EVALUATION REPORT

EV529

EVALUATION OF SILVICULTURAL RESEARCH PROJECT AND FORESTRY RESEARCH PROJECT I,

NEPAL

BY

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PREFACE

Each year the Overseas Development Administration (ODA) commissions a number of ex post evaluation studies. The purpose of the ODA's evaluation programme is to examine rigorously the implementation and impact of selected past projects and to generate the lessons learned from them so that these can be applied to current and future projects.

The ODA's Evaluation Department is independent of ODA's spending divisions and reports direct to the ODA's Principal Finance Officer.

Evaluation teams consist of an appropriate blend of specialist skills and are normally made up of a mixture of in-house staff, who are fully conversant with ODA's procedures, and independent external consultants, who bring a fresh perspective to the subject-matter.

For this evaluation, a joint British/Nepalese one, the team consisted of the following:

K M Bajracharya, Consultant Forester

Angus Fraser Consultant Forester

Paul Francis, Consultant Socio-Economist

Jane Cocking, Administrator Evaluation Department (Team Coordinator)

The evaluation involved the following stages:-

- initial desk study of all relevant papers;

- consultations with individuals and organisations concerned with the project, including a field mission to Nepal in May 1991 to collect data and interview those involved;

- preparation of a draft report which was circulated for comment to the individuals and organisations most closely concerned;

- submission of the draft report to the ODA Principal Finance Officer, to agree the main conclusions and lessons to be learned from the study on the basis of the draft report;

- agreement with the evaluation team on the final report, which is published together with a summary sheet (EVSUM).

This process is designed to ensure the production of a high quality report which draws out all the lessons.

This study is one of a series of evaluations of projects in the forestry sector. A synthesis study which draws out the conclusions and lessons from all these evaluations is available from Evaluation Department.

J C H Morris

Head, Evaluation Department

ABBREVIATIONS

ADB Asian Development Bank

CFDP Community Forestry Development Project

CFI Commonwealth Forestry Institute, later the Oxford Forestry Institute

CIDA Canadian Government Development Agency

DF Department of Forests

EC European Community

FAO UN Food and Agriculture Organisation

FINNIDA Finnish Government Development Agency

FRC Forest Research Centre

FRD Forest Research Division

FRIC Forest Research and Information Centre

FRP Forestry Research Project

FSRO Forest Survey and Research Office

GDP Gross Domestic Product

GNP Gross National Product

GTZ German Government Development Agency

HMGN His Majesty's Government of Nepal

IMF International Monetary Fund

LRMP Land Resources Mapping Project

MFSC Ministry of Forests and Soil Conservation

MPFS Master Plan in the Forestry Sector

NFRC National Forestry Research Committee

NFRP National Forestry Research Plan

NNFP Nepal National Forestry Plan

ODA Overseas Development Administration

OFI Oxford Forestry Institute

PTAS Postgraduate Training Award Scheme

SAP Structural Adjustment Programme

SDC Swedish Government Development Agency

SEADD South East Asia Development Division

SRP Silvicultural Research Project

STU Silvicultural Trials Unit

TCO Technical Cooperation Officer

TCTP Technical Cooperation Training Programme

TORs Terms of Reference

USAID US Government Development Agency

VSO Voluntary Service Overseas

EVALUATION SUMMARY

The Project

1. The Silvicultural Research Project (SRP) and Forestry Research Project (FRP) were implemented between 1979-1985 and 1986-90 respectively. The objectives of SRP were to develop a Forest Research and Information Centre (FRIC), together with a separate field station and Silvicultural Trials Unit. ODA inputs to SRP consisted of 3 Technical Cooperation Officers (TCOs), training and equipment at an estimated cost of ,0.45 million. FRP aimed to strengthen further the capability of FRIC, and to collect and disseminate forestry research information. ODA support to FRP included 7 TCOs, training, buildings and equipment. The total ODA allocation for FRP was ,2.55 million. A second phase of FRP began in November 1990, focusing on institution-building.

The Evaluation

2. SRP and FRP were evaluated in May 1991. The joint UK-Nepal team consisted of a Nepali forestry expert, a UK forester, a socio-economist, and a member of Evaluation Department.

Overall conclusions

3. The evaluation concluded that SRP/FRP had been **partially successful**. As a result of the projects there is now a central research facility which is capable of executing successful forestry research. However, institutional progress was constrained by staff shortages and by the lack of a clear institutional strategy and objectives. Most importantly, the institutional achievements would not be sustainable in the absence of the continuing ODA support.

4. Both projects produced a wide range of internationally recognised publications. However, the overall impact was reduced by the lack of a strategy for research planning and the dissemination of findings.

Main Findings

5. A large number of high quality technical articles and publications were produced. These were widely circulated and known within Nepal, although the findings were less generally used. This was due to poor institutional links between research and end-users, and to the inaccessible style and language of the publications.

6. The projects were judged to be cost-effective. Potential economic and environmental benefits were difficult to assess, but probably positive.

7. Despite wider institutional constraints in Nepal, and an inadequately defined approach to institutional strengthening, the projects contributed significantly to the creation of an operational forestry research institution. However, research planning was unsystematic and national research coordination limited.

8. The evaluation considered that the research could have been more appropriate to the needs of end-users. This was attributed to the lack of a systematic analysis of research priorities, the absence of parallel socio-economic research, and the failure to involve end-users in the research process.

9. Weak or undefined institutional links between research and its potential users inhibited problem identification and, more critically, the dissemination and impact of research results.

10. TCO training of counterparts was unsystematic and not consistently successful. UK training was generally appropriate.

Lessons

11. The effective dissemination of research findings requires a clear strategy. Information should be produced in a style, language and media appropriate to the target end-users, and good links must exist or be developed with extension services. The dissemination and impact of research will be reduced if insufficient attention is paid to these aspects.

12. The reality that a new institution will require support for longer than the life of a typical five year project needs to be recognised and planned for from inception. It is nevertheless of paramount importance that (a) timebound institutional objectives are particularly closely defined, and (b) institutions should eventually be sustainable without continued external assistance.

13. If sufficient priority and support is not given to ensuring that TCOs fulfil their counterpart training role, success in this area will be variable.

14. Wide ranging technical support is likely to be required in projects which cover a wide range of disciplines. This needs to be readily available and sufficiently flexible to address specific needs.

15. Forestry research needs to be based on a systematic multi-disciplinary assessment of priorities and, where possible, on the involvement of end-users in the research process. This is more likely to generate appropriate research findings with the maximum potential impact.

CHAPTER 1. BACKGROUND

DESCRIPTION OF SILVICULTURAL RESEARCH PROJECT AND FOREST RESEARCH PROJECT

1.1 A brief description of the two projects in the form agreed in the respective project documents is provided below. Some amendments were made to the SRP's inputs following the mid-term review.

Silvicultural Research Project (SRP) 1979-1985

1.2 Objectives

- To develop a Forest Research and Information Centre (FRIC) in Kathmandu
- To develop a field station and Silvicultural Trials Unit (STU) at Hetauda

1.3 ODA Inputs

Staff

- Senior Silviculturalist to act as team leader (TCO)
- Nursery Specialist (TCO)
- Research Forester (TCO)

- Consultancy on silvicultural research methods for up to 10 months

- VSO volunteers as agreed

Training

- 36 man months of training in UK for Nepali staff

Equipment

- Research equipment up to a value of ,40,000

1.4 HMGN Inputs

Staff

- Counterpart staff for 3 expatriate TCOs

Local Inputs

- Buildings, equipment and running costs for activities undertaken by the project

1.5 Total proposed cost to ODA: ,460,000

Forest Research Project (FRP) 1986-1990

1.6 Objectives

- To collect and disseminate information needed for efficient afforestation, reforestation, agroforestry and improved forest management throughout Nepal

- To strengthen the capability of FRIC to maintain research and information services

1.7 ODA Inputs

Staff

- Team Leader (TCO)

- Silvicultural Researcher (TCO)

- Nursery Specialist (TCO)

- Silviculturalist to compile "Manual" (TCO)

- Scientific Information Specialist (TCO)

- Forest Management Specialist (TCO)

- Fodder Trees Specialist (TCO)

- 5 VSO volunteers

- 2 PTAS officers

Training

- 7 awards for training Nepali staff of FRIC in the UK under the TCTP

Building and Equipment

- The construction of a new HQ building for the FRIC in Kathmandu
- Five zonal field stations
- Fourteen satellite buildings at trial sites
- Equipment to support the research activities of the project

1.8 HMGN Iputs

Staff

- Counterpart staff for expatriate TCOs

Local Finance

- Running costs and locally supplied equipment for the activites of the project

1.9 Total Proposed Cost to ODA:

,2.55m of which: ,0.46m capital aid, ,2.09m Technical Cooperation.

Forest Resources

1.10 As a result of its wide climatic range Nepal is endowed with many kinds of natural forest. The following is a brief list of the major varieties associated with the main topographic zones.

- **Tropical Forests:** The tropical forests are located in the Terai and Siwalik regions below 1000m. Three forest types are clearly distinguishable; sal (*Shorea robusta*) forests, sissoo (*Dalbergia sissoo*) forests; and riverain forests composed of a number of different sub-types each with a large number of species.

- **Sub-Tropical Forests:** The sub-tropical forests are located between 700 and 1700m above sea level and comprise chir pine forest and *Schima castanopsis* forests. In addition *Alnus nepalensis* occurs in patches along moist gullies and landslides.

- **Lower Temperate Forest:** This stretches between 1700 and 2700m above sea level and may be divided into three main forest vegetational types; the lower temperate mixed broad-leaved forests between 1500m and 2100m; oak (*quercus sp*) forests with a number of different species at different altitudinal levels; blue pine (*Pinus wallichiana*) forests.

- **Upper Temperate Forests:** This belt is between 2400m and 3100m above sea level and also contains many types of natural forest including; upper temperate mixed broad-leaves; upper temperate conifers; a distinct belt of khasru (*guercus semicarpifolia*).

- **The Sub-Alpine Forest:** This zone marks the timber line where a number of different forest types are distinguishable. The more important of them are; Fir (*Abies spectabilis*) forest with an understorey of *guercus semicarpifolia* in the west and *Rhododendron sp* in the east; birch (*Betula utilis*) forests from 3300 to the tree line around 4200 in patches in depressions; rhododendron forests in the east with a number of species including *R. companulatum, R. thomsonii, R. cambellianum.*

1.11 According to surveys by the Forest Survey and Research Office (FSRO) and the Land Resources Mapping Project (LRMP) based on aerial photography between 1964 and 1984 **the total forest land and shrubland** decreased from 6.7 million ha to 6.3 million hectares - a loss of more than 400,000 ha of forests in 15 years. This was mostly from the Terai and the Siwalik regions. The problem is less serious in the Middle Hill Region. During this period it was also found that 1.05 million hectares were degraded from high density forests with a crown cover of 70-100% to medium (40-70%) and poor density (10-40%) forests. This is a massive decrease by any standard.

The Economic Role of Forestry in Nepal

1.12 It is difficult to estimate the total value of forestry to Nepal as a great deal of activity is at subsistence level and therefore does not appear in trade statistics. HMGN estimates that forestry accounts for around 15% of GNP and the general impression is that with further attention this percentage could be raised considerably. In 1988/89 forestry accounted for 572m Rs (3.2%) of total HMGN expenditure.

1.13 The Master Plan in the Forestry Sector (MPFs)-(see para 18 below) estimates that the total value of the annual consumption of timber, fuelwood and fodder is 10,500m Rs, 12,700m Rs and 3,150m Rs respectively, of which 90% of the timber and fuelwood and 99% of fodder are consumed in Nepal without passing through the market.

1.14 Other minor forest products which are important in the domestic context are pine resin, lokta and bamboo for paper making, thatching grasses for roofing, and a large number of medicinal herbs and shrubs. No estimate appears to have been made of the total value of these products.

1.15 Various parastatals exist to develop the use of forest products. They include the Timber Corporation of Nepal, Nepal Resin and Turpentine Industries Co., Herbs Production and Processing Co., and the Forest Products Development Board. Most are institutionally weak and as a result do not achieve their potential. Saw milling has been the most successful of the parastatal activities. Since 1952 the Timber Corporation of Nepal has established 40 mills and there are a further 150 privately owned enterprises. Most are currently either closed or operating part time as a result of the shortage of logs.

