Virgo, K.J. and Subba, K. J. (1994). Land-Use Change between 1978 and 1990 in Dhankuta District, Koshi Hills. Mountain Research and Development. Vol 14. No. 2. Pp159-170 (available at jstor).

20. Thapa, S. (2009). Three Essays on Nepalse Development: Technology Adoption, Agricultural Risk and the effects of remittances on recipient households. PhD Dissertation. University of Trento CIFREM. 2009.

21. Maharjan. K.L & Joshi, N.P. (2010). Relationship between Income-Poverty and Food Insecurity in Rural Far-Western Mid-Hills of Nepal. Nepalese Journal of Development and Rural Studies. Vol.7. No.1. 2010.

22. Shrestha, B.K.1999. 'The origins and evolution of user groups as the institutional anchor for development at the grassroots', Sahabhagita: The Journal of Development and Local Government 2(2)/3(1): 23-30. Kathmandu: Local Development Training Academy.

23. Adhikari, Madhukar and Rajendra Pradhan. 2000. "Water rights, law and authority: changing water rights in the Bhamke Khola basin". In Water, Land and Law: Changing rights to land and water in Nepal. (ed.) Rajendra Pradhan, Franz von Benda-Beckmann and Keebet von Benda-Beckmann. Kathmandu: FREEDEAL. Wageningen: WAU. Rotterdam: EUR.

Energy

1. ENPHO/WELINK/MOPE (2002). *State of Rural Energy in the Mountains*, Kathmandu, Nepal.

2. Annual Progress Report, DDC, District Energy and Environment Section (2064/65) 21st.

Forestry

1. Ministry of Forest Soil Conservation, Forest Department. (2005/06). *Our Forest FY 2062/63*. Kathmandu, Nepal: Ministry of Forest Soil & Conservation, Forest Department. 35.

2. World Bank. (1978). *Nepal Forestry Sector Review*. Report No. 1952-Nepal Washington D.C.: World Bank.

3. World Bank. (1979). *Country Report Nepal: Development Performance and Prospects.* Washington D.C.: The World Bank (South Asia regional Office).

4. Bandyopadhyay, S., P. Shyamsundar, P. and Kanel, K. (2005). "Forestry User Groups in Nepal – Can Institutional Change Lead to Economic Development"? Background paper prepared for the Nepal Poverty Assessment, Washington, DC. (quoted in CBS/WB/DFID/ADB 2006).

5. Applegate, G.B. and Gilmour, D.A. (1987). *Operational Experiences in Forest Management Development in the Hills of Nepal*. ICIMOD Occasional Paper. Jan. No.6. Kathmandu: ICIMOD.

6. DFRS (1991). *Forest Research and Survey* (1990–1991). Kathmandu: Department of Forest Research and Survey.

7. DFRS (1999). *Forest Resources of Nepal (1987-1998).* Kathmandu: Department of Forest Research and Survey.

8. DFRS (1999). *Records on Community Fores*t. Kathmandu: Community and Private Forestry Division.

9. DRFS (1999). *Forest Resources of Nepal*. No. 74. Kathmandu: Department of Forest Research and Survey.

10. HMG (1997). *The Community and Private Forestry Program in Nepa*l. Internal Report. Kathmandu: Community and Private Forestry Division, Department of Forest.

11. Mahat, T.B.S. (1987). *Forestry-Farming Linkages in the Mountains*. ICIMOD Occasional Paper. No. 7. March. Kathmandu: ICIMOD/FAO.

12. Mathema, P., Shrestha, K.B. and Sthapit, K.M. (1998). *Community Forest Management in Nepal: Implications for Policy and Human Resource Developmen*t. Regional Workshop on Participatory Forest Management: Implications for Policy and Human Resource Development. 7–12 May 1998. Kunming, China.

13. MPFS (1988). Master Plan for Forestry Sector Nepal. Land Conservation and Watershed Management Plan. Kathmandu: MFSC.

14. Pradhan, Pushkar K & Pradhan, Bandana (2008). *Forest resources and rural development in Nepal*. Nepalese Journal of Development and Rural Studies. Vol. 5 (No. 1), Jan-Jun.

15. Shepherd, K.R. (1985). *Management of the Forest and Agricultural Systems Together for Stabilization and Productivity in the Middle Hills of Nepal*. The International Workshop on Watershed Management in The Hindu Kush-Himalaya Region, Chengdu, China. Kathmandu: ICIMOD.

16. Shrestha, N. Kaji and Charla Britt. 1997. "Crafting Community Forestry: Networking and Federation-Building Experiences". Paper presented at the International Seminar, *Community Forestry at a Crossroads: Reflections and future Directions in the Development of Community Forestry,* Bangkok, Thailand.

17. Ostrom, E. 1990. Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge: Cambridge University Press.

18. Fox, J. (1993). "Forest resources in a Nepali village in 1980 and 1990: the positive influence of population growth". *Mountain Research and Development,* 3(1): 89-98.

19. Acharya, Krishna P. and Popular Gentle. 2008. "Improving Forestry Governance through Advocacy: Evidences from Nepal." Presented at "Governing Shared Resources: Connecting Local Experience to Global Challenges," 12th Biennial Conference of the International Association for the Study of the Commons, Cheltenham, England, July 14-18, 2008.

20. Acharya, Krishna P. and Popular Gentle. 2008. "Improving Forestry Governance through Advocacy: Evidences from Nepal." Presented at "Governing Shared Resources: Connecting Local Experience to Global Challenges," 12th Biennial Conference of the International Association for the Study of the Commons, Cheltenham, England, July 14-18, 2008.

Gender and Social Inclusion/Exclusion

1. Bennett, L. (2005). "Gender, Caste and Ethnic Exclusion in Nepal: Following the Policy Process from Analysis to Action". Mimeo.

2. Department of Women Development. (2008). *Federating for Force: Lessons from Nepal's Rural Groups*. Lalitpur, Nepal: Department of Women Development.

3. Department of Women Development. (2010). *Women Development Program 2009/10 (FY 2066/67) (Sanchalan Margadarshan)*. Kathmandu, Nepal, Department of Women Development.

4. Ministry of Local Development, Women Development Division. (1999). *Impact Study of Training under Women Development Program*. Kathmandu, Nepal, Ministry of Local Development, Women Development Division.

5. Dyson T. and M. Moore. 1983. "On kinship structure, female autonomy, and demographic behavior in India," *Population and Development Review* 9: 35-60.

6. Seddon, D. & Shrestha, A. (1998). Gender and Transport Development in Nepal: A Review. Report to International Forum for Rural Transport and Development (IFRTD), London, mimeo.

7. Seddon, D. & Shrestha, A. (1999). "Gender and Transport in Nepal". *IFRTD Forum News*, 6(4).

8. ICIMOD (2010). Gender Perspectives in Mountain Development. Sustainable Mountain Development No 57. Available at

http://www.icimod.org/publications/uploads/tmp/icimodgender_perspectives_in_mountain_development.pdf

9. Department of Women Development. (2007/8). *Annual Progress Report*. Kathmandu, Nepal: Department of Women Development.

10. Aoki, Chikako & Pradhan, Pushkar K (2010). *Impact of microfinance services on socio-economic empowerment of Mahila Samuha (Women's Group) in Nepal.* Nepalese Journal of Development and Rural Studies. Vol. 7 (No. 1), Jan-Jun.

11. Acharya, Meena and Lynn Bennett. 1981. *The Status of Women in Nepal: The Rural Women of Nepal.* Kathmandu, Nepal: Tribhuvan University.

12. Allen, Michael and S.N. Mukherjee (eds.). 1982. *Women in India and Nepal*. Australian National University Monographs on South Asia, No. 8.

13. Bennett, Lynn, Dilli Ram Dahal and Pav Govindasamy. 2008. *Caste, Ethnic and Regional Identity in Nepal: Further Analysis of the 2006 Nepal Demographic and Health Survey*. Calverton, Maryland, USA: Macro International Inc.

14. Bennett, Lynn. 1983. *Dangerous Wives and Sacred Sisters: Social and Symbolic Roles of High Caste Women in Nepal*. New York: Columbia University Press.

15. Bennett, Lynn. 2008. "Policy Reform and Cultural Change: Contesting Gender, Caste and Ethnic Exclusion in Nepal". In A.A. Dani and A. de Haan (Ed.) *Inclusive States. Social Policy and Structural Inequalities*. The World Bank, Washington DC, pp 197-224.

16. Beutel, Ann M. and W.G. Axinn. 2002. "Gender, Social Change and Educational Attainment". *Economic Development and Cultural Change* 51(1):109-134.

17. Biggs, S.D., S.M. Gurung, and D. Messerschmidt. 2004. "An Exploratory Study of Gender, Social Inclusion and Empowerment through Development Groups and Group-Based Organizations in Nepal: Building on the Positive". Report submitted to the *Gender and Social Exclusion Assessment (GSEA) Study*, Kathmandu: DfID and The World Bank.

18. Brunson, Jan. 2010. "Son Preference in the Context of Fertility Decline: Limits to New Constructions of Gender and Kinship in Nepal". *Studies in Family Planning* 41(2): 89-98.

19. Cameron, Mary M. 1995. "Transformations of Gender and Caste Divisions of Labor in Rural Nepal: Land, Hierarchy, and the Case of Untouchable Women". *Journal of Anthropological Research* 51(3):215-246.

20. Cameron, Mary M. 1998. *On the Edge of the Auspicious: Gender and Caste in Nepal*. Urbana, IL: University of Illinois Press.

21. Cameron, Mary M. 2010. "Introduction." In Arjun Guneratne (Editor) *Dalits of Nepal: Towards Dignity, Citizenship and Justice*. Kathmandu: Himal Books.

22. Campbell, Jeffrey Y. 1996. "Emerging Federations in JFM and Community Forestry in India and Nepal". *Wastelands News* XII No.2. Society for the Promotion of Wastelands Development: New Delhi.

23. Chitwan Valley Family Survey (CVFS). 1996. Codebooks and Questionnaires for Individual Survey and Life History Calendar. http://perl.psc.isr.umich.edu/indivdata.htm

24. Dahal, D.R., Y.B. Gurung, B. Acharya, K. Hemchuri and D. Swarnakar. 2002. *National Dalit Strategy Report*. Prepared for the National Planning Commission, Government of Nepal. ActionAid Nepal, Care Nepal and Save the Children: Kathmandu, Nepal.

25. de Jong, Julie, D. Ghimire, A. Thornton, and L. D. Pearce. 2006. "Developmental Idealism and Changing Models of Marriage." PSC, Research Report No. 06-609.University of Michigan.

26. Dumont, Louis. 1980. *Homo Hierarchicus: The Caste System and Its Implications*. Translated by Basia Gulati. University of Chicago Press.

27. Dyson T. and M. Moore. 1983. "On kinship structure, female autonomy, and demographic behavior in India," *Population and Development Review* 9: 35-60.

28. Gellner, David N., J. Pfaff-Czarnecka and J. Whelpton (Ed). 1997. *Nationalism and ethnicity in a Hindu kingdom: the politics of culture in contemporary Nepal*. Amsterdam, The Netherlands: Harwood.

29. Ghimire, D. J., W.G. Axinn, S.T. Yabiku, and A. Thornton. 2006. "Social Change, Premarital Non-family Experience and Spouse Choice in an Arranged Marriage Society." *American Journal of Sociology* 111: 1181-1218.

30. Ghurye, G.S. 1996. *Caste and Race in India*. Bombay, India: Popular Prakashan.

31. Guneratne, Arjun (Ed.) 2010. *Dalits of Nepal: Towards Dignity, Citizenship and Justice*. Kathmandu: Himal Books.

32. Guneratne, Arjun. 1998. "Modernization, the state and the construction of a Tharu identity in Nepal". *Journal of Asian Studies* 57:749-73.