Institutional Organisation

1.16 Overall responsibility for forestry policy and execution lies with the Ministry of Forests and Environment of which the Department of Forest (DF) is part. Research was established as a separate function in 1976 within the FSRO. As a result of the SRP this became the Forest Research Centre (FRC), later the Forest Research and Information Centre (FRIC). Under the latest reorganisation of the Ministry, following the adoption of the MPFS in 1989, the research capacity was renamed the Forest Research Division (FRD) and was joined with Medicinal Plants Department which had previously had a flourishing research section. The 1989 reorganisation of the DF resulted in the complete separation of research activities from forest management, with severe repercussions on the links between the two functions. Organisational details are at Annex C.

Forestry Policy

1.17 SRP and FRP were undertaken against the background of major policy shifts in forestry in Nepal. The first major policy statement was the Nepal National Forestry Plan (NNFP) formulated in 1976 by the Ministry of Forests and Soil Conservation (MFSC) and the DF for the development and management of forests over the whole country.

1.18 The NNFP was a basic policy plan spelling out the government's policy: ie, reorientating forest management and utilization onto a national, community, and private basis; establishing territorial forestry organisation; instituting ecologically viable development of forestry practices in each of the country's physiological zones; and reorientating forest development squarely on the basis of research findings. MFSC and DF, however, could only implement a few of the programmes proposed but these included community forestry, forest research, plantation and afforestation. Many other programmes including national forest management, forest products development and marketing, and forest based industries were not addressed.

1.19 The major policy shift throughout SRP and FRP in Nepal, as elsewhere, was the move towards community forestry. At a general level this was indicated by the adoption of community forestry as the theme of the World Forestry Conference in Jakarta in 1978. In Nepal, following its Forestry Sector Review in 1980, the World Bank appraised a community forestry project which was to develop community forestry in the hills through the provision of technical assistance and equipment.

1.20 In early 1984 the MFSC decided to formulate a new plan called the Master Plan in the Forestry Sector (MPFS). MPFS was completed in December 1988 and HMGN approved the plan in early 1989. Both the NNFP and the MPFS included companion documents on research in the forestry sector. Each, however, was essentially a 'list' of topics rather than a research strategy. However, due to the India-Nepal Trade and Treaty Crisis of March 1989 and the political turmoil of early 1990 the MPFS, could be implemented only with respect to organisational changes. After more than a year of constitutional and political debate the newly elected (June 1991) parliament and the government has said that it is committed to tackling the problems of the Nepal forestry sector.

1.21 Under the eighth five-year plan, which is now expected to begin in July 1992, HMGN sought $169.6m of external assistance for programmes throughout the forestry sector. One quarter of this assistance has been committed by the Asian Development Bank (ADB) as a programme loan, of which the major part is allocated to national and leasehold forestry programmes. The largest projects (by value) are those in the community and private forestry programmes and in the soil conservation and watershed management programmes. The two largest are both community forest projects, in the Hills and the Terai, respectively, the former co-financed by IBRD, UNDP and DANIDA, and the latter by IBRD and the EC. Other projects in these programmes are funded by SDC, CIDA, ADB, USAID, FINNIDA, FAO, GTZ and ODA as well as CARE/NEPAL. FINNIDA and USAID also finance institution-building programmes. The Japanese support the Extension and Communications Division of DF.

Population

1.22 After a long period of stagnation the population of Nepal has been growing rapidly for the last few decades. Population increased from 11.5m to 15.1m between 1971 and 1981, and is currently estimated to be 18.4m. The present growth rate is estimated at 2.11% per year.

1.23 In 1971 37.6% of the population lived in the Terai, including the Siwalik zone, and the rest in the hill and mountain regions. The Terai proportion had increased to 43.6% by 1981 and the trend is continuing. The reasons for this are the control of malaria in the Terai since the mid-1950s, HMGN's settlement policy for the area, and illegal encroachment in the forest. In recent years urbanisation has also increased from 4% in 1971 to 8% in 1987.

Ethnicity

1.24 Nepal is multi-racial and multi-lingual. The usage patterns of local forests and land resources vary with ethnic communities. For example, Sherpas and other groups living in the High Mountain region specialise in animal husbandry and trading; in the middle hills there is an orientation towards subsistence farming, with provision for cash income either in cottage industries or unskilled labour; in the plains the native Tharus and Dhimals have kept large animal herds which have been reduced recently due to the pressure on the natural forest.

Economy

1.25 Nepal is one of the poorest countries in the world with a per capita GNP of $170 which has scarcely grown over the past 5 years. The economy is dominated by agriculture which accounts for 60% of GDP, 90% of the population are engaged in subsistence farming. Key economic indicators are shown at Annex B.

1.26 The balance of payments is structurally weak, with a heavy reliance on aid. Exports cover only about a quarter of imports. Trade has always been predominantly with India, with which Nepal shares a long and open border.

1.27 Real GDP growth over the last two decades has barely exceeded the population increase of 2.7% pa. Growth accelerated during the first half of the 1980s, but at the expense of unsustainably large increases in government expenditure. The consequent sharp deterioration in the balance of payments was addressed by an IMF stabilisation programme undertaken in 1985. This was followed in 1987 by a more comprehensive three year Structural Adjustment Programme (SAP) supported by both the IMF and the World Bank. The main focus of the SAP was on domestic resource mobilisation, financial sector reform, enhancement of agricultural production, and industrial and trade liberalisation.

1.28 During the past decade agriculture has been augmented by a growing tourist industry which accounts for 20% of export earnings. Other export-oriented industries, including carpets and other handicrafts, have also been developing and now account for over half of merchandise exports. Traditional exports, however, of rice, timber, jute and other forest products, have dwindled.

1.29 Gross national investment rose from Rs 4.8 billion in 1980-81 to Rs 7.6 billion in 1984-85. However, the ratio of gross national savings to gross national investment decreased from 62% to 55% during the same period, indicating the increasing dependence on foreign sources for sustaining economic growth.

1.30 Development expenditure rose from Rs 2.73 billion in 1980-81 to Rs 6.21 billion in 1985-86. During this period the external contribution rose from Rs 1.56 to Rs 3.67 billion.

Major Political and Economic Events During SRP and FRP I

1.31 In 1980 a referendum was held to decide between Partyless Panchayat Democracy and Multiparty Democracy. This affirmed the Panchayat administration which in turn led to increased exploitation of local forests, by Panchayats.

1.32 A major earthquake in August 1988 had considerable repercussions on the social and economic life of Nepal. Shortly after this, in March 1989, a further blow was dealt to the economy when trade and transit treaties with India expired. India shifted trade with Nepal to the less favourable "Most Favoured Nation" basis, closed all but two of the border points for trade, and restricted supplies of fuel. The consequent energy shortages caused considerable disruption to the transport system, a decline in industrial production, delays in the implementation of development projects, and reduced activity generally. The loss of preferential access to the Indian market resulted in a decline in exports.

CHAPTER 2. : IDENTIFICATION, DESIGN AND APPRAISAL

ODA's Previous Involvement in the Sector

2.1 Since the early 1970s ODA forestry advisers had been developing an interest in the forestry sector in Nepal through visits and the establishment of contact with DF staff. Small amounts of training had been funded by ODA but there had been no substantial involvement.

The Process of SRP Project Identification

2.2 The FSRO was founded in 1964, although its initial purpose was forest inventory and soil survey work only. In 1973 the ODA forestry adviser visited Nepal and recommended the financing of a mission to appraise a project to establish a Silvicultural Trials Unit within the FSRO. At the same time, HMGN requested assistance under the Colombo Plan for forestry research. The forestry adviser's recommendation was accepted and a consultant from the Commonwealth Forestry Institute (CFI, later the Oxford Forestry Institute, OFI) visited Nepal in 1975 and produced a proposal for the design and organisation of the proposed Unit. This later formed the basis of the SRP project document. HMGN officially requested assistance for forestry research along the lines of the CFI consultant's report in 1976. It was, however, a further two years before the project was finally agreed, the reasons for this delay being uncertain.

SRP Project Appraisal

2.3 During the identification period HMGN had adopted the Nepal National Forestry Plan (see para 1.16). The World Bank had also conducted a Sector Review in 1978 which stressed the extreme urgency in Nepal of the problems of deforestation, shortage of fuelwood, fodder, and other forest products, and associated environmental degradation. Following the publication of the report, a meeting was held in June 1978 between HMGN, the World Bank and 7 other donors including ODA. There was a consensus among donors that the SRP fulfilled an identified need for more forestry research.

2.4 The SRP was therefore consistent with HMGN's stated objectives and recently adopted policy. There is no evidence, however, about the relationship between the project proposal and ODA's own forestry strategy: that is, whether it was intended that this would be a one-off project or that further follow-up assistance would be necessary. Similarly there is no information on the intended relationship between the project and the rest of ODA's assistance to Nepal, even though at the time the Koshi Hills Area Rural Development Programme was being planned and UK support was being given to the agricultural research centres at Pakribas and Lumle. It seems that ODA's chief objective was to ensure that strategic research was placed on the agenda in the Nepal

forestry sector.

2.5 The project appraisal consisted almost solely of the CFI report which justified the SRP in forestry terms alone. No economic or social appraisal was carried out. An early focus on the economic value of the proposed research, the formal identification of potential beneficiaries and clearer identification of specific research needs, would be a major component of current project appraisal. Although the recent World Bank reports had covered the economic and social aspects of the forestry sector it is uncertain whether these were used.

2.6 Whilst there was a clear need to expand forestry research in Nepal, closer attention to the economic and social aspects of the project might have directed that research in a slightly different direction, with more initial attention being paid to fuelwood and fodder trees which had already been identified as particular areas of concern in the World Bank report.

Identification of SRP Inputs

2.7 The SRP was based on a similar project in Zambia which had been agreed by ODA the previous year. Given this and the fact that it was agreed under the Colombo Plan the concentration on technical assistance was not surprising and was correct. Staffing levels were appropriate although more concentration should have been given to on-the-job training. Insufficient attention was paid, however, to HMGN's resources when considering the building and local costs aspects of the project. Although ODA did not have direct experience of working in the forestry sector in Nepal, the heavy burden which the proposed HMGN inputs would impose on them could have been anticipated.

The Identification of FRP

2.8 There was no separate identification procedure for FRP before its appraisal in 1984. The project was designed during the course of monitoring missions by the ODA forestry adviser and with advice from the SRP project staff. During the appraisal there was some possibility that the EC would be involved in the next phase of research work and this delayed, but did not substantially alter, the project design.

2.9 The need for FRP as a continuation of the assistance given by SRP was correctly identified. The requirement for an expanded research programme and additional buildings and equipment (in the light of experience) was also well conceived although it is unfortunate that their location was decided on political rather than practical criteria (see para 3.15). Attention to institution-building in human terms was, however, not addressed although difficulties had been encountered already (see paras 3.8-3.13). The evaluators accept that before the reformation of FD under the Master Plan institutional assessment was difficult, but the subject should have been addressed.

2.10 As with SRP, no economic and social appraisal was carried out. This would have been easier in the case of the later project, as there was evidence of the value of the research results already provided by SRP, and would have been useful.

CHAPTER 3. IMPLEMENTATION

Main Events and Problems

3.1 The history of the projects' key events are listed in Annex M. It can be seen that it took about three years from the project outline to the arrival of the first TCO, also that there was a break of 22 years between the end of SRP and the start of FRP.

3.2 The recurring features of both SRP and FRP I were the difficulties associated with the recruitment and retention of local staff and the availability of local funding. Both projects also suffered from the lack of long-term planning both by ODA and HMGN which meant that there were breaks between the two projects and also between FRP I and FRP II.

Overseas staff and consultants

3.3 TCO inputs are shown in Annex D. For both projects, these inputs were substantially in accordance with those planned, as modified by the SRP

mid-term review of SRP, and the 1986 review of FRP. The approval of FRP was delayed by extended dialogue between ODA and HMGN. This resulted in delays in the granting of HMGN clearance for TCOs so that the continuity of staffing suffered between the two phases of the project before and after the mid-term review. A similar situation was largely avoided at the end of FRP before its successor FRP II began by the signing of an interim Memorandum of Understanding. Within each project period, HMGN's practice of granting clearance on an annual basis gave rise to uncertainty among TCOs which cannot have contributed to good morale. In the event, however, once TCOs were in post staffing was relatively stable.

3.4 During FRP there were two team leaders and there were periods at the beginning and between the two assignments when there was no team leader in post. Three TCOs were in post before, and three additional TCOs were recruited at about the same time as, the arrival of the first team leader. The team leaders therefore had little or no influence on the selection of the team members. The second Team Leader took over an established team. This probably contributed to the difficulties in creating a cohesive team spirit and the tendency for the TCOs to operate as individuals with their own research programmes. Another factor was the different management styles of the two team leaders which inevitably resulted in changing atmospheres within the TCO team.

3.5 The terms of reference (ToRs) of TCOs were predominantly technical. SRP TORs refer to 'some on-the-job training of counterpart staff', whilst in the ToRs for FRP, counterpart staff training occurs last in a list of otherwise technical duties, appearing from the typeface to have been added as an after-thought. The length of TCO contracts, although no shorter than usual, was also very brief considering the time needed to achieve any institution - building goals.

3.6 Technical cooperation was supported by PTAS studentships and VSO volunteers (inputs shown in Annex E). The inputs supplied were in conformity with those planned and agreed.

3.7 Actual consultancy inputs are shown in Annex F. During SRP, these were substantially below the level planned (10 staff months). These consultancies covered the subject matter areas named in the FRP project document (which does not quantify proposed staff months). However, the level of consultancy inputs remained low, and continuity of support was only apparent in the area of soils analysis. It seems to have been assumed that TCOs possessed a capacity applicable to all their areas of research without specialist assistance.

HMGN Staff

3.8 HMGN staff inputs are shown in Annex H. The projects were implemented against a background of increasing government and donor activity in the forestry sector and competing demands for staff by new projects and programmes. Levels of HMGN staffing gave continual cause for concern during both phases of the project. HMGN was unable to meet fully the agreed staffing levels for the first three years of SRP. In consequence the SRP was short of personnel during its early development phase, and this had an inevitable effect on research progress. In mid-1982, however, the staffing situation greatly improved and, by the end of that year, the project had its full complement of attached research officers, forest rangers and forest guards, although most of these staff had not yet been officially appointed to the project but remained on deputation. Considerable difficulties were also experienced because staff who were allocated to the project often had other official and unofficial tasks which meant that they were frequently absent, eg the senior research officer was seconded to the University as Dean of the Forestry faculty for three years and no replacement was appointed during this period.

3.9 The mid-term review at the end of 1982 recommended that HMGN staff numbers be increased to the levels recommended in the NFRP. By 1984, thirty-seven posts had been established, including eleven professional positions, but eleven of these (including three officer posts) remained vacant. In the agreement for FRP, HMGN committed itself to fill these vacant positions and, in addition, to establish fifty new posts (including nine officers), bringing the total establishment to 86 (including 19 professional positions).

3.10 Some six junior officers left research between 1983 and 1985 (mostly for the territorial branch), otherwise the continuity of HMGN professional staffing was relatively good. However, turnover amongst more junior workers, including rangers and forest and nursery workers, was rapid and meant that much of the effort that went into training them in research techniques was lost to the project. As a result, the ratio of technical to professional staff was inadequate for most of the project period, obliging professional level staff and TCOs to spend much of their time on technical operations.

Project-employed local staff

3.11 One response to the shortage of HMGN staff was for the project to employ staff directly. Although this was a practical and useful short-term solution it

was an unfortunate precedent and did not contribute to the institution-building objectives of the project.

3.12 In both 1986 and 1987, six graduates were recruited directly through the Ministry of Education, and sent for two years' training to the UK. This recruitment took place on the understanding that posts would be created on their return. In the event these posts were not (and still have not been) created. Three of the six trainees were employed by the project on a temporary basis and the other three obtained positions elsewhere.

3.13 Efforts to create HMGN posts for specialist staff such as the pathologist, computer manager, statistical analysts, information officer, failed. They remained project employed, i.e. without permanent tenure or training prospects. The shortage of junior staff was a persistent problem, leading the project to recruit six temporary rangers in 1986-87, and thirteen project field assistants in 1989. However, temporary service does not count towards promotion, training, or pension, and turnover amongst junior project staff proved even higher than amongst junior HMGN personnel.

Buildings and Equipment

3.14 Under the SRP, HMGN was to provide buildings for FRIC in Kathmandu and for the STU at Hetauda. By mutual agreement this requirement was amended to basic accommodation at Hetauda and additional accommodation in Kathmandu. The accommodation in Kathmandu proved structurally unsound and HMGN encountered difficulties in financing the work at Hetauda. Both these factors contributed to a generally difficult working environment.

3.15 The decision to include a substantial building programme in FRP was based on sound experience. The need to establish a field station in each geographical region does, however, appear to have been based on the need expressed by HMGN to treat regions equally rather than on the research strategy. Siting of buildings within regions was also sometimes inappropriate.

3.16 The new FRIC building in Kathmandu and the field stations at Hetauda, Adabhar, Pokhara and Dhankuta were completed largely according to schedule although additional finance was agreed by ODA to meet the full costs of the programme.

3.17 The Kathmandu building is currently fully occupied and provides a good focal point for the department. It is attractive and well-designed although it does not possess field space in its immediate vicinity. Unfortunately none of the field stations is properly furnished and they are inadequately used. No personnel are permanently based there and the buildings serve as occasional rest houses for visiting researchers. Considerably more use could be made of the field stations which at present do not justify the cost of their construction. The function of the buildings does not seem to have been clearly identified at the outset and as a result their design is not well suited to any specific purpose.

3.18 Most of the equipment supplied to the project was suitable and delivered on time. The total amount supplied under SRP, in particular, exceeded the original commitment. The only items which caused substantial difficulties were two computers which had been selected on the advice of the Oxford Forestry Institute (OFI) and which repeatedly broke down. This problem was compounded by the absence of service facilities in Kathmandu.

Training

3.19 For both projects, formal training inputs took the form of short courses and MScs at UK Universities and study tours in the region.

3.20 Details of UK training are shown in Annex J. Fourteen officers were awarded MScs, seven obtained diplomas, and eleven attended short courses in the UK.

3.21 The selection of candidates for overseas training was constrained by the limited number of HMGN staff assigned to the project and the need to take account of seniority. Over the life of the project almost all the HMGN officers have received overseas training to MSc level, but the timing in relation to the presence of the TCO counterpart was often far from ideal and there was limited scope for consolidation of the training on return to Nepal or the development of close working relationships between the TCO and the returned trainee. This problem was further exacerbated for many of the trainees because of the uncertainties, already mentioned, over their employment status.

3.22 The former trainees were almost equally divided in their opinions regarding the relevance of the training, with some expressing satisfaction and a similar number considering that it was not really relevant. Those who undertook specialist training on such subjects as soils and entomology were generally satisfied, whereas those doing a more general course or a new course such as "environmental forestry" found the study much less useful. In general, a taught MSc course is not adequate training for research and should be followed by a short research methods course, such as that at OFI.

3.23 All the courses were completed successfully. In one case a graduate certificate was awarded instead of an MSc.

3.24 **Subsequent careers of trainees.** Although, as noted above, three of the six directly recruited project staff who received training in the UK have since left the project all the HMGN staff who received postgraduate training remain within the FRP.

3.25 **Study tours.** Two study tours took place during SRP, both in India. Only one study tour, to Uttar Pradesh, took place under FRP. Planned tours to Pakistan and Bhutan had to be cancelled for administrative reasons.

Local and Recurrent Expenditure

3.26 Both SRP and FRP encountered some difficulties over the availability of local finance. The HMGN contribution took two forms: the regular recurrent expenditure - sundries, general supplies etc; and special allocated funds for buildings and vehicles. Access to the latter caused more problems.

3.27 Regular recurrent expenditure passes through the HMGN "red book" budgeting system. Departments submit their budgets to the central Finance Ministry, approved expenditure is written into a "red book" and may then be drawn down. SRP and FRP had a separate budget line under this system and seem to have had easy access to funds. Nevertheless money was often received late. This problem was solved in the short-term by the provision of an imprest account for the team leader for day-to-day research activity expenses. Additional difficulties were experienced as a result of an administrative error in 1985/86 and the India trade crisis in 1988/89 and 1989/90. The total amounts supplied are listed at Annex G.

3.28 Special expenditure for construction is approved centrally. Access to funds for approved special items ran into difficulties due to HMGN's chronic overall financing problems. These were overcome by ODA taking on a greater proportion of the construction budget than had originally been agreed.

Research Planning and Management

3.29 The objectives of the SRP in 1979 were the establishment of a Forest Research Centre (FRC) to co-ordinate and control forest research throughout the whole country, and a Silvicultural Trials Unit, (STU) to produce information as a basis for planning future plantation development.

3.30 While the objective of the FRC was to co-ordinate and control research nationally, the main emphasis of the work was put into appraising existing research and improving the quality of information available for general forestry planning purposes. The production of a National Forestry Research Plan (NFRP) appears to have been a condition of the World Bank's funding of the Community Forestry Development Project (CFDP). This led the SRP to prepare the National Forestry Research Plan in 1981. The plan was hailed as a major achievement of the project by the Mid-term Review. The Mid-term Review also noted that the task of co-ordinating and controlling research nationally was becoming increasingly difficult and endorsed the recommendation of the NFRP that a National Forestry Research Committee (NFRC) be established to undertake the co-ordination function.

3.31 The National Forestry Research Plan was based on a workshop followed up by a questionnaire and discussions with District staff. Although the plan provides a list of research topics it gives no indication of the priority assigned to each topic, the level of resources required, or the expected value of the outputs.

3.32 The NFRC, though constituted, never met, and the FRP project objectives dropped all reference to co-ordinating and controlling research, and instead emphasised the institutional strengthening in the field of information services.

3.33 The Mid-term Review of FRP looked at the whole question of research planning, including the proposals for decentralising research, and recommended the promotion of effective planning, monitoring and controlling research, within the Division of Forest Research.

3.34 This was soon followed by the preparation of a Forest Research Master Plan (1989) instigated by the national Forestry Master Plan. The Plan is essentially a list of all the potentially interesting research topics that could be investigated and extends slightly the list contained in the 1981 Forestry Research Development Plan.

3.35 Out of the 13 topics listed in the NFRP, four were included in the original programme for SRP and two more were taken up by SRP on the recommendations of the Mid-term Review (silvicultural manual and bamboo research). Two further topics, fodder and timber stand improvement, were added in the FRP Project Document but the remaining topics had not been addressed at the time the Forest Research Master Plan was prepared.

3.36 Despite the stated intention of SRP that it should co-ordinate and control research at the national level, the stimulus for both national research plans came from outside the projects and gave little opportunity for a project contribution to the planning process. The finished products failed to provide clear guidance on research direction and priorities and the size of potential benefits.

3.37 The project did not identify sufficiently clearly the target audience for the research and as a result the views of Local forestry staff were not taken into account in the planning of a research strategy. Their involvement in design might have helped to produce work which was more directly relevant to the field situation.

3.38 The main indicator used by both projects to measure progress with research has been the number of field trials. This has continued into the FRP II for which the annual target is defined by the number of trials which each section is set to establish during the forthcoming year. The size, design, and quality of the trial have not been considered, and one consequence seems to have been the failure to use a broader range of experimental designs such as surveys, observations and field measurement of variables, now known as rapid rural appraisal, which may be quicker and more cost-effective than trials.

3.39 In the absence of a well justified research strategy setting out the directions of research and the expected outputs which could be applied by identified target user groups, the various research topics have been developed by the individual TCOs and, to a lesser extent, by the Nepali Research Officers, according to their own interests and experience. Within each of the major research topics no justification was found by the evaluators for the approach adopted and the expected use to which the research results would be put. Apparently, for some research topics, such justifications were prepared. That they no longer exist is a failure of research management. Each field trial had a "Protocol" but these also lacked any justification. There is, therefore, no way of estimating the value of the benefits expected from any of the research.

3.40 In FRD, the planning of the annual research programme seems to have consisted of agreeing the number of new trials to be established at each location for each research topic. The trial "Protocols" did not lay down in detail the resources required, especially manpower, for the various assessments specified. Nor was there an overall aggregation of the resources committed to all the on-going and new trials. HMGN policy management operates through a target system. Goals are agreed annually with each department and success is measured by numerical achievement of these targets. This system is particularly unsuitable for research departments as it measures output only in terms of trials established rather than their qualitative results.