33. Guneratne, Arjun. 2002. *Many Tongues, One People: The Making of Tharu Identity in Nepal.* Ithaca: Cornell University Press.

34. Gupta, D. (Ed.). 2007. *Social Stratification*. Oxford University Press: New Delhi.

35. Hashemi, S.M., S.R. Schuler and A.P. Riley. 1996. "Rural Credit Programs and Women's Empowerment in Bangladesh". *World Development* 24 (4):635-653.

36. Höfer, András. 1979. *The Caste Hierarchy and the State in Nepal. A Study of the Muluki Ain of 1854. Khumbu Himal* Band 13/2. Innsbruck: Universitatsverlag of Wagner.

37. Jones, R. L. and S.K. Jones. 1976. *The Himalayan Women: A study of Limbu women in marriage and divorce*. Palo Alto: Mayfield Publishing.

38. Kabeer, Naila. 1994. *Reversed Realities: Gender Hierarchies in Development Thought*. London: Verso.

39. Kabeer, Naila. 2000. "Social Exclusion, Poverty and Discrimination: Towards and Analytical Framework". *IDS Bulletin* 31(4):83-97.

40. Kabeer, Naila. 2001. "Conflicts over credit: Re-evaluating the empowerment potential of loans to women in rural Bangladesh". *World Development* 29(1):63-84.

41. Kabeer, Naila. 2006. "Poverty, Social Exclusion and the MDGs: The Challenge of 'Durable Inequalities' in the Asian Context". *IDS Bulletin* 37(3):64-78.

42. Lahiri-Dutt, Kuntala and Gopa Samanta. 2006. "Constructing Social Capital: Self-Help Groups and Rural Women's Development in India". *Geographical Research*, 44(3):285–295.

43. Lawoti, Mahendra. 2005. *Towards a Democratic Nepal: Inclusive Political Institutions for a Multicultural Society*. Sage Publications.

44. Leve, Lauren G. 2001. "Between Jesse Helms and Ram Bahadur: Participation and Empowerment in Women's Literacy Programming in Nepal". *Political and Legal Anthropology Review (PoLAR)* 24(1): 108-128.

45. Leve, Lauren. 2007. "'Failed Development' and Rural Revolution in Nepal: Rethinking Subaltern Consciousness and Women's Empowerment". *Anthropological Quarterly* 80(1):127-172.

46. March, Kathryn S. 2002. *'If Each Comes Halfway': Meeting Tamang Women in Nepal*. Ithaca, N.Y.: Cornell Univ. Press.

47. Molnar, Augusta. 1981. *The Kham Magar women of Thabang*. Kathmandu, Nepal: Centre for Economic Development and Administration, Tribhuvan University.

48. Morgan, S. P. and B. B. Niraula. 1995. "Gender Inequality and Fertility in Two Nepali Villages". *Population and Development Review* 21(3):541-561.

49. Muller-Boker, Ulrike. 1999. "The Chitawan Tharus in Southern Nepal: An Enthnoecological Approach". *Nepal Research Center Publication*, No. 21, Franz Steiner Verlag, Stuttgart.

50. Narayan, Deepa (ed.). 2005. *"Measuring Empowerment. Cross Disciplinary Perspectives".* Washington DC: The World Bank.

51. Pettigrew, Judith and S. Shneiderman. 2004. "Women in Maobadi: Ideology and Agency in Nepal's Maoist Movement". *Himal Southasian* 17 (1): 19-29.

52. Pradhan, Meeta S. 2010. *"Keeping Girls in Schools and Delaying Early Marriage in Nepal"*. Policy Brief #1. Bharatpur, Chitwan: Institute for Social and Environmental Research–Nepal (ISER-N).

53. Pradhan, Rajendra. 2002. "Ethnicity, caste and a pluralist society" in *State of Nepal*, Edited by Kanak Mani Dixit and Shastri Ramchandaran, Kathmandu: Himal Books, pp: 1-21.

54. Schuler, S.R., S.M. Hashemi and A.P. Riley. 1997. "The Influence of Women's Changing Roles and Status in Bangladesh's Fertility Transition: Evidence from a Study of Credit Programs and Contraceptive Use". *World Development* 25(4):563-575.

55. Sheth, D.L. 2004. *Caste, Ethnicity and Exclusion in South Asia: The Role of Affirmative Action Policies in Building Inclusive Societies.* UN/HRD Regional Paper, Islamabad.

56. Stash, Sharon Khatry-Chhetri, and Emily Hannum. 2001."Who Goes to School? Educational Stratification by Gender, Caste, and Ethnicity in Nepal." *Comparative Education Review,* 45 (3): 354-378.

57. Swarteveen, M. and N. Neupane. 1996. "Free Riders or Victims: Women's Non-Participation in Irrigation Management in Nepal's Chhattis Mauja Irrigation Scheme". *IIMI Research Report 7*, Colombo, Sri Lanka.

58. Tamang, S. 2009. "The Politics of Conflict and Difference or the Difference of Conflict in Politics: The Women's Movement in Nepal". *Feminist Review,* 91:61-80.

59. Tamrakar, T. 2003. *Dalits Rights Under Nepalese Legal System.* Lalitpur, Nepal: Feminist Dalit Organization.

60. Tanka Prasad Acharya Memorial Foundation (TPAMF), DFID, and World Bank. 2008. *Caste, Ethnic and Gender Dimensions of Nepal's Population: A Statistical Analysis, 1991-2001*. Kathmandu: TPAMF.

61. Watkins, J.C. 1996. *Spirited women: gender, religion, and cultural identity in the Nepal Himalaya.* New York: Columbia University Press.

62. World Bank and DFID. 2006. *Unequal Citizens: Gender, Caste and Ethnic Exclusion in Nepal. A Summary*. The World Bank and the Department for International Development, U.K.

63. Gaige, F.H. 1975. *Regionalism and National Unity in Nepal*. Berkeley: University of California Press.

64. Gellner, David N. and Declan N. Quigley (Ed.). 1995. *Contested Hierarchies: A Collaborative Ethnography of Caste among the Newars of the Kathmandu Valley, Nepal*. London: Oxford University Press.

65. Gurung H.B. 2003. "*Trident and Thunderbolt Cultural Dynamics in Nepalese Politics*". Inaugural Lecture at the conference, 'The Agenda of Transformation: Inclusion in Nepali Democracy', organized by the Social Science Baha, Kathmandu, 24-26, April 2003.

66. Lawoti, Mahendra and Arjun Guneratne. 2010. *Ethnicity, Inequality and Politics in Nepal*. Social Science Baha: Kathmandu, Nepal.

67. Cameron, Mary M. 1995. "Transformations of Gender and Caste Divisions of Labor in Rural Nepal: Land, Hierarchy, and the Case of Untouchable Women". *Journal of Anthropological Research* 51(3):215-246.

68. Cameron, Mary M. 1998. *On the Edge of the Auspicious: Gender and Caste in Nepal*. Urbana, IL: University of Illinois Press.

69. Cameron, Mary M. 2010. "Introduction." In Arjun Guneratne (Editor) *Dalits of Nepal: Towards Dignity, Citizenship and Justice*. Kathmandu: Himal Books.

70. de Jong, Julie, D. Ghimire, A. Thornton, and L. D. Pearce. 2006. "Developmental Idealism and Changing Models of Marriage." PSC, Research Report No. 06-609.University of Michigan.

71. Dumont, Louis. 1980. *Homo Hierarchicus: The Caste System and Its Implications*. Translated by Basia Gulati. University of Chicago Press.

Health and Population

1. Health Sector Reform Support Programme MoHP, RTI International, 2007, Equity Analysis in Resource Allocation to Districts, Kathmandu, Nepal, Health Sector Reform Support Programme MoHP, RTI International. 98.
2. Ministry of Health & Population, 2009, Budget Analysis, Fiscal Year 2009-10, Kathmandu, Nepal, Ministry of Health & Population. 90.
3. Ministry of Health & Population. (2006). Nepal National Health Accounts (2001-2003). Kathmandu, Nepal: Ministry of Health & Population. 91.
4. Ministry of Health, 2004, Public Expenditure Review of the Health Sector, Kathmandu, Nepal, Ministry of Health. 89.
5. MPH Student (2008), An Elective Posting Report on BNMT Regional Office, Biratnagar, School of Public Health, BPKIHS 199k.
6. Annual Report (2002), TB/Leprosy Programme, The Britain Nepal Medical Trust. 197k.
7. Chapa, D. R., (2002) Final Evaluation Report (2002), Britain Nepal Medical Trust, Community Health Development Program 198k.
8. BNMT. (2002) Extracts from Programme Evaluation Reports 1998-2002, BNMT 200k.
9. An Evaluation of Drug Schemes program in Eastern Nepal, Final Report 2002, BNMT 201k.
10. 40 Years and Beyond, The Britain- Nepal Medical trust. Annual Report 2007/08 203k.
11. Building A New Nepal, The Britain- Nepal Medical trust. Annual Report 2008/09 204k.
12. Persevering in embattled Nepal, The Britain- Nepal Medical trust. Annual Report 2003/04. 205k.
13. Health Improvement Program, HMG/ MoH/DoHS- Eastern Regional Health Directorate, The British - Nepal Medical Trust 2003. 2st.
14. Nepal National Tuberculosis Programme At a Glance, 2008, BMNT 5st.
15. Empowering women for health, The Britain Nepal Medical Trust, 2006. 7st.
16. Persevering in embattled Nepal, the Britain Nepal Medical trust, 2003/04. 8st.
17. Analysis of Hospital and Public health Section, BNMT (Chapter-3) 10st.
18. Health Improvement Programme (HIP), Assessment Report (2003/04) 11st.
19. Endline Survey Report, Safe Motherhood Innovation Project (SMIP), BNMT, ADRA 16st.
20. Safe Motherhood innovation Project (Final Evaluation Report), MITRA, ODC, 2007, BMNT 26st.
21. British Nepal Medical Trust (BNMT). (2003). *Health Improvement Programme (HIP): summary report, HIP assessment*. BNMT/HMG/MoH/DoSH/ERHD. 2ST.
22. British Nepal Medical Trust (BNMT).. (2007). *End line Survey Report*. Biratnagar: Safe Motherhood Innovation Project (SMIP)/BNMT. 24st.
23. BNMT British Nepal Medical Trust (BNMT).. (2008). *Nepal National Tuberculosis Programme: At a Glance*. Kathmandu: BNMT. 5st.
24. British Nepal Medical Trust (BNMT). (2009). Building A New Nepal : The Britain-Nepal Medical Trust, Annual Report 2008/9. BNMT 33.
25. British Nepal Medical Trust (BNMT). (2009). Celebrating 40 Years of Service in Nepal. BNMT 34.
26. British Nepal Medical Trust (BNMT). (n.d.) *Analysis of Hospital and Public Health Section*. Biratnagar: BNMT. 10st.
27. Deurali Society. (2010). "*Smarika".* Terhathum: Deurali Society. 6st.
28. Ministry of Health (MOH)/ New Era (2001). Nepal Demographic and Health Survey 2001. MOH
29. Barber, Jennifer S., L. D. Pearce, I. Chaudhary and S. Gurung. 2001. “Voluntary Associations and Fertility Limitation”. *Social Forces* 80(2):1269-1301.

30. Ministry of Health and Population (MOHP) [Nepal], New ERA, and Macro International Inc. 2007. *Nepal Demographic and Health Survey 2006.* Kathmandu, Nepal: Ministry of Health and Population, New ERA, and Macro International Inc.

31. Koirala, Arun Kumar 2000. Community Health Development Programme: An Analytical Report on Baseline Survey Britain-Nepal Medical Trust, CHDP/BNMT. Health 2000.

32. Steele, F., S. Amin and R. T. Naved. 2001. "Savings/Credit Group Formation and Change in Contraception". *Demography* 38(2):267-282.

Livelihoods

1. Bagchi, D.K., Blaikie, P., Cameron, J., Chattopadhyay, M., Gyawali, N. and Seddon, D. (1998). "Conceptual and Methodological Challenges in the Study of Livelihood Trajectories: Case Studies in Eastern India and Western Nepal". *Journal of International Development*, 10: 453-468.

Migration

1. Gurung, H. B. (1989). *Regional Patterns of Migration in Nepal*. Papers of the East-West Population Institute. No. 113. Hawaii: East West Institute.

2. National Commission on Population (1983), *Internal and International Migration in Nepal* (Summary and Recommendations), Kathmandu: National Commission on Population (NCP), His Majesty's Government.

3. Todaro, Michael P (1976), Internal Migration in Developing Countries: A Review of Theory, Evidence, Methodology and Research Priorities. Geneva: International Labour Office.

4. Nepal Institute of Development Studies (NIDS). (2009). Nepal Migration Year Book 2009. NIDS. Kathmandu.

5. Sharma, J.R. & Sharma, Sanjay. (2011). Enumerating Migration in Nepal. A Review. Working Paper 1. Centre for the Study of Labour and Mobility. Kathmandu.

6. Nepal Institute of Development Studies, (2010), Report on Nepal Migration Survey ,Nepal Migrants Survey 2009, World Bank. 186k.

7. Gurung, Y. B. (2008) Migration from Rural Nepal. A social Exclusion Framework. Social Inclusion research Fund, Kathmandu. 187k.

8. Shrestha. A. S., (2011). Human Capital Responses to skilled Migration Prospects: Evidence from a Natural Experiment in Nepal, University of Michigan.

Nepal-Foreign Aid

1. Banskota, M. 1983. "Foreign Aid and the Poor: Some observations on Nepal's experience". In: Proceedings of a Seminar on Foreign Aid and Development in Nepal. Kathmandu: Integrated Development Systems.

2. Ministry of Finance. 2007. Source Book for Projects Financed with Foreign Assistance, Fiscal Year 2007–2008. Kathmandu.

National Plans/Policies

1. APROSC & John Mellor Associates. (1995). *Nepal Agriculture Perspective Plan Main Document (Final Report).* Asian Development Bank TA: 1854. Kathmandu and Washington D.C.: Agricultural Projects Services Center, Kathmandu, Nepal/John Mellor Associates, USA.

2. Cameron, J. (1998). "The Agricultural Perspective Plan: The Need for Debate". *Himalayan Research Bulletin*, XVIII(2), 3-10.

3. Choe, KyeongAe & Pradhan, Pushkar. 2010. *Unleashing Economic Growth: Region-Based Urban Development Strategy for Nepal*. Mandaluyong City, Philippines: Asian Development Bank.

4. HMG (1970), *The Fourth Plan (1970-75).* Kathmandu: National Planning Commission, HMG.

5. HMG (1999), *Local Self-Governance Act 1999*. Kathmandu: Law Books Management Board, Ministry of Law and Justice.

6. HMG (2002). *Tenth Plan 2002-2007* (in Nepali). Kathmandu: National Planning Commission.

7. HMG/KESL (1986), Land Resource Mapping Project: Land Utilization Report. Kathmandu.

8. Ministry of Local Development. 1997. *Remote Area Development Programme*. Kathmandu.

9. National Planning Commission (NPC). (1984). *The Seventh Plan* (1985-1990), Kathmandu: National Planning Commission, His Majesty's Government of Nepal.

10. NPC (1986). *Sixth Plan*. Kathmandu: National Planning Commission.

11. NPC (1998). *The Ninth Plan (1997-2002)*. Kathmandu: National Planning Commission.

12. Pradhan, Pushkar K (2004). Rural development through rural urban linkage in Nepal: an undertaking of micro economic enterprises of Rural-Urban Partnership Programme. NJDRS, Vol. 1, No.2 (Jul-Dec).

13. Pradhan, Pushkar K (2006). *Population growth, environmental consequences, and sustainable development in Nepal*. Nepalese Journal of Development and Rural Studies. Vol. 3. (1), Jan-June.

14. Pradhan, Pushkar K, Wastl-Walter, Doris & Folmar, Steven (2008). *Public Policy and Local Development: Opportunities and Constraints*. A Publication of International Geographical Union (IGU), Bern/Switzerland.

15. UNDP (2002). *Nepal Biodiversity Strategy*. Kathmandu: MOFSC/GEF/UNDP.

16. UNDP (2004). Nepal Human Development Report 2004: Empowerment and Poverty Reduction. Kathmandu: United Nations Development Programme.

17. UNEP (2001). *State of the Environment Nepal*, Kathmandu: Ministry of Population and Environment/ICIMOD.

Poverty

1. ADB. (2002). *Poverty Reduction in Nepal: Issues, Findings, and Approaches*. Manila: Asian Development Bank. Available at: http://www.adb.org/Documents/Reports/Poverty_Reduction_Nep/poverty_analysis.pdf

2. Bhatta, S. and Sharma, S. (2006). “The Determinants and Consequences of Chronic and Transient Poverty in Nepal”. *Chronic Poverty Research Center, Working Paper 66*.

3. Bird, K., et al. (2010). “Chronic Poverty and Remote Rural Areas”. CPRC Working Paper 13.

4. Chhetry, D. (2004). “Practices of Poverty Measurement and Poverty Profile of Nepal”. *ERD Working Paper* 57. Manila, Philippines: Asian Development Bank.

5. DFID. (2011). *An Inclusive Growth Strategy for the Mid-West and Far-West Regions of Nepal that delivers on poverty, food security and nutritional outcomes. Outputs 1-4 Draft.* Kathmandu: DFID Nepal.

6. National Planning Commission (NPC). (2010a). *The Food Security Atlas of Nepal*. Kathmandu: NPC/Government of Nepal.

7. National Planning Commission (NPC). (2010b). *Poverty Measurement Practices in Nepal and Number of Poor*. Kathmandu: NPC/Government of Nepal.

8. Pant, M. (2002). Changing Faces of Poverty in East Nepal. DPhil Thesis, University of Sussex. CD 8.

9. Wagle, U. (2005). “Multidimensional Poverty Measurement with Economic Well-being, Capability, and Social Inclusion: A Case from Kathmandu, Nepal”. *Journal of Human Development* 6(3).

10. WFP/CBS/WB (2006). *Small Area Estimation of Poverty, Caloric Intake and Malnutrition in Nepal*. Kathmandu: WFP/CBS/WB.

11. Narayan, Deepa and Elena Glinskaya (Ed.) 2007. *Ending Poverty in South Asia: Ideas That Work*. Washington D.C.: The World Bank.

Socio-Cultural Studies

1. Caplan, L. 1974. “A Himalayan People: Limbus of Nepal”. In C. Maloney (ed.) *South Asia: Seven Community Profiles*. New York.

2. Dahal, D.R. (1981). The Concept of Economy in a Peasant Society: A Case Study of the Athpahariya Rais in East Nepal. *Contributions to Nepalese Studies,* 8(2), 57-71.

3. Dahal, D.R. 1988. Political Organization and the Changing Role of Leadership: A Study of the Athapahariya Community. *Contributions to Nepalese Studies,* 15(1), 57-71.

4. DFID/World Bank (2006). *Unequal Citizens, Gender, Caste and Ethnic Exclusion in Nepal, Summary*. DFID and WB, Kathmandu, Nepal. Summary available at http://siteresources.worldbank.org/EXTSOCIALDEV/Resources/3177394-1168615404141/NepalGSEASummaryReport-part1.pdf

5. Furer-Haimendorf, C von. (1975). *Himalayan Traders*. London: J. Murray.

6. Gurung, H.B. (2003) ‘Trident and Tunderbolt: Cultural Dynamics in Nepalese Politics’. Mahesh Chandra Regmi Lecture 2003, Kathmandu , Nepal.

7. Ahearn, Laura M. 2004. *Invitation to Love: Literacy, Love Letters, and Social Change in Nepal*. Ann Arbor: University of Michigan Press.

8. Axinn, William and J.S. Barber. 2001. “Mass Education and Fertility Transition”. *American Sociological Review* 66(4): 481-505.

9. Barber, Jennifer and W.G. Axinn. 2004. "New Ideas and Fertility Limitation: The Role of Mass Media." *Journal of Marriage and Family* 66:1180-1200.

10. Barber, Jennifer S. 2004. “Community Social Context and Individualistic Attitudes Toward Marriage”. *Social Psychology Quarterly* 67(3):236-256.

11. Bista, Dor Bahadur. 1972. *People of Nepal*. Kathmandu: Ratna Pustak Bhandar.

12. Gurung, H.B. 1998. *Nepal: Social Demography and Expressions.* New Era, Kathmandu, Nepal.

13. McHugh, Ernestine. 2001. *Love and Honor in the Himalayas: Coming to Know Another Culture*. Philadelphia, PA: University of Pennsylvania Press.

14. Axinn, William G. and Scott T. Yabiku. 2001. "Social Change, the Social Organization of Families, and Fertility Limitation". *American Journal of Sociology* 106(5):1219-1261.

15. Axinn, William G., Lisa D. Pearce, and Dirgha J. Ghimire. 1999. "Innovations in Life History Calendar Applications". *Social Science Research* 28(3):243-264.

16. Pigg, Stacy Leigh. 1992. “Inventing Social Categories through Place: Social Representations and Development in Nepal”. *Comparative Studies in Society and History* 34(3): 491-513.

17. Pigg, Stacy Leigh. 1993. “Unintended Consequences: The Ideological Impact of Development in Nepal”. *South Asia Bulletin* 12(1&2): 45-58.

Donor Agencies

1. ADB. 1999. Country Assistance Plan 2000–2002 for Nepal. Manila.

2. ADB. 2003. Country Strategy and Program Update 2004–2006 Nepal. Manila.

3. ADB. 2007. Final Report of TA4752-Nepal: Regional Development Strategy Report. Manila.

4. Government of Nepal and ADB. 2004. Memorandum of Understanding between His Majesty’s Government of Nepal and Asian Development Bank for the Nepal 2004 Country Strategy and Program (CSP) Kick-off and Country Programming Mission.

5. ICIMOD (1994). Spatial Analysis of Rural Service Delivery System (Lalitpur District), MENRIS Case Study Series, No.2: Application of GIS to Rural Development Planning in Nepal, MENRIS/ICIMOD.

6. INFRAS (1993), Rural Urban Inter Linkages: A Case Study Based on Nepalese-Swiss Development Experiences. Report B-321-30, Zurich (Switzerland): INFRAS.

7. Pradhan, Pramod & Pradhan, Pushkar K (1994). Spatial analysis of rural service delivery system (Lalitpur District). MENRIS Case Study Series, No.2: Application of GIS to rural development planning in Nepal, MENRIS/ICIMOD.

Rural-Urban Linkages

1. Matsumura, K.I. & Elvidge, C.D. (2010). Constructing Spatial Income Distribution Map in Nepal. *Nepalese Journal of Development and Rural Studies*. Vol.7. No.1. 2010.

2. Choudhary, D., Pandit, B.H., Kinhal, G. & Kollmair, M. (2011). Pro-Poor Value Chain development for High Value Products in Mountain Regions: Indian Bay leaf. ICIMOD. Kathmandu.

Baselines/Socio-economic Studies

1. NARMA. (2010). Micro-Enterprise Development Programme (MEDEP). Kathmandu. 107K.

2. Unity Service Cooperation Nepal. (2010). Baseline Survey Report: Main Text. Local Governance and Community Development Program. Kathmandu. 108K.

Roads and Rural Infrastructure

1. Acharya, B.N. (1993). “Low Cost Roads in Nepal”. International Group of Bio-Engineers Newsletter, No. 2, April 1993.

2. Acharya, B.N. (1993). Transport Infrastructure Master Plan for Dhading District: a proposal submitted to the Dhading District Development Committee.