3.41 Constraints on staffing caused problems throughout the project. At the time the projects were implemented FD was divided into two areas of reponsibility (termed 'faculties'): research and general forestry. As staff were recruited to one or the other and there was no exchange of personnel, staff from the general forestry side, with district, regional and management functions, had no experience of research, and *vice versa*. The research capacity is now within the Division of Forest and Plant Research but there is still no opportunity for movement between research and management functions.

3.42 Problems arising from the rigidities of the 'faculty' system are increased by the fact that all research officers are based in Kathmandu, where the cost of living is high, especially for those from outside the area who lack access to family-owned accommodation. Therefore potential candidates from elsewhere in Nepal rarely apply to work in the research faculty. As a result, the catchment groups for the two faculties are completely different and cross-fertilisation of ideas and experience is very unlikely.

3.43 All DF staff at professional level are required to hold degrees in forestry, regardless of the positions which they will hold. This inhibits the recruitment of staff in disciplines complementary to mainstream technical research, eg those concerned with information, the social aspects of community forestry, forestry economics etc.

Research Execution

3.44 During the two project periods a total of 610 trials were established at 135 different sites. 339 trials (55% of the total) were established at 6 sites, and the remainder were generally between 1 and 5 trials at a site. The Table below gives a summary of the trials by technical section, showing that the vast majority were plantation silviculture and nursery trials. The evaluation mission was able to visit 9 sites and inspect 36 trials, about 6% of the total. By 1985 at the end of SRP, 249 trials had been established, with an average of around 40 per year, and a peak of 60 in 1983. The remaining 361 trials were established during FRP at an average of 72 per year, reflecting the increased staffing levels. This level of output is about 3 trials per Research Officer (expatriate and Nepali) per year, which is considered by the evaluators to be low.

Research Publications

3.45 The most important outputs were:

the "Manual of Afforestation in Nepal" Jackson, 1987;

the Nursery Manual: "Forest Seed and Nursery Practice in Nepal" Napier and Robbins, 1988;

a journal: "Banko Janakari" of which eight numbers were published during FRP and which is widely available outside Nepal;

several other publications series e.g. "Nepal Forestry Technical Information Bulletin", NEFTIB FRIC and FRD "Occasional Papers"; and

the directory of forestry contacts in Nepal, "Who's Where".

Section	Nursery	Plant Silviculture	Fodder	Natural Forest	Bamboo	Entomology	Pathology	Utilities	TOTAL
No. Trials established	141	373	42	37	11	2	3	1	610
No. Trial sites	6	80	8	32	5	2	1	1	135
No. Trials visited	11	16	3	4	2	-	-	-	36
No. Sites visited	1	6	2	3	1	1	-	-	149

3.46 In all, approximately 280 individual documents were published of which 50 were in publications outside the project and 90 were in "Banko Janakari". The two manuals were found to be well known within Nepal by the special survey commissioned for the evaluation, but the survey also suggested that the Afforestation Manual is relatively little used, except by the University lecturers.

3.47 A critical examination of the Afforestation Manual suggests an explanation of this finding. The manual is divided into roughly three equal sections; the first is a series of chapters giving a description of Nepal, including topography, soils, climate and vegetation. The second section is a relatively short technical description of the main silvicultural techniques used for afforestation. It is sparsely illustrated and general in its prescriptions. The third section is a lengthy series of notes describing the main tree species that are used for afforestation in Nepal. The first section would have been strengthened by bringing all the data together in a concluding chapter in some form of ecological zonation which integrates the effects of soil, altitude and climate, and which could be used as a basis for making more detailed site specific recommendations for choice of species and establishment technique.

3.48 If more effort had been put into identifying and defining site types of silvicultural importance, it would have been easier subsequently to design research, to address the major technical problems encountered in each of the site types and to develop prescriptions for which the potential for application could be quantified, thereby making research planning and management more meaningful. Such approaches were well established in a number of national forest research institutes in the UK and elsewhere during the 1960s.

3.49 The quality of the publications, especially those produced during FRP are generally good both from technical and presentational points of view. However, very little material was produced in Nepali, and the majority of the documents described a specific set of results and did not bring together a

range of information in the form of practical prescriptions. These last two factors greatly limited the degree to which Nepali field staff could apply the results.

3.50 Almost 20% of the documents produced were in outside publications. Although this may testify to the quality of the research it supports the criticism made by many Nepali project staff that the aim of publishing was more to establish individual reputations than to influence field practice. A similar criticism was made of "Banko Janakari" which achieved a good and consistent standard and consequently a good reputation outside Nepal, but within the country was mainly used by the expatriate staff.

3.51 While these criticisms are valid, it is also necessary to have a longer term view regarding the necessity to set standards for the future.

Research Workshops and Conferences

3.52 The projects made significant contributions to forestry research through the participation of staff in conferences, both at national and international levels. The project provided a key contribution to the Working Group on fodder trees, forest fodder and leaf litter research, which held three meetings during the life of FRP.

Library

3.53 The organisation of the library was initially a very difficult task as the original holdings were in disarray and facilities for storage were minimal. The construction of the new FRIC building, however, considerably improved the situation. The library is clearly catalogued and the collection has been expanded through the Book Presentation Programme.

3.54 Use of the library steadily increased during FRP. A total of 1644 readers visited during 1988-89 and although there was an unexplained fall in 1989-90 to only 586, the numbers now appear to have returned to their former level. As the most obvious point of contact between FRD and a wide range of members of the forestry community - students, managers, etc the library functions well and provides an efficient service.

Soil Survey and Plant and Soil Testing Laboratory

3.55 ODA assistance to the Soil Survey section of FSRO and the establishment of a Plant and Soil Testing Laboratory was agreed as a result of the mid-term review of SRP. Both the Survey and the Laboratory provided useful services to a wide range of outside clients including other sections of DF, academic institutions, and individual researchers. The soil survey carried out work on between 1000 and 3000 ha per year and produced 45 reports in all. Both the survey and the laboratory suffered from uneven staffing and in particular the lack of technical support staff. Although this problem was overcome in the short term by the FRP project's funding of posts this was clearly not a sustainable solution. Expatriate staff working in this area were all VSO personnel. The quality of the work of the volunteers is not questioned but their employment may not have been appropriate either from the point of view of the FRIC which would have preferred more experienced staff or VSO which felt, in retrospect, that the positions were not in keeping with its own aims.

3.56 Planning was particularly difficult in the soil section. Initial work was solicited through a questionnaire but after this the rigid HMGN target system meant that it was difficult to accommodate clients' immediate requests. The system for planning work and ensuring that all potential clients have access to the services of the section remains haphazard and difficult to manage.

Institution-Building

Staff and Counterpart

3.57 While the objectives of SRP, in particular those relating to the Forestry Research Centre, included important institutional aims, the institutional objectives of the FRP related mainly to the establishment of a forestry information service. The preponderance of technical over institutional duties in TCOs' ToRs has already been mentioned. Furthermore, TCOs received no formal training in methods of communicating and transferring skills in cross-cultural situations, or guidance in working effectively within the particular context of the HMGN bureaucracy. These shortcomings in project design were reinforced by the comparatively low priority given to institution-building by project management until the final stages of FRP I. While staffing of HMGN officer posts and TCO posts was mostly satisfactory, counterpart relationships were in many cases inevitably disrupted by the substantial periods spent by officers on overseas training. Some skills do seem to have been effectively transferred within the counterpart context but this occurred in an unstructured

manner and its success therefore was often dependent on the vagaries of personality.

3.58 A major hindrance to the building of an effective research institution lay in a series of interlocking constraints inhibiting the provision, management and motivation of HMGN staff. Some of these were general to the Nepalese public service, while others were specific to the expanding forestry sector, and to forestry research in particular.

3.59 The difficulties of the Nepalese public service, with its low pay and cumbersome procedures are well known. As well as setting the institutional culture within which the project operated, the broader organisational environment resulted in delays in the establishment of positions, the reliance on temporary project staff, the consequent high turnover, and the overall adverse effect on institution-building.

3.60 Furthermore, the status and remuneration of staff in forestry research is considerably lower than that of their territorial colleagues. This is a result of the structure of allowances, of opportunities for promotion, and the scope for informal income. Until the later years of FRP, when increasing numbers of forestry graduates became available, vacancies in research remained unfilled.

3.61 An additional barrier to recruiting permanent staff was the 'faculty' system of personnel administration adopted by HMGN in 1976 (see paras 3.41 and 3.43). This regulation meant that those who had graduated in other essential disciplines (e.g. information, economics, sociology, pathology), could not be recruited to research. It also inhibited the recruitment of women, who are little represented amongst forestry graduates, to professional positions.

3.62 Other problems of management and motivation arose out of the target system of planning described in para 4.40, which characterises the HMGN annual planning process and is concerned exclusively with quantitative targets and not with the quality and relevance of work undertaken; the system of promotion which is based on seniority rather than performance; and the absence of job descriptions or terms of reference for HMGN staff.

Regionalisation Policy

3.63 Nepal has five Development Regions. The initial focus of project activities was in the Central and Western Regions. The 1981 Forestry Research Plan made the case for carrying out certain research activities in the other regions. The mid-term review of SRP recommended that a phased programme should be initiated to develop the necessary bases for silvicultural research in all zones. Whilst regional research centres were constructed under FRP, they have not been staffed and have been little utilised. This was due to the shortage of staff and failure to establish new professional and administrative staff positions for these centres. The policy of regionalisation does not appear to have had the wholehearted support of FD. In retrospect, the particular model of regionalisation promoted appears to have been based more on an idealised view of bureaucratic organisation than on well-conceived research priorities and ecological needs.

Research Planning and Management

3.64 Any research organisation requires a framework of systematic planning practices and procedures for the generation of an annual research programme, in accordance with agreed research priorities. During SRP and FRP, no such systematic procedures were introduced or institutionalised, and annual programmes seem to have been the outcome of the proposals of individual researchers and the HMGN target system of annual budgeting and planning (a system quite unsuited to research planning).

Collaboration Co-ordination and Control

3.65 The objectives for the Forest Research Centre component of SRP included the co-ordination and control of forest research in the entire country. Under FRP, it was envisaged that the co-ordination function was to be performed by a National Forestry Research Committee (NFRC). This body, proposed in the 1981 Forestry Research Plan, was to consist of a broadly-based and influential membership under the chairmanship of the Secretary of the Ministry. This body never met. With the adoption of the Master Plan for the Forestry Sector in 1988, it was replaced by a similarly constituted Council for Forestry Sector Research and Development which has still not met.

3.66 Although the projects' co-ordinating function has been weak they played an important role in collating and disseminating information about forestry research activities in Nepal. A National Forestry Information Network was established under SRP, and the projects also published regular research compendia and a directory of forestry contacts. Both projects engaged actively in collaborative research with other agencies and projects, including the

Nepal-Australia Forestry Project, the Terai Community Forestry Project, the Hills Community Forestry and the Integrated Hills Development Projects (SATA), Lumle Agricultural Centre, Pakhribas Agricultural Centre and the United Mission to Nepal. In general, links with other agencies appear to have been effective, if often informal.

Links With Users of Research Results

3.67 The SRP and FRP were not designed or intended to implement activities to disseminate their results to all levels of the forestry community. To be effective such research findings must be presented in the form of a package of treatments applicable to a well-defined ecological zone. As described above, the project had good links with many other donor-funded projects. Links with the forestry districts, through DFOs and forest rangers were, however, not strong and this affected knowledge and awareness of the results.

3.68 During FRP several seminars and open days at Hetauda were held and were successful. The publication of the Nursery Manual and its recent translation into Nepali was also a significant means of making research results available to users.

3.69 Extension remains a considerable problem in the DF. There is a very small and under-staffed extension section in the department but it lacks the resources to operate effectively. As a result, other projects design and implement their own extension materials, eg the Hills Community Forestry Project (with funding from FINNIDA) has produced an excellent series of Ranger-level publications. Although it was not within their mandate, the need for the existence of an extension strategy could have been emphasised by SRP and FRP and the production of and the production of publications similar to the Nursery Manual would have rendered project results more immediately accessible.

Response and Adaptability to Policy Change

3.70 During the course of SRP and FRP two major policy documents , the NNFP and the MPFS, were adopted by HMGN. Project members provided inputs to the research aspects of both papers, although neither presented a particularly well-structured research strategy. The research carried out did, however, reflect changing emphasis within the forestry community towards fodder crops and community-based forestry.