3. Acharya, B.N. (1997). Approach Paper for the Construction of Rural Roads in Gorkha District. Gorkha Development Project. Kathmandu: GTZ.

4. Acharya, B.N. (1997). Green Roads Programme of Lamjung District. Rural Development Through Self-Help Promotion, Lamjung. Kathmandu: GTZ.

5. Acharya, B.N. (n.d.). *Village Road Programme in Gorkha*. GDP/GTZ. B.N. Acharya Consulting Civil and Structural Engineers, Kathmandu.

6. Acharya, B.N., R. Aryal, B. Karmacharya & Meyer, W.P. (1999). See also Meyer, W.P. (1999). *Green Roads in Nepal: Best Practices Report* (second edition). May 1999, Kathmandu.

7. ADB. (1996). Rural Infrastructure Development Project, Sociological Study in Kavre, Tanahun and Baglung Districts. Kathmandu: ADB.

8. ADB. (2006). Nepal: Rural Infrastructure Development Project. Completion Report. Kathmandu: Asian Development Bank.

9. Adhikari, N.P. (1975). Economic Impact of Mahendra Rajmarg (Eastern Sector). Kathmandu.

10. Adhikary, K. P., Pfaff-Czarnecka, J. & Rajbhandari Shrestha, M. (1990). Opinion and Perception Survey. Kathmandu.

11. Adhikary, P. K., Pfaff-Czarnecka, J. & Shrestha, M. R. (1990). *Rapid Rural Appraisal of IHDP/LJRP Impacts in Central and Eastern Panchayats of IHDP Area*. Kathmandu: SDC/INFRAS Impact Monitoring Project.

12. Apedaille, L.P. (1996). Diagnostic Review of the Dhading District Project Local Roads Maintenance Issues and Related Institutional Innovations in Dhading District of Nepal. Peer Diagnostics Ltd., Edmonton, Canada.

13. APROSC (1978). Report of Seminar-Cum-Workshop on People’s Participation in Rural Development in Nepal. APROSC, Kathmandu.

14. APROSC (1982). Rural Transportation Development Policies and Planning Study. Case Study – Nuwakot. July 1982, APROSC, Kathmandu.

15. ARD, EASTCONSULT & Acharya, B.N. (1994). *Draft Final Report of Nepal Rural Infrastructure Development Project (RIDP)*. Report prepared for the ADB (Manila) and HMG/N, Vermont USA.

16. Asian Business Consultants (ABC). (1994). *Socio-Economic Situation of Road Labourers Along Dhading Besi-Salyantar-Salmetar Road. Parts 1 & 2*. Asian Business Consultants (ABC) Pvt., Ltd. Impact Monitoring Unit (IMU). GTZ, Kathmandu.

17. Asian Development Bank (1972). Appraisal of the Hetauda-Narayangarh Road Project in Nepal. Asian Development Bank.

18. Bajracharya, B.B. & Shrestha, C.B. (1981). Transport and Communication Linkages in Nepal. CSD Theme IX, Transport and Communication Linkages for Regional Cooperation and National Development. Kathmandu: CEDA, Tribhuvan University.

19. Baker, C.F. (1995). *Rural Infrastructure Development Project. Final Report*. Burlington, Vermont: Associates in Rural Development Inc.

20. Banskota, K. (1999). *Rural Community Infrastructure Work: Impact Assessment. Rural Roads (Dhanusha) and Mule Trails (Parbat)*. Report of the Impact Assessment Mission – Food for Work, RCIW Program, March 1999.

21. Banskota, M. (1997). "Mountain Accessibility and Rural Roads: innovations and experiences from Nepal". *Issues in Mountain Development*, 97/5, ICIMOD, Kathmandu.

22. Basnyet, D.B. (1999). Development of Strategic Direction for Attaining the Implicit Objectives of BBLL, Workshop Proceedings and Results. BBLL/HELVETAS, Kathmandu.

23. BBLL (1997). *Project Document: Phase 1*.7.97-30.6.2000. Kathmandu.

24. BBLL (1998). Annual Programme Report: July 1997-July 1998. Kathmandu.

25. BBLL (1999). Annual Programme Report, July 1998-July 1999. Kathmandu.

26. Bhandari, M. Banskota, K. & Sharma, B. (1999). *Roads and Agricultural Development in Eastern Development Region: A Correlation Analysis*. Winrock International, Research Report Series, No. 40, September 1999.

27. Bharati, G.N.M. (1989). Annual Report on Bhimdhunga-Lamidanda Road Construction Programme 2045/46. Dhading Development Project, Kathmandu.

28. Bista, A. (1998). "Developing ex ante framework to assess the impacts of rural roads to agriculture development programme in Bhojpur District of Nepal". Unpublished thesis, University of Dortmund, Dortmund.

29. Blaikie, P. Cameron, J. and Seddon, D. (1977). *The Effects of Roads in West Central Nepal Part I (Summary).* Overseas Development Group, University of East Anglia.

30. Blaikie, P., Cameron, J. & Seddon, D. (1977). *The Effects of Roads in West Central Nepal*: Part 1. Overseas Development Group/University of East Anglia.

31. Blaikie, P.M., Cameron, J. & Seddon, D. (1977). The relation of transport planning to rural development: the implications of road construction in Nepal. Paper presented to the PTRC Summer Annual Meeting, 1977, University of Warwick, June 1977, mimeo, pp. 11. also (1979) as Development Studies Discussion Paper, School of Development Studies, University of East Anglia, Norwich, 1979.

32. Bridge Building at Local Levels (BBLL). (1996). *To Recollect the Past Towards Better Future and Elaborating a Basis of Project Document*. BBLL Internal Workshop, BBLL, Kathmandu.

33. Cameron, J. (1979). 'Highway construction workers', Chapter 7 in Seddon, D, Blaikie, P.M. & Cameron, J. (1979). *Peasants and Workers in Nepal*, Aris & Phillips, Warminster and Vikas Pvt, New Delhi.

34. Caplan, L. (1997). "Himalayan highway: the local impact of a road in east Nepal". In Karmay, S. & Sagant, P. (eds), *Les Habitants du Toit du Monde*. Hommage a Alexander W Macdonald.

35. CEDA (1973). Comparison of Different Road Projects from the Point of View of Indirect Benefits.

36. CEDA (1989). *Traffic Surveys, Rounds 1-3*. CEDA, Tribhuvan University, Kathmandu.

37. Central Department of Geography (CDG). (2001). Study on Physical Planning of Human Settlements and Emerging Towns along the Banepa-Bardibas Highway Corridor. Project Report,

Kathmandu: Central Department of Geography/Department of Urban Planning and Building Construction, His Majesty's Government of Nepal.

38. Chakhun, K.S. (1996). Mid-Term Review of Upper Sagarmatha Agricultural Development Project: Report on Hill Transport Component. ADB/EASTCONSULT, December 1996.

39. Chalise, D.N. (1994). Economic Effectiveness of a Pedestrian Bridge Project. A Case Study of the Suspension Bridge Project of Nepal. Unpublished dissertation, University of Manchester.

40. Chaudary, N.D.A. (1967). Preliminary Report on Priority of Feeder Roads in Nepal. Asian Highway Transport Technical Bureau, ESCAP, Bangkok.

41. Dempsey, S.M. (1992). Green Roads in Nepal. Discussion Paper, June 1992, ICIMOD, Kathmandu.

42. Deoja, B (1994). Sustainable Approaches to the Construction of Roads and other infrastructure in the Hindu Kush-Himalayas, ICIMOD Occasional Paper No.24. ICIMOD. Kathmandu.

43. Deoja, B.B. (1985). Consideration for Rural Hill Roads in Nepal. Paper presented at SARC Seminar on Rural Roads, June 1985, Kathmandu.

44. DEVA (1998). Rapid Assessment on the Impact of Cash Earnings by Labourers Engaged in the Local Road Programme under the Gorkha Development Project. Development Associates for Rural and Regional Development (DEVA), Impact Monitoring Unit, GTZ, Kathmandu.

45. Devkota, B. (1980). Government Expenditure on Road Transport in Nepal. CEDA, Kathmandu.

46. DHV Consultants (1992). Eastern Feeder Roads: In-Depth Evaluation. DHV Consultants BV, The Netherlands, United Nations Capital Development Fund.

47. DOR (2000). *Nepal Road Statistics*. Kathmandu: Department of Roads.

48. DOR (2000). *Policy Document: Environmental Assessment in the Road Sector of Nepal.* Kathmandu: Department of Roads, Ministry of Physical Planning and Works, Government of Nepal.

49. Griesbaum, M. (1994). Rural Centres and Integrated Transportation Network. Transport Geography of Nepal. Draft thesis. Tribhuvan University/University of Zurich, Kathmandu/Zurich.

50. Groeli, R. (1977). Traditional Trail Suspended Bridge in Baglung District. Suspension Bridge Division and Swiss Association for Technical Assistance, Kathmandu.

51. Gurung, S.B. (1987). Urban localities along the Siddartha Highway in Gandaki growth axis. *Journal of Development and Administrative Studies*, 9(1), 81 - 97.

52. Comtec in Collaboration with Alpina and Machhi. (1970). Road feasibility Study: reconnaissance Survey: Part A Report. Rome and Kathmandu 1970.

53. Gyawali, D. and Dixit, A. (1996). Ropeways in Nepal: conceptual analysis of context and viability. G & D Associates, Intermediate Technology Nepal, March 1996, mimeo, pp. 34. (See also ITN 1996).

54. Harding, P. (1992). Nepal Eastern Region Roads Literature Review of Social Impact of Roads. November 1992, Centre for Development Studies, University of Wales, Swansea.

55. Heinrich, R. (1977). Mountain Roads - Nepal. Consultant's Report. Integrated Watershed Management, Torrent Control and Land Use Development Project, NEP-74/020, HMG Ministry of Forests, Department of Soil and Water Conservation, UNDP and FAO, Kathmandu.

56. HELVETAS (n.d.). Field Investigation Report of Sitkaghat Crossing (Ramechhap/ Sindhuli). Suspension Bridge Project, Helvetas, Kathmandu.

57. HELVETAS Nepal (1998). A Proposal for Public Audit System – in the context of the Rural Infrastructure Project. Ministry of Local Development, The World Bank, Kathmandu.

58. HELVETAS Nepal (1998). Stakeholder Analysis, Social and Environmental Assessment in the context of the Rural Infrastructure Project (RIP). Report submitted to the Ministry of Local Development, HMG/N and the World Bank.

59. Hine, J.L. (1992). Planning the Priorities of Road Investment and Maintenance. Discussion Paper, Maintenance and Rehabilitation Co-ordination Unit, Department of Roads, HMG/N, Kathmandu.

60. HMG/-CEC (1996). Bagmati Watershed Project: a trial ropeway from Bhattedanda to Jhankridanda, Lalitpur District. May 1996, IDC, FR Germany.

61. HMG/N (1972). Hill Area Transport Development: request to the UN/FAO, WFP for assistance in a project for economic and social development. HMG/N, Kathmandu.

62. HMG/N (1972). Transport Development in Nepal: a country paper.

63. HMG/N (1973). Economic Feasibility Study of Improved Thankot-Naubise Road.

64. HMG/N (1976). Brief Account of the Last 25 Years' Progress Under the Ministry of Public Works and Transport (in Nepali). HMG/N, Ministry of Public Works and Transport, Kathmandu.

65. HMG/N (1979). A Socio-economic benchmark study of the area around the Prithvi Highway. Department of Food and Agriculture Marketing Service, Kathmandu, December 1979.

66. HMG/N (1987). Arun Access Study. Final Report. September 1987, SWK in association with BDA.

67. HMG/N (1993). District Road Network Planning for Eastern Sector (33 Districts), 2 volumes. NEPECON and IRAD, for HMG/N, DoR. December 1993).

68. HMG/N (1993). Manual of Project Planning, Implementation and Evaluation of Local Level Projects Implemented under the DDC. Ministry of Local Development, Kathmandu.

69. HMG/N (1997). Pre-Investment Plan (PIP) Project. Final Report (5 volumes). February 1997, WSA/SMEC, DoR, Kathmandu.

70. HMG/N (1997). *Rural Community Infrastructure Works (RCIW) Programme,* August 1996-April 1997. MoLD/WFP/GTZ, May 1997.

71. HMG/N-UK (1997). Rangrung-Barpak Goods Ropeway Project. Project Memorandum (Britain-Nepal Partnership Scheme), February 1997.

72. HMGN/GTZ (1994). Dhading Development Project. Impact Assessment of the Local Road Program implemented on Dhading Besi-Salyantar-Siktar Road and Bhimdunga-Lamidanda Road. Draft, Kathmandu.

73. Huntingdon, R. & Tripathy, L.N. (1997). *PLRP. Report of the Evaluation Mission*. Kathmandu: PLRP.

74. ICIMOD (1985). Integrated Rural Development Projects in Nepal – A Review. Kathmandu: ICIMOD.

75. ICIMOD (1987). Road Construction in the Nepal Himalaya: the experience from the Lamosangu-Jiri Road Project. ICIMOD, Kathmandu.

76. ICIMOD (1997). Mountain Accessibility and Rural Roads: innovations and experiences from Nepal. Issues in Mountain Development, 97/5, ICIMOD, Kathmandu.

77. IDCJ (1979). Current Status and Development Prospects of Transport Sector in Nepal. November 1979. International Development Centre of Japan.

78. IHDP (1986). Traffic Counting on LJR. Internal Survey. IHDP, Kathmandu.

79. ILO (n.d.). Nepal Special Labours, Intensive Public Works Programme: economic feasibility study of the Dandeldhura-Doti road. ILO/UNDP/HMG/N.

80. IMP (1991). Proceedings of the Workshop on Impact Monitoring of Rural Development and Road Projects, Organised by SDC/N and CEDA, 10-11th March 1991, Kathmandu.

81. IMP (1991). Traffic Survey 1991. Report of the First Round – February 1991. Impact Monitoring Project LJRP/IHDP – SDC, Kathmandu.

82. IMU (1994). Impact Assessment of the Local Road Program Implemented on Dhading-Salyantar-Siktar Road and Bhimdunga-Lamdanda Road: summary report. Impact Monitoring Unit (IMU), Kathmandu, December 1994.

83. IMU (1994). Photo Documentation on Malekhu Bridge and Road Corridor of Dhading Besi-Sallyantar Road. IMU, GTZ, Kathmandu.

84. IMU (1994). Traffic Survey on Two Fair Weather Roads in Dhading District: Bhimdunga-Lamidanda Road and Dhading-Bensi-Salayantar-Siktar Road. Dhading Development Project, Impact Monitoring Unit, Kathmandu.

85. IMU (GTZ) (1999). IMU Publications List. 15th December 1999, IMU, GTZ, Kathmandu.

86. INFRAS (1987). IHDP/LJRP Impact Monitoring – Methodology Review. SDC, Kathmandu & Zurich.

87. INFRAS (1987). IHDP/LJRP Impact Monitoring – Methodology Review. SDC, Kathmandu & Zurich.

88. INFRAS (1988). IHDP/LJRP (Nepal). Impact Status Report, No. 1. 1987. Prepared for SDC, INFRAS, Kathmandu & Zurich.

89. INFRAS (1989). Physical and Social Impact of IHDP/LJRP on Human Settlements. An Interpretive Summary of the Findings of the Settlement Survey of 1987. SDC, Kathmandu.

90. INFRAS (1989). Physical and Social Impact of IHDP/LJRP on Human Settlements. An Interpretive Summary of the Findings of the Settlement Survey of 1987. SDC, Kathmandu.

91. INFRAS (1991). Impact Status Report, No. 2. 1990. Main Text. Impact Monitoring Project (IMP), LJRP/IHDP, SDC, Kathmandu & Zurich.

92. INFRAS (1993). Rural-Urban Linkages. A Case Study Based on Nepalese-Swiss Development Experiences. INFRAS, Kathmandu/Zurich.

93. INFRAS (1995). Development Status Report. INFRAS, Kathmandu/Zurich.

94. INFRAS (1995). Development Trends in Dolakha and Sindhupalchowk, Nepal (1975-1995). Development Status Report 1995: Synthesis. Swiss Development Cooperation (SDC), Kathmandu & ZurichINFRAS/CEDA (1990). Impact of Lamosangu-Jiri Road and Integrated Hill Development Programmes on the Transport and Food Sectors in Dolakha and Sindhupalchowk Districts. Impact Monitoring Report prepared for SDC.

95. ITECO (1990). Handbook for Bio-Engineering Methods in Gully and Landslide Stablization Works (Lamosangu-Jiri Road. Charnawati Rehabilitation Programme, Phase III. ITECO AG.

96. ITECO (1995) also see KfW 1995. Rural Transport Infrastructure Projects in Dhading, Gorkha and Lamjung Districts in Nepal. Review of the GTZ funded projects and evaluation of financial participation of KfW. Kreditanstalt fur Wiederaufbau (KfW), Affoltern a/A, Switzerland.

97. ITN (1996). Ropeways in Nepal: conceptual analysis of context and viability. March 1996, G&D, Intermediate Technology Nepal. (See also G&D 1996).

98. IUCN, NORM, 2009, Tinjure-Mike-Jaljale Rhododendron Conservation Area : A Strategy for Sustainable Development, Final Report, -, IUCN, NORM. 101.

99. JICA (1990). The Master Plan Study on the Integrated Rural Development Project in the Lumbini Zone (Gulmi, Arghakhanchi, Kapilvastu, Districts and Marchwar Area of Rupandehi District). Main Report. JICA, MoLD/HMG/N.

100. K.C., B. K. and Pradhan, P. (1980-81). A study of highway market centres along the Siddhartha and Prithvi highways. *Geographical Journal of Nepal,* 3(4), 1-13.

101. Kantha, S.C. (1990). Economic Impact of New Bridge Construction Project. Financial Management Course, Executive Development Programmes, November 1990, Maastricht, Netherlands.

102. Kappeler (1984). Rural Road Construction in Nepal: evaluation of experiences from the construction of the Lamosangu-Jiri Road Project. HMG/N Roads Department and SATA, Kathmandu and Bern: DDC.

103. KEC/SDC (1994). Pilot Labour-Based District Roads Rehabilitation and Maintenance Programme: Planning Mission. KEC/SDC Consultants.

104. KfW (1995). Rural Road Transport Infrastructure Projects in Dhading, Gorkha and Lamjung Districts in Nepal. Review of the GTZ District Development Projects and Evaluation of a Financial Participation of KfW. Kreditanstalt fur Wiederaufbau, Frankfurt.

105. Khaire, V. A. (1975). Sonauli-Pokhara Road Project in Nepal. Paper no. 298, presented to the Indian Road Congress, XXXV-4, pp. 725-835.

106. Kolkar, V.L. & Banskota, M. (1972). "Road User Charges and Route Licensing Policy in Nepal". Report by CEDA for the Ministry of Works and Transportation, HMG/N.

107. Ledergerber, E. (1993). Mission Report. INFRAS, for SBD/BBLL, February 1993.

108. Ledergerber, E. (1997). BBLL-SBP Mission Report 1997. Econcept, Zurich.

109. Linder, W. with Groeli, R & Ghimire, J. (1999). Local Bridge Building As A Participatory Development Process. Helvetas/SDC Review-cum-Advisory Support Mission to BBLL. University of Berne, March 1999.

110. Louis Berger & Renardet (1986). Feeder Road Project. Interim and Final Reports. March and July 1986, Louis Berger & Renardet, for DoR, HMG/N.

111. Louis Berger International, Eastconsult & CEMAT Consultants (1987). Study of the Road Transport Industry. Feeder Roads Project, Final Report. Department of Roads, Ministry of Works and Transport, HMG/N, Kathmandu.

112. Mallik Bharati, G.N. (n.d.). Construction of Environmentally Sound Low Cost Rural Mountain Roads through Conservation Oriented Participatory Approach. Case Study for Bhimdunga-Lamidanda Road . DDP.

113. Meyer, W. P. (1999). District Transport Master Plan, Quick Reference Guide. Helvetas/SDC, Kathmandu.

114. Meyer, W.P. & Acharya, B. N. (1995). Final Report of Review of Dhading Local Road's Programme. Dhading Development Project (DDP), GTZ, Kathmandu.

115. Meyer, W.P. (1992). Backstopping Mission Report to the Local Road Construction Programme. Dhading Development Project, Kathmandu.

116. Meyer, W.P. et al (1999). Green Roads in Nepal: Best Practices Report (second edition). GTZ/SDC, May 1999, Kathmandu.

117. Molesworth, K. N. (1999). The Impact of the Lamosangu-Jiri road on the life experience and reproductive behaviour of women of the Tamang community of Jetthul, Nepal. Unpublished PhD thesis, University of Durham, Durham.

118. Morelli, G.A., Gupta, D.P., Thomas, S. & Taylor, M.J.P. (n.d.). Feasibility Studies for Second Road Improvement Project, Volume 4. Rapti Roads. ADB TA 1027.

119. N.D. Lea & Associates (Canada) (1976). Mahendra Rajmarga-Tulsipur Road Project, Phase I. Review of Feasibility Study. Phase II. Consolidated Technical Report. March and November 1976.

120. Nepal, T. R. (2000). Decentralizating Development: Potential for Sustainability – the Case of Pedestrian Trail Bridges in Nepal. Unpublished MA dissertation, School of Development Studies, University of East Anglia, Norwich.

121. No-Frills (1989), Importance of Trails and Central Places for Nepal's Hill Economy: A Geographical Perspective. Kathmandu: No-Frills Development Consultants.

122. No-Frills. (1989). Importance of Trails and Central Places for Nepal's Hill Economy: A Geographical Perspective. Kathmandu: No-Frills Development Consultants.

123. North, N, Ghimire, S.S., Kapali, S.P. & Rai, S. (1995). *Social and Distributional Effects of Local Contributions and Benefits: a Case Study*. BBLL, Helvetas, Kathmandu/Zurich, May 1995. P. 61, xxxv.

124. NPC/HMG (1984). Rural Road Users Group Implementation Book-Manual. National Planning Commission, Kathmandu.

125. NPC/HMG (1992). Guidelines for District Road Construction. Rural Development and Decentralisation Division. Kathmandu.

126. ODA (1986). Nepal Roads Sector: review paper. April, SEADD, Bangkok.

127. ODA (1987). Nepal: Roads Remedial Works Unit. Project Memorandum, October 1987, SEADD, Bangkok.

128. ODA (1988). Nepal: Malekhu-Mugling Road. Project Memorandum Addendum.

129. ODA (1989). Nepal: Road Maintenance and Rehabilitation (Interim Phase). Project memorandum, April, SEADD, Bangkok.

130. ODA (1990). Department of Roads – Maintenance and Rehabilitation Coordination Unit (MRCU). Project Memorandum, September, SEADD, Bangkok.

131. ODA (1990). Nepal Eastern Region Road Maintenance. PEC (90) 27 Submission, October.

132. ODA (1991). Nepal: Eastern Region Road Maintenance. March 1991, SEADD, Bangkok.

133. Oli, K.P. (1989). Pack Animals in the Hills and Mountains of Nepal. NARSC.

134. Onta, I.R. (1990). 'The Transport System of Nepal. A Factor in Horticulture Development. Working Paper no. 5'. In Master Plan for Horticulture Development (TA No.III-NEP), Pacific Resources Inc., USA and EASTCONSULT (P) Ltd, for HMG Nepal & ADB.