Project Management and Monitoring

The Role of the ODA Adviser

3.71 The ODA London-based forestry adviser made seven advisory visits during the course of SRP and FRP and participated in both mid-term reviews. His involvement was appreciated by both TCOs and Nepali staff. Unfortunately, the infrequency and brevity of his visits meant that his activities were confined mainly to the organisational aspects of the project, such as staffing and equipment problems. At the same time use was not made of outside consultants. This meant that the projects received no regular external technical advice of a kind which could have benefited the research strategy and execution of activities.

The Role of SEADD and ODA London

3.72 Responsibility for the forestry sector passed from ODA in London to South East Asia Development Division (SEADD) in Bangkok during the course of the projects. The natural resources adviser from SEADD visited on three occasions, the social development adviser twice and the head of SEADD once. The transfer of responsibility to SEADD seems to have been beneficial in that it increased the frequency of monitoring visits. There was evidence of some confusion among project staff as to precisely what the respective responsibilities of the various parts of ODA were, although this did not have any significant bearing on the project's progress.

3.73 The major area in which ODA administrative support was required lay in decision-making on the financing of additional requirements for the building programme or other local cost items. This seems to have been done with acceptable speed and understanding.

Actual ODA Expenditure

3.74 Funds allocated by ODA to SRP (1979-1984) amounted to ,460,000 of TC aid. Detailed figures of project expenditure are not available but a later submission within ODA indicated that the allocation had been fully spent. There were two allocations of ODA Capital aid under FRP I (1985-90). The first of

these (December 1985) was for ,466,000, of which expenditure amounted to ,415,830. The second (February 1987) was for ,362,000, of which expenditure amounted to ,228,001. While ODA's allocation of TC funds to FRP I was ,2,091,000, actual expenditure of TC is not available as the system did not aggregate individual items of expenditure (the present information system will be able to achieve this). Overall expenditure on the two projects is likely to have been of the order of ,3.4 million.

CHAPTER 4. IMPACT AND SUSTAINABILITY

Awareness of Research Topics and Results

The task of SRP and FRP was to disseminate research results to FD staff, not to carry out extension work in the community.

4.1 The evaluation therefore commissioned Metcon consultants to undertake a survey of the target audience for the results of SRP and FRP. They interviewed 84 "clients" from various districts, and at a range of levels from DFO to forest ranger in the DF; academic institutions; and other donor-funded projects. A summary of their findings is at Annex L.

4.2 The majority of respondents (c. 80%) were aware of the SRP and FRP and their work largely through "Banko Janakari",and the Afforestation and Nursery Manuals. Precise knowledge of the topics covered by the projects was confined to higher level staff and often to species on which the respondents had worked themselves. Those at a lower level in the FD were less aware of the coverage of project topics.

4.3 These findings suggest that the research results have been well-circulated to District Offices, other projects, etc, but that when they are received they are for some reason not distributed among staff but confined to the higher echelons. It was suggested that a more multi-media approach to the dissemination of results might have had a more far-reaching effect.

The Take-up of Research Results by the Target Audience

4.4 Respondents in the Metcon survey were asked how useful they thought the information supplied by SRP and FRP was. Again the three major publications, "Banko Janakari", and the Afforestation and Nursery Manuals were thought to be useful by the majority of high level staff. The selection of general topics had varied relevance to the target recipients. For example, a high proportion had experience of bamboo and eucalypt management and therefore the research in these areas was of direct relevance whereas a much smaller proportion had been involved in the management of Sal coppice. In general, the research topics chosen were relevant to the respondents. It is, however, unclear whether the precise problems addressed within these topics were especially relevant.

4.5 It is as yet rather early to measure the total direct use which has been made of the results produced by SRP and FRP. It takes time to incorporate new techniques into the forest management cycle. This does not, however, invalidate the conclusions drawn by the Metcon Study on the take-up of research results to date. Some survey respondents had already used the findings on bamboo and acacia although not for other species such as castanopsis and sal.

4.6 Very few respondents had knowledge or experience of FRD's information and services on soil and plant analysis.

Institution-building impact

Current Staffing

4.7 By the end of FRP, the Forest Research Division was established in its own well-designed and equipped building, with personnel who were trained, although lacking in field experience, and an organisational structure reflecting the major fields of research and information. There were thirteen Gazetted Officers in post, most with postgraduate qualifications and some experience of field research. However, largely due to the administrative constraints outlined above, many key staff remained project or temporarily-employed, and important sections (including Information; Forest Protection Services,

Pathology and Entomology, and Computing) remained entirely staffed by such non-established personnel.

Current Activities of FRD

4.8 FRD is now supported by FRP II, a five-year long, ,5 million project, including twenty five TC staff years (five TCOs and one APO), and substantial training, consultancy, and associate expert inputs. While research will still be guided by the Master Plan, the focus of ODA support under FRP II has shifted towards meeting the needs of individual, community, and institutional users, and improving the management of research and the dissemination of information. HMGN staff will undertake the lines of technical research previously led by expatriates, and TCOs' input will now focus, according to the project document, on 'social and multi- disciplinary aspects of community forestry and the overall guidance and strengthening of research planning and control'. Staff are to be reoriented towards multi-disciplinary, participative, and client-oriented research methods.

The Ability of FRD to Carry Out Well-Planned Relevant Research

4.9 Research Management procedures have been gradually developed during the course of the project but the emphasis has been on using a "trial" as a planning unit. The annual programme is defined in terms of the number of trials to be established in each subject area. The subject areas are determined by the research topics set out in the Research Master Plan.

4.10 Each Research Officer determines the number of trials which he believes it may be feasible to establish during the year and allocates them to research sites so as to achieve a reasonable balance in geographical spread. The proposals are discussed and agreed, possibly with amendments, with the

Deputy Director-General of the Research Division. Once the programme is agreed it is up to the Research Officer to prepare the protocols and he is also responsible for trial files. This means that there is no single reference source for all the trials being carried out by the Division. When, during FRP I this deficiency was recognised, a database was prepared which recorded all trials. The information maintained, however, on each project is limited and there is no indication of the whereabouts of the file. This problem is being addressed by FRP II.

4.11 The data base does not contain information on the manpower resources committed for establishment, maintenance, and assessment, so that there is no way of assessing total commitments in order to allocate the scarce technical resources in the most effective way.

4.12 NRD uses the FRMP as the overall guide to the areas of research but, because the HMGN officers were only involved in its preparation in a consultative role, NRD has no capability for revising the plan and updating it as progress is made. The lack of any form of quantitative targets in the plan means that the annual plans tend to be repetitive and not responsive to changes in economic circumstances.

4.13 At the research officer level there is a general competence in establishing and implementing trials, but the lack of proper support in experimental design and statistical analysis during SRP/FRP has meant that some of the errors are being repeated and more efficient designs are not being used. This problem is being addressed in FRP II. Although the need for socio-economic research was identified by the NNFP, the Division still has no staff with training in the social sciences, and, as a result, no socio-economic research has been undertaken. The lack of socio-economic expertise has also seriously inhibited the ability of FRD to ensure the relevance of research (particularly in the community forestry sub-sector), or to develop participatory research methods.

Economic Impact

4.14 A conventional analysis would relate the value of the effects of the projects on the productivity of the forest sector to project and related costs. The evaluation was unable to adopt this approach because of the difficulties involved in estimating research project benefits. These include the following:

(a) the most significant results of the project are in the form of research findings and recommendations whose impact on the forest estate are yet to be realised;

(b) a major portion of the project benefits are institutional (i.e. the creation of a viable forest research and information organisation and a library and information service);

(c) given the indirect nature of the potential environmental benefits of the project and the difficulties of quantifying and valuing such benefits, it would be speculative to estimate these in either physical or economic terms.

4.15 The method adopted here is therefore to consider the performance of the project in terms of the cost-effectiveness with which its outputs and effects have been

achieved and to undertake a rough cost-benefit analysis based on an assessment of the potential future economic benefits of the project.

4.16 The principal outputs were achieved in: the training of staff, the construction of buildings, the establishment of trial sites, the production of research findings, and the dissemination of publications as detailed in Annex K.

4.17 At the next level of directness are the projects' institutional achievements, which might be considered the most significant and sustainable result of ODA support.

4.18 Although, in retrospect, the results of project intervention, in particular the institutional ones, might have been brought about more effectively with clearer and more explicit understanding of constraints and objectives, it seems unlikely that the objective of establishing a central research capacity could have been realised more cheaply by fundamentally different means. Institution-building by its nature is a slow process and one which must advance, in part, through trial and error. The collaborative approach adopted to research, in addition to assisting the formulation of research problems and the dissemination of findings, also resulted in cost savings. The strategy of contracting out research to other institutions might have been feasible for certain limited and well-defined research problems. It was not one explored during the projects under review but should be considered during the current phase.

4.19 To complement this assessment of the cost-effectiveness of the projects, a simple cost-benefit analysis was undertaken. The potential benefits of research due to the increased production of trees in plantations, natural forests and farms were estimated from the full economic analysis undertaken for the Master Plan for the Forestry Sector in 1987-88. The implementation of research findings is assumed. In order to generate a minimum acceptable rate of return of 10% for the projects, research would need to be responsible for 3% of the predicted incremental total benefit stream due to the adoption of the masterplan programme (MPFS main report 1988:292). Assuming 10% of the estimated potential benefits and comparing these to the actual costs of the projects (including HMGN contribution), gave an economic internal rate of return (EIRR) of 16%. Making a further assumption that continued modest support to research would be necessary to bring these results to fruition reduces the EIRR to 15%. The EIRR is relatively insensitive to changes in assumed benefits. With the assumed benefits halved (equivalent to costing research against 5% of incremental Master Plan benefits), the EIRR is 12%. In conclusion, the potential benefits of forestry research in Nepal are high but dependent on associated improvements in extension and implementation. An acceptable rate of return, although possible, will not be realised unless greater attention is paid to the dissemination of project results and the Nepal Forestry Department is strengthened to enable it to implement research results.

Social Impact

4.20 In considering the social impact of the project the evaluation analysis must once again be conducted largely in terms of potential rather than actual effects. The early work of the project was focused on **plantation** silviculture, and the direct beneficiary of improved plantation productivity would be the state, although consumers may also benefit from lower prices for timber and timber products.

4.21 Under HMGN's community forestry policy, most **natural forest** is to come under the management and control of local communities and its improved productivity would therefore benefit all members of those communities using the forests. Small and marginal farm households constitute the majority of such communities, are often more dependent upon common resources, and thus more threatened by land degradation than those with more favourable endowments of land. On this count the project would result in a progressive distribution of benefits. The development of improved technologies for **farm forestry** (i.e. private planting) would also have the potential to benefit the majority of rural households which have access to land for tree planting. As women are largely responsible for livestock management and (with children) for the laborious task of fodder collection, their welfare would be served by better access to fodder from communal or farm forestry. In retrospect, if greater attention had been paid to community forestry the project's social impact is likely to have been greater.

Impact of the Project on Women

4.22 During the course of the projects there was one women TCO. There were no female counterparts but two project-employed staff were women as were several VSOs. The reasons for this relatively small number of women are uncertain but may lie in the nature of the work which means that long periods of field work may be difficult for women with families. Although this problem may not be solved it could be alleviated by careful attention to the terms and conditions of employment for both TCO and counterpart staff.

4.23 The weakness of the project's client-orientation has already been noted. The impact of research projects on women is obviously dependent on the level of take-up of the results. With greater take-up in the future the results, particularly those concerning fodder and fuelwood, two areas in which women are heavily involved (see para 21 above), could be significant.

Impact of the Project on the Environment

4.24 The impact of the project on the environment is difficult to assess because the degree to which research results are applied is not well established, and there may be a considerable time lag before many of the findings are put into practice on a wide scale.

4.25 The impact of tree planting on the environment is generally considered to be good except where large scale monocultures are established. In Nepal, trees have particularly important environmental benefits for soil conservation.

4.26 Most of the research conducted by the project has been directed towards improving the growth of trees or increasing the range of trees that can be cultivated on the main site types. Work has also been directed towards increasing the output of fodder which is important for increasing the incentives to protect trees and plant more on degraded sites. Thus, most of the outputs of the project, if applied, will have environmental benefits although none of the research was conducted or designed with explicit environmental considerations in mind.

Sustainability

4.27 In 1990, ODA and HMGN signed an agreement for a second phase of FRP at a proposed cost of ,5m over five years. The objective of the project is to provide institutional support to the FRD through the provision of five full-time TCOs, 96 man months of associate professional expertise and 34 man months of consultancies. These personnel will not carry out research themselves but will support FRD staff in their own work.