135. Paudel, B.P. (1997). Pre-Investment Study on the Proposed Rangrung-Barpak Ropeway. March 1997.

136. Paudyal, D. (1996). Access Improvement and Sustainable Development: a case of rural road development in Nepal, draft, ICIMOD, Kathmandu.

137. Paudyal, Durga, P. (n.d.). Access Improvement and Sustainable Development. A Case of Rural Road Development in Nepal. Kathmandu, Nepal: ICIMOD. K-DS.

138. Rana, P.S.J.B. (1971). 'An economic study of the area around the alignment of the Dhangadi-Dandeldhura road, Nepal'. CEDA Study Series, no. 1, CEDA, Kirtiopur, Kathmandu.

139. Rapp, E. (1992). PDP Traffic Survey on the Three Fair Weather Roads in Palpa. Palpa Development Program, Tansen.

140. Rapp, E. (1994). Impact Assessment of the Local Roads Programme Implementation on Dhading Besi-Salyantar-Siktar Road and Bhimdunga-Lamidanda Road: Summary. Impact Monitoring Unit, Dhading Development Project, HMG/N, GTZ.

141. Rapp, E. (1994). Impact Study on Settlement Structures along the Dhading Besi-Salyantar Road. December 1994, IMU, GTZ, Kathmandu.

142. Rapp, E. (1994). Traffic Survey of Two Fair Weather Roads in Dhading District: Bhimdunga-Lamidanda Road and Dhading Besi-Salyantar-Sktar Road. December 1994, IMU, GTZ, Kathmandu.

143. Rapp, E. (1997). Comprehensive Impact Assessment of a Local Road Programme in Nepal: method and observed change in the environment, the economy, the socio-cultural setting and institutions. GTZ, Eschborn.

144. RCIW/FfW (1997). Rural Hill Roads Construction – Green Road Approach. Rural Community Infrastructure Works (RCIW) Programme through Food for Work. GTZ – Food for Work Project.

145. Rohner, P. & Bhandari, B.C. (1997). District Roads Nepal: a discussion paper for SDC's future involvement. SDC, Kathmandu.

146. Sacherer, J. (1990). Opinion and Perception Survey. Prepared for INFRAS, Kathmandu.

147. Sacherer, J., (1990). Rapid Appraisal of IHDP/LJRP Impacts. SDC Impact Monitoring Project, Kathmandu.

148. SAGUN (1995). Micro Survey of Selected Indicators to Assess Development Trends (Traffic, Settlement, Tourism, Market). Prepared for INFRAS, Kathmandu.

149. Schaffner, U. (1985). Review of experiences from the construction of the Lamosangu-Jiri Road. June 1985, unpublished memo.

150. Schaffner, U. (1987). Road Construction in the Nepal Himalaya: the experience from the Lamosangu-Jiri road. ICIMOD Occasional Paper, no. 8, Kathmandu, March, pp. 67.

151. Schaffner, U. (1987). Road construction in the Nepal Himalaya: the experience from the Lamosangu-Jiri Road Project. *ICIMOD Occasional Paper.* No. 8 (March). Kathmandu: International Centre for Integrated Mountain Development.

152. Schloss, A. (1977). Transportation and Development in Nepal: an inquiry into the dynamic of development administration and policy making. Unpublished PhD, Department of Political Science, University of California.

153. Schloss,A. (1983). The Politics of Development: Transportation Policy in Nepal. University Press of America.

154. Schmid, R. (1971). Working Programme for the Rural Feasibility Study in Dolakha and Ramechhap Districts. SATA.

155. Schmid, R. (1973). Road Feasibility Study. SDC. Kathmandu/Bern.

156. Schroeder, M. C. W. & Sisler, D. G. (1980). The impact of the Sunauli-Pokhara highway on the regional income and agricultural production of Pokhara valley, Nepal. Occasional Papers. No. 32. Ithaca: Department of Agricultural Economics, Cornell University.

157. Schroeder, M.C.W. & Sisler, D. (1970). The Impact of the Sonauli-Pokhara highway on the regional income and agricultural production of Pokhara Valley, Nepal. Occasional Paper no. 32, Department of Agricultural Economics, Cornell University, mimeo, p. 113.

158. Schroeder, M.C.W. & Sisler, D. (1971). Impact of the Sonauli-Pokhara highway on the regional income and agricultural production of Pokhara Valley, Nepal. Cornell University Press, Ithaca, New York. 1971, pp. 89.

159. Schroeder, M.C.W. & Sisler, D. (1971). Impact of the Sonauli-Pokhara highway on the regional income and agricultural production of Pokhara Valley, Nepal. Cornell International Agriculture Development Bulletin, no. 11.

160. Schroeder, M.C.W. (1977). The Impact of the Sonauli-Pokhara Highway on the Regional Income and Agricultural Production of Pokhara Valley, Nepal. Unpublished PhD thesis, Cornell University.

161. Scott Wilson (1997). Nepal Rural Transportation Position Paper. Prepared for DfID SEADD, November 1997.

162. Scott Wilson Kirkpatrick (1993). Nepal Low Cost Roads Review. ODA, SEADD, Bangkok.

163. SDC (1995). Transport Sector Strategy: Nepal. Swiss Development Cooperation, Kathmandu.

164. Sharma, K. & Bhattarai, B. (1990). “Green Roads for Rural Himalaya”, *Himal*, Jan-Feb. 1990, pp. 22-3, Kathmandu.

165. Shrestha, B.K. (1985). People’s Participation in Rural Road Construction in Nepal. Paper presented at SARC Seminar on Rural Roads, June 1985, Kathmandu.

166. Shrestha, H.R. (1989). Annual Report on Dhadingbesi-Salyantar-Salmetar Road Construction Programme 2045/46. Dhading Development Project, Kathmandu.

167. Shrestha, H.R. (1994). Local Road Maintenance System in Dhading District. Draft proposal, Kathmandu.

168. Shrestha, H.R., Mallik B. & Govinda, N. (1996). ‘Eco-Design Approach to Hill Roads: an appropriate strategy to preserve mountain environment’, in Environment and Biodiversity: in the context of South Asia, pp. 360-65. Ecological Society, Kathmandu.

169. Shrestha, N. R. (1988). Main Trail Study Paper on Importance of Trails and Central Places for Nepal’s Hill Economy: a geographical perspective. No-Frills Consultants, Kathmandu.

170. Shrestha, N.D. (1967). A Comparative Study of Tribhuvan Rajpath and Kodari Rajmarg. Kathmandu.

171. Shrestha, R.K. (1998). Traffic Survey along Benighat-Aarughat/Arkhet Road (First Cycle). June 1998, IMU, GTZ, Kathmandu.

172. Shrestha, R.K. (1998). Traffic Survey along Benighat-Aarughat/Arkhet Road. Final Report. October 1998, IMU, GTZ, Kathmandu.

173. Shrestha, R.L. (1977). Impact of Tribhuvan Rajmarga (Kathmandu-Raxaul Highway) on Nepalese Economy from 1956 to 1976). Unpublished PhD thesis, Institute of Humanities and Social Science, Tribhuvan University, Pokhara.

174. Shrestha, R.L. (1978). 'Impact of Development of Roads on Malaria Eradication Programme in Nepal', Horizon, no.2, GPO 1607, Kathmandu.

175. Shrestha, R.L. (1978). Transportation in Nepal (in Nepali). Paper presented to a Seminar-cum-Workshop on Development Planning at CEDA, Kirtipur, April 1978. Mimeo.

176. Shrestha, R.L. (1979). 'Road Transportation Planning in Nepal (in Nepali), Development Mirror, vol. 1, no. 1, PB 1601, Kalikasthan, Kathmandu.

177. Shrestha, R.L. (1980). Impact of Kathmandu-Raxaul Highway (Tribhuvan Rajmarga) on Nepalese economy. Katunga Press, Kathmandu.

178. Shrestha, R.P. (1999). Baseline Situation of Karaputar-Salme Bhanjyang-Singdi Green Road. December 1999, IMU, GTZ, Kathmandu.

179. Singh, S.K. (1974). Socio-economic impact of Mahendra Rajmarga (Eastern Section). Indian Cooperation Mission, Kathmandu.

180. Skerry, C.A., Moran, K. & Calavan, K.M. (1992). *Four Decades of Development: the History of U.S. Assistance to Nepa*l. USAID Nepal, Kathmandu.

181. SLE (1985). Possibilities of Increasing Rural Incomes in Dhading District/ Nepal. Schriftenreihe des Fachbereichs, no. 85. Center for Advanced Training in Agriculture Development, Technische Universitat Berlin.

182. Stiller, S.J. (1988). Damage to ecology through poor road construction. Unpublished memo.

183. Stiller, S.J. (1988). Survey to determine the use road workers make of their pay. Unpublished memo.

184. SWK (1993). Nepal: Low Cost Roads Review. For ODA, May 1993.

185. TechEcon, Scott Wilson Kirkpatrick & Partners, and East Consult. (1988). *Kingdom of Nepal Transport Sector Profile Study Final Report*. London, UK: TechEcon Economic and Transport Consultants.

186. TECNECON (1987). Nepal Transport Sector Profile Study. Road Maintenance Study. Asian Development Bank, Kathmandu.

187. Tuladhar, A.M. (1970). A Relative Study of Raxaul-Kathmandu Raj Path and Hetauda-Kathmandu. Mimeo, CEDA, Tribhuvan University, Kathmandu.

188. Tuladhar, A.R. (1998). BBLL Post-Construction Assessment. June 1998, DEFT Consults.

189. Tuladhar, A.R. (1998). BBLL Social Monitoring Analysis. October 1998, DEFT Consults, Kathmandu.

190. Tuladhar, A.R., Griesbaum, M. & Rayamajhi, S..S. (1995-96). Updating of Main Trail Maps. September 1995-October 1996, DEFT Consults, Kathmandu.

191. UN. (1975). Nepal Road Feasibility Studies, Construction and Maintenance. UN, New York.

192. UNDP (1970). Plan of Operation: Nepal Road Feasibility Studies. UNDP, Kathmandu.

193. UNDP (1994). Pilot Labour Based District Roads Rehabilitation and Maintenance. UNDP/HMG/N Project Document, Kathmandu.

194. UNDP-HMG/N (1970). Nepal Road Feasibility Study, Part A – Reconnaissance Survey. UNDP-HMG/N, Kathmandu.

195. UNDP-HMG/N (1973). Nepal Road Feasibility Study, Part B - Economic-General Report. UNDP/HMG Nepal, Kathmandu, 1973.

196. UN-HMG/N (1971). Preliminary Investigation of the Kathmandu-Raxaul Corridor (Part C). Coal Ma, Rome.

197. UN-HMG/N (1974). Nepal Road Feasibility Study, Report for Kathmandu-Birgunj Corridor. Coal Ma, Rome.

198. UN-HMG/N. (1971). Road Feasibility Study Reconnaissance Survey. Coal Ma, Rome.

199. Upadhyaya, S.P. (1970). Ropeway and Railway Development in Nepal. Mimeo, Kathmandu.

200. USAID (1966). The Hill Roads Project. USAID, Kathmandu.

201. USAID (1973). A Study of Human and Economic Problems Related to the Overland Transportation Sector in Nepal. Human Resources Development Division, USAID/Nepal, Kathmandu.

202. Vroegop, J. (1993). Nepal Road Maintenance. Sectoral Environment Assessment. Final Report. Traffic Planning Consultants Ltd, HMG/N, World Bank.

203. Wegmuller, P. (1972). The Western Hills Road, Dhangarhi-Dandeldhura: some comparisons with the feasibility study for a Jiri road.

204. Wiederkehr, A. (1994). Local Road Improvement Programme Palpa. A Major Activity of the Palpa Development Programme (PDP). Back to Office Report, Helvetas Nepal, Kathmandu and Zurich.

205. World Bank (1965). A National Transport System for Nepal. Vols. I to III. Washington D.C: World Bank.

206. World Bank (1970). Appraisal of a Highway Project in Nepal. Transportation Project Department, Report No. PTR-54a. Washington D.C: World Bank.

207. World Bank (1977). *Project Completion Report, Nepal First Highway Project (Cr. 223-NEP)*. September 1977, Washington D.C: World Bank.

208. World Bank (1984). Nepal Second Highway Project Supervision Review Report. Washington D.C: World Bank.

209. World Bank (1984). *Staff Appraisal Report: Nepal, Third Highway Project. Report No. 4763-NEP*. Power and Transportation Division, South Asia Projects Department, Washington D.C: World Bank.

210. World Bank (1986). Project Completion Report: Nepal Second Highway Project. (Cr. 730-NEP). Report No. 6296. South Asia Regional Office. Washington D.C: World Bank.

211. World Bank (1988). Memorandum and Recommendations of the President of the IDA to the Executive Directors on a Proposed Credit to the Kingdom of Nepal for a Road Flood Rehabilitation Project. May, 1988, Washington D.C: World Bank.

212. World Bank (1993). *Pilot Labour Based Road Rehabilitation Project*. March 1993. Washington D.C: World Bank.

213. World Bank (1994). *Road Maintenance and Rehabilitation Project – staff appraisal report, Nepal*. Energy and Infrastructure Operation Division, Country Department I, South Asia Region. Washington D.C: World Bank.

214. WSA/SMEC (1996). *Priority Investment Plan (PIP). Master Plan for Strategic Road Network and Rural Transport, vol. III* – Rural Transport. Wilbur Smith Associates (WSA) and Snowy Mountains Engineering Corporation International Ltd (SMEC), for HMG/N, Department of Roads, Kathmandu.

215. WSP, ODG, OPM & Helvetas Nepal. , 2007, Environmental Monitoring Report: Leguwaght Bhojpur Section of HBFR , Kathmandu, Nepal, RAP. 59.

216. Yadhav, B. (1985). *Road Development and Rural Roads in Nepal*. Report to SARC Seminar on Rural Roads, June 1985, Kathmandu.

7.3 Part C: Databases for Different Sectors in Nepal

Central Bureau of Statistics (CBS)

1. Central Bureau of Statistics (CBS) & UNFPA. (2003). *Population Projections for Nepal 2001 – 2021.* Central Bureau of Statistics/UNFPA, Nepal: Kathmandu, Nepal.

2. Central Bureau of Statistics (CBS). (1974). *Statistical Pocket Book of Nepal 1974.* Kathmandu, Nepal: CBS/HMG/N.

3. Central Bureau of Statistics (CBS). (1981). *Population Census 1981.* Kathmandu, Nepal: CBS/HMG/N.

4. Central Bureau of Statistics (CBS). (1982). *Statistical Pocket Book of Nepal 1982.* Kathmandu, Nepal: CBS/HMG/N.

5. Central Bureau of Statistics (CBS). (1987). *Statistical Year Book of Nepal 1987.* Kathmandu, Nepal: CBS/HMG/N.

6. Central Bureau of Statistics (CBS). (1989). *Statistical Year Book of Nepal 1989*. Kathmandu, Nepal: CBS/HMG/N.

7. Central Bureau of Statistics (CBS). (1990). *Statistical Pocket Book of Nepal 1990.* Kathmandu, Nepal: CBS/HMG/N.

8. Central Bureau of Statistics (CBS). (1991). *Population Census 1991.* Kathmandu, Nepal: CBS/HMG/N.

9. Central Bureau of Statistics (CBS). (1992). *Statistical Pocket Book of Nepal 1992.* Kathmandu, Nepal: CBS/HMG/N.

10. Central Bureau of Statistics (CBS). (1996). *Nepal Living Standards Survey (NLSS 1) 1995/96*. Central Bureau of Statistics, National Planning Commission, Kathmandu.

11. Central Bureau of Statistics (CBS). (1996). *Statistical Pocket Book of Nepal 1996*. Kathmandu, Nepal: CBS/HMG/N.

12. Central Bureau of Statistics (CBS). (1997). *Statistical Year Book of Nepal 1997*. Kathmandu, Nepal: CBS/HMG/N.

13. Central Bureau of Statistics (CBS). (2001). *National Sample Census of Agriculture Nepal 2001/02: Sunsari District*. Kathmandu, Nepal: CBS/HMG/N

14. Central Bureau of Statistics (CBS). (2002). *Population (Eastern Development Region).* Kathmandu, Nepal: CBS/HMG/N.

15. Central Bureau of Statistics (CBS). (2002). *Population (VDC/Municipality).* Kathmandu, Nepal: CBS/HMG/N.

16. Central Bureau of Statistics (CBS). (2002). *Statistical Pocket Book of Nepal 2002.* Kathmandu, Nepal: CBS/HMG/N.

17. Central Bureau of Statistics (CBS). (2003). *Population Monograph of Nepal.* Kathmandu, Nepal: CBS/HMG/N.

18. Central Bureau of Statistics (CBS). (2004). *Nepal Living Standard Survey (NLSS 2) 2003/04 (Vol. 1 and Vol. 2)*. Kathmandu, Nepal: CBS/HMG/N.

19. Central Bureau of Statistics (CBS). (2004). *Statistical Pocket Book of Nepal 2004.* Kathmandu, Nepal: CBS/HMG/N.

20. Central Bureau of Statistics (CBS). (2005). *Statistical Year Book of Nepal 2005.* Kathmandu, Nepal: CBS/HMG/N.

21. Central Bureau of Statistics (CBS). (2006). *Statistical Pocket Book of Nepal 2006.* Kathmandu, Nepal: CBS/HMG/N.

22. Central Bureau of Statistics (CBS). (2008). *Nepal Labour Force Survey 2008*. CBS/NPC. Kathmandu, Nepal.

23. Central Bureau of Statistics (CBS). (2008). *Statistical Pocket Book of Nepal 2008.* Kathmandu, Nepal: CBS/GON.

24. Central Bureau of Statistics (CBS). (2009). *Distributive Trade Survey of Nepal, 2008: A Statistical Report*. Kathmandu, Nepal: CBS/GON.

25. Central Bureau of Statistics (CBS). (2009). *Statistical Year Book of Nepal 2009.* Kathmandu, Nepal: CBS.

26. Central Bureau of Statistics (CBS). (2010). *Statistical Pocket Book of Nepal 2010.* Kathmandu, Nepal: CBS/GON.

27. Central Bureau of Statistics (CBS). (2011). *Preliminary Results of the National Population Census 2011*. http://census.gov.np/images/pdf/Preliminary%20Leaflet%202011.pdf.

28. Central Bureau of Statistics (CBS.) (1986). *Statistical Pocket Book of Nepal 1986.* Kathmandu, Nepal: CBS/HMG/N.

29. Central Bureau of Statistics (CBS.) (1994). *Statistical Pocket Book of Nepal 1994.* Kathmandu, Nepal: CBS/HMG/N.

Education

1. Department of Education (DOE) (1981). *Nepal ko Saichik Tathanka Pratibaydhan 2038(1981)*. Kathmandu: DOE/GON.

2. Department of Education (DOE) (1985). *Nepal ko Saichik Tathanka Pratibaydhan 2042(1985)*. Kathmandu: DOE/GON.

3. Department of Education (DOE) (2001). *School Level Educational Statistics of Nepal*. Kathmandu, Nepal: DOE/GON.

4. Department of Education (DOE) (2005). *School Level Educational Statistics of Nepal*. Kathmandu, Nepal: DOE/GON.

5. Department of Education (DOE) (2006). School Level Educational Statistics of Nepal: Consolidated Report 2005 (2062). Kathmandu, Nepal: DOE/GON.

6. Department of Education (DOE) (2009). *Flash I Report 2066 (2009-010).* Kathmandu, Nepal: DOE/GON.

7. Department of Education (DOE) (2009). *Flash II Report 2065 (2008-09)*. Kathmandu, Nepal: DOE/GON.

8. Department of Education (DOE) (2009). School Level Educational Statistics of Nepal: Consolidated Report 2009 (2069). Kathmandu, Nepal: DOE/GON.

9. Department of Education (DOE) (2010). *Flash I Report 2067 (2010-011)*. Kathmandu, Nepal: DOE/GON.

10. Department of Education. (2008/9). *Flash I Report*. Kathmandu, Nepal: Department of Education, Ministry of Education.

Agriculture

1. Ministry of Agriculture and Cooperatives (MOAC). (2009). *Statistical Information on Nepalese Agriculture*. Kathmandu, Nepal: GON/MOAC.

2. Ministry of Agriculture and Cooperatives (MOAC). (2005). *Statistical Information on Nepalese Agriculture* (Time Series Information). Kathmandu Nepal: MOAC, Government of Nepal. 56.

3. Central Bureau of Statistics (CBS). (1994). *National Sample Census of Agriculture Nepal, 1991/92: Analysis of Results*. Kathmandu, Nepal: CBS/HMG/N. 40.

4. Central Bureau of Statistics (CBS). (2001). *National Sample Census of Agriculture Nepal 2001/02: Morang District*. Kathmandu, Nepal: CBS/HMG/N.

5. Central Bureau of Statistics (CBS). (2001). *National Sample Census of Agriculture Nepal 2001/02: Terhathum District*. Kathmandu, Nepal: CBS/HMG/N.

6. Central Bureau of Statistics (CBS). (2001). *National Sample Census of Agriculture Nepal 2001/02: Dhankuta District*. Kathmandu, Nepal: CBS/HMG/N.

7. Central Bureau of Statistics (CBS). (2001). National Sample Census of Agriculture Nepal 2001/02: Sankhuwasabha District. Kathmandu, Nepal: CBS/HMG/N.

8. Central Bureau of Statistics (CBS). (2001). *National Sample Census of Agriculture Nepal 2001/02: Bhojpur District*. Kathmandu, Nepal: CBS/HMG/N.

9. Central Bureau of Statistics (CBS). (2001). *Population Census 2001.* Kathmandu, Nepal: CBS/HMG/N.

10. Government of Nepal, (2008)Ministry of Agriculture and Cooperatives, Statistical Information on Nepalese Agriculture 2007/2008 (2064/2065), Agri-business Promotion and Statistics Division 177k.

11. Government of Nepal, (2007)Ministry of Agriculture and Cooperatives, Statistical Information on Nepalese Agriculture 2006/2007 (2063/2064), Agri-business Promotion and Statistics Division. 178k.

12. Government of Nepal, (2006)Ministry of Agriculture and Cooperatives, Statistical Information on Nepalese Agriculture 2005/2006 (2062/2063), Agri-business Promotion and Statistics Division. 179k.

13. Government of Nepal, (2010)Ministry of Agriculture and Cooperatives, Statistical Information on Nepalese Agriculture 2009/2010 (2066/2067), Agri-business Promotion and Statistics Division. 181k.

14. Government of Nepal, (2005)Ministry of Agriculture and Cooperatives, Statistical Information on Nepalese Agriculture 2004/2005 (2066/2067), Agri-business Promotion and Statistics Division. 180k.

Finance

1. Ministry of Finance (MOF) (2009/10). Economic Survey: Fiscal Year 2009/10 (Vol 1). MOF/GON.

2. Ministry of Finance (MOF) (2009/10). Economic Survey: Fiscal Year 2009/10 (Vol 2). MOF/GON.

Poverty

1. Central Bureau of Statistics (CBS). (2005). *Poverty Trends in Nepal (1995-96 and 2003-04)*. Central Bureau of Statistics, National Planning Commission, Kathmandu.