4.28 There is provision to pay a proportion of the recurrent expenditure for the Division of Forest Research, to engage local staff, construct buildings, and provide equipment. HMGN contributions are the pay and allowances for divisional staff, an increasing contribution to other divisional recurrent costs, the buildings and assets created by previous projects, and land for new buildings.

4.29 The project acknowledges and aims to address the institutional shortcomings of SRP and FRP I. As such, it demonstrates the lack of sustainability built into the first two projects. It is expected that at the end of this project FRD will be capable of operating and actively co-ordinating work in all the research programmes defined in the MPFS. The MPFS foresees a need for outside assistance to forest research until 2010 but at a diminishing level. This appears realistic but difficulties arise from the problems donors have in committing themselves to long projects. Thus FRD is unsure whether its long-term goals are achievable.

CHAPTER 5. CONCLUSIONS AND LESSONS

5.1 As a result of the Silvicultural and Forestry Research Projects (SRP and FRP) there is a central research facility within the MFSC of Nepal which is capable of executing successful research. Both projects produced a wide range of internationally-recognised publications. In the judgement of the evaluators both projects were partly successful.

PROJECT IDENTIFICATION

5.2 From the evidence available, no systematic justification was made for ODA's involvement in the forestry sector in Nepal. Furthermore, the decisions to

extend the project do not appear to have been made in the context of an overall policy on ODA's part towards the forestry sector. Such involvement, however, would seem to have been justified both in terms of needs and of potential returns. Project impact was reduced by the lack of a strategy to address planning and dissemination.

PROJECT DESIGN AND APPRAISAL

5.3 For neither project were objectives defined in terms of their impact on beneficiaries. The SRP project document did not attempt to quantify outputs, and was not revised between project identification and initiation, although there were major policy developments in the four years which intervened (notably the adoption of the National Forest Policy in 1978).

5.4 The lack of a long-term commitment to supporting forestry research in Nepal, as reflected in the five-year life of each of the projects, led to an over-emphasis on short-term technical achievements rather than the creation of a local capacity to plan and undertake research.

5.5 Institutional objectives and the means of achieving

them were not clearly defined at the outset for either project. In the FRP, institution-building focused on information services at the expense of research planning and management. Partly as a result, insufficient attention was paid to the institutional capacity of the Ministry and to the availability of trained manpower in Nepal, and the institutional constraints which later arose were not anticipated.

PROJECT IMPLEMENTATION

Research Planning and Management

5.6 The National Forestry Research Plan (1981), and the subsequent Research Master Plan (1988) in which SRP and FRP project staff had considerable involvement and which guided the selection of research activities, were not based on a systematic analysis of available information on environmental, ecological, social and economic conditions. Neither were classes of beneficiary and their respective needs and priorities identified, or potential economic benefits estimated. It was not therefore possible to set research priorities in terms of their relative costs and benefits.

5.7 The annual planning of research activities was not based on an assessment of priorities against available, costed resources. Clients were little involved in the planning of research activities. Little technical, and no socio-economic, justification was given for individual pieces of research.

Research design and execution

5.8 The selection of experimental sites was sound for longer term experiments but the design and execution of experiments were inconsistent. More short term experiments should have been done in conjunction with district forestry staff or other projects.

5.9 There was little involvement of potential beneficiaries in the design of research or the evaluation of experiments and findings. The use of a broader range of research techniques would have facilitated the diagnosis of constraints and the identification of researchable problems. Similarly, more participatory trials methods should have complemented the formal experimental designs on which research mainly relied.

5.10 Major socio-economic issues remained largely unresearched by the project. Chief among these were indigenous knowledge, management, and use of trees; and the institutional implications of community forestry policy.

Dissemination and impact of research results

5.11 A large number of articles and publications of a generally high technical quality were produced.

5.12 Project publications were widely circulated and known in Nepal. The manuals on silviculture and nursery management are particularly well known, if less widely used. Specific research findings seem to have been less generally adopted, in part because of the poor institutional links referred to below, and in part because the reports were mainly in English rather than in Nepali, and academic and technical in style. Nepali staff made a significant contribution to the content of the publications.

5.13 The projects were cost-effective, and the potentially high economic benefits of research findings justified the investment. The distribution of these potential benefits is progressive, with improvements in natural forest management and farm forestry, in particular, likely to benefit poorer households and especially women. Potential environmental benefits are difficult to assess, but benign.

Institutionalisation

5.14 Despite major institutional constraints, in particular in the areas of staffing and staff management policies, the projects contributed effectively to the creation of an institutional capability to plan and undertake forestry research.

5.15 While some counterpart relationships resulted in the effective transfer of knowledge and skills, the predominance of technical over institutional objectives meant that this occurred in an unsystematic fashion, and with variable success.

5.16 UK training was provided for a substantial number of Nepali research officers, and this was by and large appropriate. More attention, however, could have been given to exposing trainees to research institutions in the UK, and to the running of courses in Nepal to transfer basic forestry and field research skills, including participatory research skills.

5.17 Although good collaborative relationships were established with other projects, the failure of the Research Management Committee to meet represented a failure of the co-ordinating role of the project.

5.18 Within HMGN the institutional links between research and its potential users remained either weak or undefined throughout the project life. This situation inhibited both problem identification and, more critically, the dissemination and impact of research results.

5.19 The policy of regionalising research activities was not well conceived given the serious institutional constraints, or justified in terms of its costs and benefits. As a result, the policy has not been effectively implemented. The lack of an overall research plan is also reflected in the inappropriate siting of the Regional Research Centres at Dipayal and Pokhara.

Project monitoring and management

5.20 Technical back-stopping was inadequate, especially with regard to disciplines outside forestry, such as experimental design, statistical analysis of data, participatory research methods, and social and institutional analysis.

5.21 Because of the major institutional constraints already mentioned, much ODA advisory time was spent in attempts to resolve administrative problems. The immediate demands of management and administration may have been the reason for not identifying some technical problems eg those in experimental design. They also precluded a longer term perspective on institutional development.

LESSONS LEARNED

5.22 It is beneficial to long-term planning if projects are identified in the context of an overall policy and strategy towards the country concerned.

5.23 Benefits and beneficiaries of projects should be identified at an early stage of the project planning process.

5.24 Institution-building objectives need to be particularly closely defined. Achieving these objectives may take longer than the life of a current project. In this case the adoption of medium-term sector policies may be especially helpful (see para 5.21 above).

5.25 Research strategies and activities need to be based on an assessment of priorities deriving from a systematic analysis of available information and of needs, benefits and economic returns. Research activities should be planned and regularly reviewed in the light of these priorities, taking into account their costs and the availability of resources.

5.26 Where possible, clients should be involved in the identification of research topics. This requires a multi-disciplinary approach towards research planning.

5.27 Biological research on trees needs to be supported by socio-economic research on the institutional factors and indigenous knowledge and

management.

5.28 A clear strategy needs to be developed for the dissemination of research findings whether or not this is the responsibility of the researchers themselves. In publishing and disseminating findings the media, language and style of output should be selected with the needs of the clients in mind. If necessary a range of different types of publication should be produced.

5.29 Careful consideration should be given to the counterpart role of TCOs and every assistance should be given to make them aware of the cultural and institutional context in which they will be working.

5.30 In projects which cover a wide range of disciplines within a sector there is a special need for technical support. This should be readily available and sufficiently flexible to address very specific needs.

5.31 There is a need for the various administrative and advisory functions within a project to be clearly defined so as to avoid delays in implementation.

ANNEX A: TOPOGRAPHY AND LAND USE IN NEPAL

Topography

1**.** Nepal has an area of approximately 14.7 million hectares stretching from the Terai in the south, which is an extension of the Indian Gangetic Plain, to the High Himal in the north. There is an altitudinal range from 60m mean height above sea level, on the border with India, to 8848m, at Sagarmatha (Mt Everest), over a ground distance of only 150km.

2**.** The country may be divided into five main topographic and ecological zones:

- **High Himal:** Making up 23% of Nepal the High Himal lies along the upper band of the main Himalayan ranges and is more than 4000m above sea level, including many mountains over 6000m. Apart from the valleys and warmer south-facing mountain shelves the zone is virtually barren and uninhabited.

- **High Mountains**: Covering the altitudinal range between 2500m and 4000m above sea level, this zone runs along the outer Himalayan range and covers 20% of Nepal. Because of the long and steep mountain slopes this zone is prone to severe erosion and landslides.

- **Middle Mountains:** The most extensive zone in Nepal, about 30% of the total area the Middle Mountains range from 400m to 3000m above sea level and have been intensively settled and cultivated up to 2000m. Most large towns, including Kathmandu are within this belt. The predominant natural vegetation is subtropical pine forest and mixed broad-leaves. Due to the long history of dense habitation most of the manageable hill slopes have been converted into farm land.

- **Siwalik Hills:** Siwalik or the Churia is the outermost hill range with dry, scarp-sided slopes in the south, moist dip-sided slopes with deep soil in the north, and hogs-back ridges in between. The area covers 13% of Nepal and ranges from 200m above sea level in the east and 2000m in the west. The area is cut by deep, mainly narrow valleys. As a result of rampant malaria the region was sparsely populated before the beginning of the major malaria-eradication programme in the 1950s. Since then the luxuriant tropical forests have been largely destroyed or degraded, by recent settlement.

- **Terai:** The Terai covers 14% of the country area and is divided into the northern Bhabar belt, which is unsuitable for cultivation and mainly covered by deciduous forests, and the southern Terai proper which has a fine alluvial desposit and has been the country's prime cultivation area since the introduction of malaria control.

Land Use

3. Land use divided by these physiographic regions is given below:

Physio- Culti- Non Grass Forested Shrub Other

graphic vated Culti- Land Land Land Land Total

Region Land vated

Inclusions

in cultivated

land

High Himal 7.8 1.9 884.2 155.2 66.6 2233.9 3349.6

High Mtn 244.4 147.2 509.9 1631.5 181.3 244.7 2959.0

Mid Mtn 1222.5 666.4 292.6 1794.1 409.3 60.6 4445.5

Siwaliks 258.8 66.6 20.7 1444.7 31.3 74.3 1896.4

Terai 1234.3 117.1 49.7 591.3 1.4 116.1 2109.9

Total 2967.8 999.2 1757.1 5616.8 689.9 2729.6 14760.4

Per cent 20.1 6.7 11.9 38.1 4.7 18.5 100.0

Areas given in '000 ha.

Source: Land use in Nepal - A summary of the Land Resources Mapping Project Results. HMGN Ministry of Water Resources, Water and Energy Commission, Kathmandu, Nepal. March 1986.