2. Central Bureau of Statistics (CBS). (2006). Resilience Amidst Conflict: An Assessment of Poverty in Nepal 1995-96 and 2003-04. Kathmandu, Nepal: CBS.

3. Central Bureau of Statistics (CBS). (2001). *Poverty Trends*. Kathmandu, Nepal: CBS/HMG/N.

7.4 PART D: Theoretical Frameworks: Social and Economic Changes, Development Theory

ADB (2006). “Poverty and Development Indicators: Statistics, Economics and Research Department”. Glossary. Available at www.adb.org/Statistics/Poverty/glossary.asp

Alkire, S., & Santos, M., E. (2010). Acute Multidimensional Poverty: A New Index for Developing Countries. Oxford Poverty & Human Development Initiative (OPHI) Working Paper 38. Oxford: University of Oxford.

Anderson, G.W., Vandervoort, C.G., Suggs, C.M. & Clapp-Wincek, C. (1982). Rural Roads Evaluation. Summary Report. USAID, Program Evaluation Report no. 5.

Axinn, W. G. & Ghimire, D. J. (2011). Social organization, population, and land use. American Journal of Sociology, 117(1), 209-258.

Axinn, W.G., Pearce, L.D., & Ghimire, D. (1999). Innovations in Life History Calendar Applications. Social Science Research, 28: 243-264.

Bagchi, D.K., Blaikie, P., Cameron, J., Chattopadhyay, M., Gyawali, N. and Seddon, D. (1998). Conceptual and Methodological Challenges in the Study of Livelihood Trajectories: Case Studies in Eastern India and Western Nepal. Journal of International Development, 10: 453-468.

Barber, Jennifer and W.G. Axinn. 2004. "New Ideas and Fertility Limitation: The Role of Mass Media." Journal of Marriage and Family 66:1180-1200.

Barber, Jennifer S. 2004. “Community Social Context and Individualistic Attitudes Toward Marriage”. Social Psychology Quarterly 67(3):236-256.

Baulch, B. and Masset, E. (2003). “Do Monetary and Non-monetary indicators tell the same story about chronic poverty?” World Development 31(3):441-453.

Belli, R.F. (1998). The structure of autobiographical memory and the even history calendar: Potential improvements in the quality of retrospective reports in survey. Memory 6, 383-406.

Beutel, Ann M. and W.G. Axinn. 2002. “Gender, Social Change and Educational Attainment”. Economic Development and Cultural Change 51(1):109-134.

Biggs, S. Justice, S. & Lewis, D. 2011. Patterns of Rural Mechanisation, Energy and Employment in South Asia: Reopening the Debate. Economic and Political Weekly, Vol. XLVI, No. 9, pp. 78-82.

Carney, S., Whitmarsh, L., Nicholson-Cole, S. & Shackley, S. (2009). A Dynamic Typology of Stakeholder Engagement within Climate Change Research. Working Paper 128. UK: Tyndell Centre for Climate Change Research.

Carney, S., Whitmarsh, L., Nicholson-Cole, S. & Shackley, S. (2009). A Dynamic Typology of Stakeholder Engagement within Climate Change Research. Working Paper 128, Tyndell Centre for Climate Change Research.

Chilvers, J. (2008). ‘Deliberative competence: theoretical and practitioner perspectives on effective participatory appraisal practice’. Science, Technology & Human Values, 33(2), 155-185.

Chronic Poverty Research Centre (CPRC) (2004) Chronic Poverty Report 2004-05. Manchester: CPRC, University of Manchester.

Connell, J. P. & Kubisch, A.C. (1998). ‘Applying a Theory of Change Approach to the Evaluation of Comprehensive Community Initiatives: Progress, Prospects, and Problems’. (Ed.) Anne C. Kubisch, & James P. Connell, New Approaches to Evaluating Community Initiatives, 2: Theory, Measurement, and Analysis. USA: The Aspen Institute.

Curran, S. R., Filiz G., Chang C. & Kanchan T. (2003). Migration, Cumulative Causation and Gender: Evidence from Thailand. A Paper for the Conference on African Migration in Comparative Perspective, Johannesburg, Africa, 4 – 7 (June), 1–48.

Curran, S. R., Filiz G., Chang C. & Kanchan T. (2003). Migration, Cumulative Causation and Gender: Evidence from Thailand. A Paper for the Conference on African Migration in Comparative Perspective, Johannesburg, Africa, 4 – 7 (June); 1 – 48.

Devereux D. et al. (2006). Vulnerability to Chronic Poverty and Malnutrition in Malawi. A Report for DFID Malawi.

DFID (2001). ‘Poverty: Bridging the Gap – Guidance notes.’ DFID Issues paper: Department for International Development, London.

DFID. (2001). Contribution of Irrigation to Sustaining Rural Livelihoods: Literature Review. KAR Project R 7879, MDS 0537 Report OD/TN 109, DFID.

Dumont, Louis. 1980. Homo Hierarchicus: The Caste System and Its Implications. Translated by Basia Gulati. University of Chicago Press.

Dyson T. and M. Moore. 1983. "On kinship structure, female autonomy, and demographic behavior in India," Population and Development Review 9: 35-60.

FAO. (2006). Food Security. Policy Brief June 2006, Issue 2.

Fussell, E. & Massey, D. (2004). The limits to cumulative causation: international migration from Mexican urban areas. Demography, 41 (1), 151-171.

Herrmann, R. K. & Choi, J. K. (2007). From prediction to learning: opening experts' minds to unfolding history. International Security, 31(4). 132-161.

Hodgson, G. M. (1989). Institutional Rigidities and Economic Growth. Cambridge Journal of Economics, 13, 79–101.

Hulme D. et al. (2001). Chronic Poverty: Meanings and Analytical Frameworks. CPRC Working Paper 2.

Hunter, B. (2007). Cumulative causation and the productivity commission’s framework for overcoming indigenous disadvantage. Australian Journal of Labour Economics, 10(3), 185 – 202.

Hunzal, K., Gerlitz, J. and Hoermann, B. (2011). The Specificities of Mountain Poverty. Regional Analysis of Mountain Poverty in Bhutan, India and Nepal. Draft.

International Fund for Agriculture and Development (IFAD). (2011). Sustainable Livelihoods Approach. Retrieved from http://www.ifad.org/sla/index.htm.

Jalan, J. and Ravallion M. (2000). Is transient poverty different? Evidence for rural China. Journal of Development Studies 36(6), 82–99.

Kabeer, N. (2010). Alternative accounts of chronic disadvantage: Income deficits versus food security. What Works for the Poorest? Poverty Reduction Programmes for the World's Extreme Poor. D. Hulme, Practical Action.

Kabeer, Naila. 1994. Reversed Realities: Gender Hierarchies in Development Thought. London: Verso.

Kabeer, Naila. 2000. "Social Exclusion, Poverty and Discrimination: Towards and Analytical Framework". IDS Bulletin 31(4):83-97.

Kabeer, Naila. 2001. "Conflicts over credit: Re-evaluating the empowerment potential of loans to women in rural Bangladesh". World Development 29(1):63-84.

Kabeer, Naila. 2006. "Poverty, Social Exclusion and the MDGs: The Challenge of 'Durable Inequalities' in the Asian Context". IDS Bulletin 37(3):64-78.

Kumar, N. and Quisumbing, AR. (2010). Evaluating The Long-Term Impact Of Antipoverty Interventions In Rural Bangladesh. Does Social Capital Build Women's Assets? Disseminating Agricultural Technologies to Individuals versus Groups in Bangladesh. IFPRI and Chronic Poverty Research Center.

Lahiri-Dutt, Kuntala and Gopa Samanta. 2006. "Constructing Social Capital: Self-Help Groups and Rural Women's Development in India". Geographical Research, 44(3):285–295.

Lourenço, N., Correia, T.P; Jorge, R & Machado, C. R. (1997) Monitoring and managing changes in rural marginal areas: a comparative research. Final report of the project funded by the European Commission (DG VI), Lisboa, 447 p.McRae. S.G. & Burnham, C.P. (1981). Land Evaluation. Oxford: Clarendon Press.

Mayne, J. (1999). Addressing attribution through contribution analysis: Using performance measures sensibly: discussion paper. Canada: Office of the Auditor General of Canada.

McCulloch, N. and Calandrino M. (2003). Vulnerability and Chronic Poverty in Rural Sichuan. World Development 31(3): 611-628.

Myrdal, G. (1968). Asian Drama – An Inquiry into the Poverty of Nations, Vol. III. New York: Pantheon.

Ostrom, E. 1990. Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge: Cambridge University Press.

Prowse, M. (2003). Towards a Clearer Understanding of 'Vulnerability' in Relation to Chronic Poverty. CPRC Working Paper No. 24.

Quisumbing, A.R., Baulch, B. and Kumar, N. (2011). Evaluating the Longterm Impact of Antipoverty Interventions in Bangladesh: An Overview. IFPRI Discussion Paper 01077.

Ravallion, M., Chen, S. and Sangraula P. (2009). "Dollar a day Revisited". World Bank Economic Review 23(2):163-184.

Sandell, R. (2008). Immigration and cumulative causation: Explaining the ethnic and spatial diffusion of Spain's immigrant population 1997-2007. Working Papers 2008-12, Instituto Madrileño de Estudios Avanzados (IMDEA) Ciencias Sociales.

Seddon, David. (n.d.). Impact Evaluation of a Rural Road Rehabilitation Project (Vietnam). Report shared by David Seddon. K-DS.

Setterfield, M. (1997). Rapid Growth and Relative Decline. London: Macmillan.

Sieber, Niklas. (1997). An Annotated Bibliography On Rural Transport. London, UK: International Forum for Rural Transport and Development. K-DS.

Solesbury, W. (2003). Sustainable Livelihoods: A Case Study of the Evolution of DFID Policy. Working Paper 217. London: Overseas Development Institute.

Toner, P. (1999) Main Currents in Cumulative Causation: The Dynamics of Growth and Development, London: Macmillan.

Uphoff N. and CM Wijayaratna. 2000. "Demonstrated benefits from social capital: the productivity of farmer organizations in Gal Oya, Sri Lanka''. World Development 28: 1875-1890.

Walters, H. (2007). Capacity Development, Institutional Change and Theory of Change: What do we mean and where are the linkages. A Conceptual Background Paper. http://portals.wi.wur.nl/files/docs/successfailuredevelopment/Walters_CapacityDevelopmentConceptPaperFIN.pdf

Watkins, J.C. 1996. Spirited women: gender, religion, and cultural identity in the Nepal Himalaya. New York: Columbia University Press.

Weiss, C. H. (1995). "Nothing as Practical as Good Theory: Exploring Theory-based Evaluation for Comprehensive Community Initiatives for Children and Families." In New Approaches to Evaluating Community Initiatives: Concepts, Methods, and Contexts, ed. James Connell et al. Washington, DC: Aspen Institute.

Whitmarsh, L. (2007). Citizens' Workshops on Sustainable Futures: Report of Findings. MATISSE Working Paper 14. Dutch Research Institute for Transitions (DRIFT), Erasmus University Rotterdam.

World Bank. (2003). A User's Guide to Poverty and Social Impact Analysis, Washington D.C., The World Bank.

World Bank (2000). World Development Report 2000/2001 – Attacking Poverty. Washington D.C.: World Bank. Available online http://www.worldbank.org/poverty/wdrpoverty.

World Bank. (2006). Impact Evaluation: The Experience of the Independent Group of the World Bank. Washington D.C.: The World Bank, IEG.

World Bank. (2008). Stakeholder Analysis. Washington D.C.: The World Bank.

World Bank. (2011). Investing in Young Children: An Early Childhood development Guide for Policy Dialogue and Project Preparation. Washington D.C.: The World Bank. http://www.ecdgroup.com/docs/lib_006091521.pdf