ANNEX B: NEPAL: SOCIAL AND ECONOMIC INDICATORS

	1983/84	1984/85	1985/86	1986/87	1987/88 Prel
INTERNAL INDICATORS					
Population (million)	15.8	16.3	16.7	17.1	17.5
GNP per capita (US$)	160	160			170

Population Growth (% change)	2.7	2.7	2.7	2.7	2.5
Primary School Enrolment (% eligible)	77		82		
of which female (%)	29		50		
Life Expectancy (years) - male	47.2	47.6	48.0		
- female	45.7	46.1	46.5		
Infant MOrtality ('000 live births)	143.0	140.0	134.0	136.0	
Male	32				
Female	9				
Growth Rates (Annual % Change)					
GDP at Market Prices	9.7	3.0	3.9	2.4	7.1
of which: Agriculture	9.5	0.9	4.3	1.0	8.7
Non-Agriculture	9.9	16.6	3.5	4.4	5.0
Domestic Credit Expansion					
Government	17.6	126.6	16.4	12.5	3.0
Private Sector	17.7	27.4	24.7	18.6	24.7
Money Supply	13.4	7.6	23.3	15.4	22.0
Consumer Prices	1.6	4.1	15.9	13.3	10.9
Percent of GDP					
Gross Domestic Savings	9.6	10.7	10.7	10.5	10.9
Gross National Savings	11.3	12.3	11.9	12.2	13.2
Gross Domestic Investment	17.9	19.5	19.3	19.4	22.0
of which: Private	9.8	11.5	11.5	11.4	12.7
Public	8.1	8.0	7.8	7.9	9.3
Goverment:					
Total Revenues Excl. Grants	8.0	8.7	8.9	10.0	10.5
Current Expenditures	5.5	6.1	6.2	7.1	6.3

Capital Expenditures	13.5	12.4	12.0	12.0	12.8
INTERNAL INDICATORS					
Population (million)	15.8	16.3	16.7	17.1	17.5
GNP per capita (US$)	160	160			170
Population Growth (% change)	2.7	2.7	2.7	2.7	2.5
Primary School Enrolment (% eligible)	77		82		
of which female (%)	29		50		
Life Expectancy (Years) - Male	47.2	47.6	48.0		
- Female	45.7	46.1	45.5		
Infant Mortality ('000 live births)	143.0	140.0	134.0	136.0	
Male	32				
Female	9				
Growth Rates (Annual % Change)					
GDP at Market Prices	9.7	3.0	3.9	2.4	7.1
of which: Agriculture	9.5	0.9	4.3	1.0	8.7
Non-Agriculture	9.9	16.6	3.5	4.4	5.0
Domestic Credit Expansion					
Government	17.6	126.6	16.4	12.5	3.0
Private Sector	17.7	27.4	24.7	18.6	24.7
Money Supply	13.4	7.6	23.3	15.4	22.0
Consumer Prices	1.6	4.1	15.9	13.3	10.9
Percent of GDP					
Gross Domestic Savings	9.6	10.7	10.7	10.5	10.9
Gorss National Savings	11.3	12.3	11.9	12.2	13.2

Gross Domestic Investment	17.9	19.5	19.3	19.4	22.0
of which: Private	9.8	11.5	11.5	11.4	12.7
Public	8.1	8.0	7.8	7.9	9.3
Government:					
Total Revenue Excl Grants	8.0	8.7	8.9	10.0	10.5
Current Expenditures	5.5	6.1	6.2	7.1	6.3
Captial Expenditures	13.5	12.4	12.0	12.0	12.8

ANNEX C: ORGANISATION CHARTS; MINISTRY AND PROJECTS

Annex Ca: Organization of the Minisitry of Forests and SOil COnservation, 1981.

Annex Cb: Organisational Chart and Staff Establishment of Present Forest Survey and Research Office, Dept of Forests: 1981.

Annex Cc: Organisation of the Ministry of Forests and Soil Conservation, 1989


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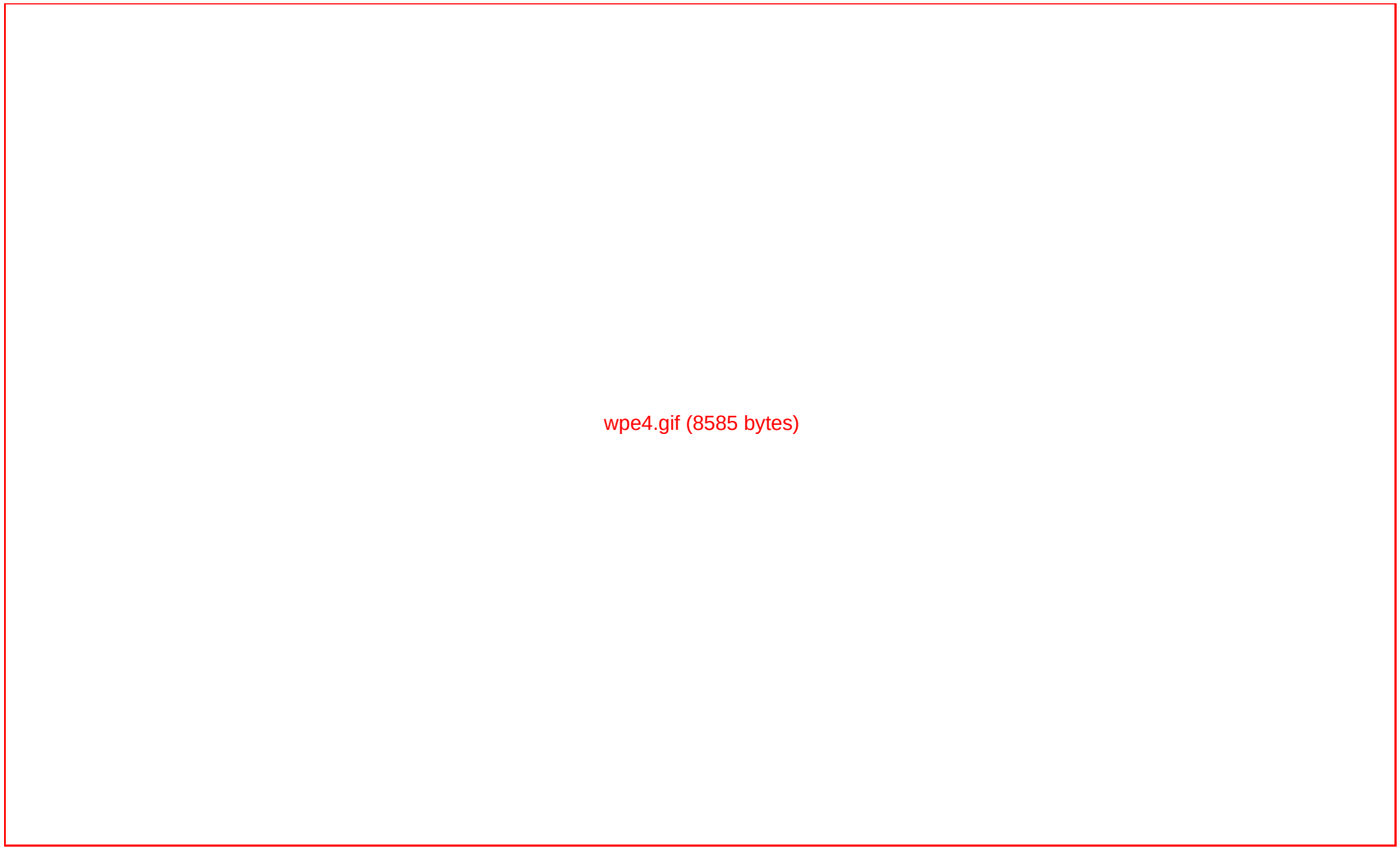
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ANNEX D: TCO INPUTS

Silvicultural Research Project

	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
Team Leader						
Mr J Wyatt Smith	**********	**********	**********	**********	*	
Mr P Howland					**********	**********
Field Research Specialist						
Mr P Howland	**********	**********	**********	**********	*	
Mr TE Hawins					**********	**********
Nursery Specialist						
Mr AL Sharpe		**********	**********	**********	**********	**

Forestry Research Project

	1985/86	1986/87	1987/88	1988/89	11989/90

Senior Silviculturalist (Team Leader)					
Mr J Howland	***				
Mr JA Hudson	***	**********	**********		
Mr M Phillip				**********	**********
Nursery Specialist					
Mr I Napier	**********	**********	**********		
Silviculturalist (field trials)					
Mr JK Jackson	**********				
Tree Fodder Specialist					
Dr PJ Robinson		**********	**********	**********	********
Forest Management Specialist					
Mr D Wallace	**********	*******			
Mr IS Thompson			*******	**********	**********
Scientific Information Officer					
Mrs MC Hawkins	***				
Mr W Finlayson		**********	**********	**********	**********
Forest Pathology and Microbiology			****		

ANNEX E: VSO AND PTAS

VSO

Library
Mr KE McNeff (1981-1983)
Mr CJ Cunninghame (1983-85)

Bamboo Research
Ms A Blae (- December 1987)
Mr CMA Stapleton (1982-1984; later PTAS ODA Research Fellow)

Nursery Research
Ms Sally Westwood (- March 1986)

Ms C Flower (December 1987 - September 1989)

Fibre Research
Mr JP Jeanrenaud (- November 1985)

Soil Chemistry
Mr IS Ingram (- Aug 1985)
Ms J Sutton (6/87 - February 1988)

Soil Surveys
Ms Judy Teare (- August 1985)
Mr John Howell (1986-88)

PTAS

Mr Ian S Thompson (PTAS - APril 1985)

TE Hawkins
P Upton (PTAS - June 1987)

ANNEX F: CONSULTANCY INPUTS

Silvicultural and Forestry Research Projects Consultancy Inputs

Library and Information Services
Mr W Finlayson, Director, Commonwealth Forestry Bureau
March 1983
December 1985 (three weeks)

Forest Soils
Mr RN Jenkin, Soils Specialist, Land Resources Development Centre
1984 (Ref: LRDC Project Report No 138 1984)
1985 (2 weeks)
17 June - 8 July 1986

Soils Analysis
Mr KF Baker, Director, Tropical SOils Analysis Unit, Land Resources Development Centre
June-July 1985 (To commission the newly arrived soil and plant analysis equipment and train local staff in it's use.)
June/July/ 1986 (3 days).
19 January - 12 February 1987 (to commission new equipment, diagnose and rpair faulty equipment, and assist the new soil chemist in re-establishing the soil and foliar analysis programmes)
March 1988 (to discuss 'Phase III' development of the soils lab.)

Forest Pathologogy
Dr MH Ivory, Forest Pathologist, unit of tropicl silviculture, Commonwealth forestry institute ,Oxford.
March, 198 (To advise on forest pests and diseases in Nepal and in particular on 'Borwn Needle Disease'.)
19-26 March 1986.

Entomology
Dr Martin Speight, Department of Zoology, Oxford University
August-September 1989 (2 weeks)

Computer commissioning and training
Mr Miller, Commonwealth Forestry Institute
16 July - 27 August 196
January - February 1988

Mr Howard Wright, Oxford Forestry Institute
1988-89 (three weeks)

Biometrics
Ms Janet Riley, Biometrician, Rothamstead Agricultural Experimental Centre
1988-89 (2 days)

Institutional
Ms Jane Carter, SAATA
January - February 1987 (preparation of directory of 'Orgs concerned with Forestry in Nepal')

Master Plan for the Forestry Sector
Mr John Wyat-SMith (for MPFS)
2 May - 29 June 1987 (preparation of draft report)
October 1987

Socio-Economic Research
Dr Colin Kirk, Natural Resources Institute
January 1990

ANNEX G: HMGN CONTRIBUTION TO RECURRENT COSTS

		Expenditure	
	FY	Budgeted RS	Actual RS
	1979/80	456000	201383
	1980/81	597000	446377
	1981/82	747000	540146
	1982/83	829000	589796
	1983/84	570000	482773
		3199000	2260475
	FY		Rs Exp
	1984/85		506679

	1985/86		668414
	1986/87		1170192
	1987/88		938774
	1988/89		741000
	1989/90		576339
			4601458

ANNEX H: HMGN STAFF INPUTS

HMGN Staff Employed on SRP and FRP:-

	81/2	82/3	83/4	84/5	85/6	86/7	87/8	88/9	89/90
Administration									
ER Sharma I.	(*)	*	*	*	*	*	*	*	*
KP Prajapati				*	*				*
BP Lamichanney I	(*)	*	T	*	*	*	*	*	*
Forest Management									
RB Joshi II							*		
MR Joshi II	(*)	*	T	T	T	*	*		
PR Tamraker III			t	*	*	T	*		
Natural Forest Silvicultural and Management.									
RB Joshi II								*	T
MR Joshi II								*	
PR Taraker III								*	*
R Tapole III								*	*
Silvicultural Trials Unit									
AV Parajuli III	(*)	*	*	*	*				
R Shakya III				*	*				
M Shrestha III			*	*	*				
AV Amatya II			*	*	*				
D SHrestha III	(*)	*	*						
JN Koirala	(*)	*	*						
HH Sigdal II			*						

GS Timila III			*	*					
KR Shrestha III			*	*	*				
Field Trials.									
R Shakya III						*	T		
HB Thapa III						*	*		
Plantation Silviculture									
SG Jha II								*	*
R Shakya III								*	*
NB Shrestha III								*	*
D Manandhar III								*	*
Forest Nursery									
AV Parajuli III						T	*	*	*
HB Thapa III							*	*	*
Fodder Trees									
SM Amatya III						T	T	T	*
Bamboo			*	*	*	*			
SM Tamraker III			*	*	*	*			
A Das III						*	t	*	*
KP Prajapati I			*	*	*(part-time)				
R Malla III			*	*	*	T	*		
G Juwa III			*	*	*	*	T*		
SD Manandhar III						*	*		
Soil Survey									
RM Singh II									*
G Juwa III								*	*
SD Manandhar III								*	*
Soil and Plant Analysis Laboratory									
R Malla III								*	*
Library, Documentation and Information.									
D Thapa III	*	*	*	*	*	*	*	*	
TOTAL STAFF	(7)	(7)	(17)	(16)	(15)	(14)	(15)	(18)	(18)

HMGN CONTRIBUTION (in project document)	6	6	+	12	>	>	>	19	19

KEY:

* - In post.

(*) - Possibly in post (listed by MR Lamichanney as "1981", but not mentioned in Mid-Term Review).

T - Away for training throughout year.

t - Away for training during part of year.

+ - no specific figure, MTR reccomended gradual increase in staff numbers in accordance with NFDP.

ANNEX J: UK TRAINING

Name	Gender	Course	Institution	Dates	Succesful completion?	HMGN Staff?	Current Position (1991)
Mr BP Lamichaney	M	Forestry Research (short course) MSc Forestry	CFI, Oxford CFI, Oxford	1983 1983-84	Yes Yes	HMGN	Senior Research Officer (GO I)
Mr MR Joshi	M	Forestry Research (short course) MSc Forestry	CFI Oxford CFI Oxford	1983 1983-86	Yes Yes	HMGN	Information Officer (GO II)
Mr Pryag Tamrakar	M	Forest Management (short course)	CFI, Oxford	1984	Yes	HMGN	Research Officer; Management Section (GO II
Mr D Thapa	M	Librarianship Graduate Summer School	Univeristy COllege of Wales, Aberystwyth	1985	Yes	HMGN	Librarian (GO III)
Mr A V Parahjuli	M	Forestry Research (short course) MSc	CFI, Oxford CFI, Oxford	1985 1986-89	Yes Yes	HMGN	Research Officer, Nurseries (GO II)

Mr M Malla	M	MSc Soil Science	Univeristy of Reading	1986-87	Yes	HMGN	Head of Soils Lab (GO III)
Miss Madhuri Thapa	F	Diploma in Forestry MSc Pest Management	Univeristy of Bangor University of Bangor	1986-87 1987-88	Yes	No	Head of Pathology Section (Go III)
Mr Laxman Joshi	M	Diploma in Forestry MSc Applied Entymology	University of Bangor Imperial College London	1986-87 1987-88	Yes	No	Pakhribas Agricultural Centre
Mr Prakash Mathema	M	Diploma in Forestry MSc Environmental Forestry	Univeristy of Bangor University of Bangor	1986-87 1987-88	Yes	NO	Research Officer; Management Section
Mr GB Juwa	M	MSc Resource Assessment for Development Planning	University of East Anglia	1987-88	Awarded Diploma	HMGN	Head of Soils Survey Section (GO III)
Mr P Tamrakar	M	Forestry Research (short course) MSc Forestry	OFI, Oxford University of Aberdeen	1987 1987-88	Yes	HMGN	Research Officer; Management Section (GO II)
Miss Usha Gewali	F	Diploma in Forestry MSc Forestry	University of Bangor	1987-88 1988-89	Yes	No	Resigned
Mr Shri Prasad Dhaubhadel	M	Diploma in Forestry MSc Environmental Forestry	Univeristy of Bangor University of Bangor	1987-88 1988-89	Yes	NO	Returned to former post at Tribhuvan University
Mr Lila R Upadhyay	M	Diploma in Forestry MSc Environmental Forestry	University of Bangor University of Bangor	1987-88 1988-89	Yes	No	Research Officer; Entomology (GO III)

Mr SM Amatya	M	Forestry Research (short course) MSc Forestry	OFI, Oxford OFI Oxford	1986 19886-89	Yes	HMGN	Head of Fodder Section (GO II)
Mr Ramesh Shakya	M	FOrestry Research (short course) MSc Forestry	OFI Oxford University of Aberdeen	1987 1990-91	Yes Ongoing	HMGN	Research Officer; Plantation Silviculture (GO III)
Mr A Das	M	Forestry Research (short course)	OFI, Oxford	1989	Yes	HMGN	Research Officer, Bamboo (GO III)
Mr HB Thapa	M	Forestry Research (short course)	OFI, Oxford	1989	Yes	HMGN	Research Officer, Forest Nurseries (GO III)
Mr BP Lamichaney	M	Forestry Research (short course)	OFI, Oxford	1989	Yes	HMGN	Senior Research Officer (GO I)
Mr RB Joshi	M	Forestry Research (short course)	OFI, Oxford	1990	Yes	HMGN	Research Officer (Nat For Silv) (GO II)
Mr Pathak	M	MSc Information Science	City University, London.	1988-89	Yes	NO	Resigned (now documentation officer with SDC).
Mr SG Jha	M	MSc Forestry	University of Edinburgh	1990-91	ongoing	HMGN	Research Officer; Plantation Silviculture (GO II)

ANNEX K: ANALYSIS OF PUBLISHED PAPERS

Analysis of Papers published by project

A) BANKO JANAKARI 8 Issues

Total number of Papers- 93.

	SRP/FRP	Non Project	Total	Authors
1 Author	36	30	66	66
2 Authors	2	18	20	40
3 Authors	1.33	5.66	7	21
	39.33	53.66		127

Authors

From SRP/FRP	Authors	Papers	Contributed Papers	Contribs per Author	Papers per Author
Nepali	9	(11)	13	1.444	1.222
Expatriate	8	(28.3)	31	3.875	3.542
Total	17	(39.3)	44	2.588	2.313

Outside Project

Nepali	37	(26.5)	48	1.297	0.716
Expatriate	26	(27.16)	35	1.346	1.045
Total	63	(53.66)	83	1.317	0.852
	80	(93)	127	1.587	1.162

B) SRP/FRP Publication Series.

Total number of papers 218.

Pub Series	NEFTIB	Occ Papers	Soils	Other FRIC/FRSO	Manuals	Other
Project Staff:						
Expats	23	14	45	26	2	35
Nepali	10	3		1		9
Non-Project Staff:						
Expats	9	2		2		1
Nepali	2			1		2
Total:	44	19	45	30	2	47
Expats	32	16	45	28	2	36
Nepali	12	3		2		11

ANNEX L: MAJOR FINDINGS OF THE EVALUATION OF THE SILVICULTURAL AND FORESTRY RESEARCH PROJECT : SURVEY OF CLIENT INSTITUTIONS

1. INTRODUCTION

The main purpose of this study is "to assess the impact of the Nepal-UK Silvicultural and Forestry Research Project and its relevance to potential users."

A stratified sample of high level manpower professionals working in the forestry sector as regional directors, deputy directors, district forest officers, assistant district forest officers, project chiefs, advisors and the university teachers, and low level technicians as rangers and assistant rangers from both Terai and hill districts of all five development regions were interviewed. The sample size was 84.

2. Awareness and Association with SRP/FRP/FRD Information

A large majority of high level manpower (95%) are aware of the Nepal-UK Forestry Research Project (FRP) although fewer of lower level (54%). The most likely reason for this different awareness being highest among the high level manpower might be that they occupy higher level of the administrative hierarchy having more contact with research personnel in the organisations and also they were more accessible to different media as compared to the lower level manpower.

As to the FRP information, more than three-fourth (80%) of the high level manpower expressed their association through the Manual of Afforestation as against 50 per cent among the low level manpower. A similar trend was observed both in Forest Seed and Nursery Practice (70%), and in Banko Janakari (83%) indicating that the higher level authorities were more exposed and attached with the FRP information as compared to the lower level working as technicians in the forestry sector (Table I).

3. Usefulness and Relevance of SRP/FRP/FRD information

Usefulness of FRP information for high level manpower was found to be most in Banko Janakari (83%), followed by the Manual of Afforestation (78%) and the Forest Seed and Nursery Practice (50%). The response was comparatively low among the technicians in all those information. It is quite likely that the low level technicians get minimum exposure by virtue of their job more towards the field and low level of their understanding over the English language publications. Unavailability of FRP information to the technicians was another hindrance due to the limited copies available in the district as pronounced by the respondents.

Relevance of FRP information was identified more in the Manual of Afforestation by the high level professional (77%). The extent of relevancy of information was indicated fairly high both in Forest Seed and Nursery Practice (48%) and in Banko Janakari (40%). The FRP information disseminated through the manual was expressed relevancy only by 33 per cent among low level manpower and it was still low in Banko Janakari (25%). Thus, the usefulness and relevance of FRP information was very high among the professional level than the field level technicians (Table I).

4. Association of Respondents in SRP/FRP/FRD Species Information

The degree of association of respondents in SRP/FRP/FRD information for different species varied from one species to other. Majority of respondents (64%) expressed their association in bamboo species followed by exotic Acacia (42%) and native fodder (31%). Respondents association was comparatively low in Sal coppice and Castanopsis-Schima. The proportion of respondents association is comparatively more among the high level professional in bamboo (67%) and in Acacia (41%).

The data evinced a similar association between high and low level manpower in case of Pinus, Eucalyptus, and Alnus indicating a negligible difference of the impact between these two categories (Table II).

5. Usefulness and Relevance of SRP/FRP/FRD information in different species

The usefulness of SRP/FRP/FRD information in different species was based on the practical translation of respondents knowledge into plantation. It was observed that a great majority of the respondents used FRP information in plantation of native fodder (62%), Pinus (61%) and bamboo (55%), while it was to the extent of 26 per cent both in Eucalyptus and exotic Acacia. In Pinus species 35 per cent did both plantation and management whereas other 26 per

cent engaged only for plantation. Like wise in Eucalyptus species only 8 per cent did both plantation and management whereas only 18 per cent performed plantation. For exotic Acacia only 4 per cent did both plantation and management whereas 22 per cent were engaged in plantation. Likewise for native fodder only 8 per cent did both plantation and management where as 54 per cent did plantation. For bamboo only 12 per cent did both plantation and management where as 43 per cent performed plantation. In case of Alnus 33 per cent respondent found to be involved in management only. For Castonopis - Schima, 25 per cent respondent found to be involved in management, whereas for Sal coppice only 18 per cent respondent found to be involved in management (Table II).

The use of SRP/FRP/FRD information in species plantation of high level manpower was almost on par with that of low level except in Eucalyptus, which was pronounced more among high level than that of low level manpower.

6. Use of Research Findings Pertaining to Different Species

The use of SRP/FRP/FRD findings were found more among the high level manpower and it was specially observed in Pinus, Eucalyptus, exotic Acacia, native fodder and bamboos. The use of findings was expressed more in bamboo (12%) species followed by native fodder, exotic Acacia, Pinus and Eucalyptus (Table II). Respondents did not indicate the use of SRP/FRP/FRD findings in Sal coppice, Castonopsis-Schima and Alnus. This is most probably because of their existence in natural forest with plenty of regeneration rather than plantation.

7. Dissemination of SRP/FRP/FRD information

It is quite encouraging to note that 81 per cent of the respondents have either seen or familiar with the research journal "Banko Janakari". A near equal percentage of respondents (79%) expressed their familiarity with the "Manual of Afforestation" and 55 per cent respondents expressed their knowledge of existence of "Forest Seed and Nursery Practice". The present findings indicate that the SRP/FRP/FRD publications are in wide distribution to different places. However, dissemination of SRP/FRP/FRD research findings in terms of practical utility in the field situation was found to have low, indicating that the project need to focus on multi-media approach to make the innovative information more useful to the users.

8. Use of SRP/FRP/FRD Soil and Plant Analysis, and Information on Medicinal Plants

Very few respondents (13%) considered information on soil and plant analysis, and work on medicinal plant as the SRP/FRP/FRD activity. A sizeable proportion (15%) of professionals, mainly from Kathmandu Valley, pronounced their involvement in collaborative research with the SRP/FRP/FRD.

9. Delivering Forestry Research Information to Forestry User Group (FUG)

Forestry user group is the main executive unit of forest information. Data gathered from the user groups indicated that these units were almost untouched in information dissemination process of SRP/FRP/FRD. It was observed from the study that conservation and utilisation of forest were their major concerns. Hence it will be more practical and effective if the planning and management of forest information be taken down to user groups through localite Communication Channels like, village newspaper, wall posters, relatives, neighbour, village council and cosmopolite Communication Channels such as, radio, documentary show, city newspaper, television, salesman, and forest extension agents.

10. SUGGESTIONS TO STRENGTHEN INFORMATION DISSEMINATION IN FORESTRY SECTOR

10.1 FRP information is limited to print media creating its limitation to field level technicians. Hence, the project should focus on its activities to multiple media. Information should be made available to all the levels in a simple language to make better understanding of the message to be disseminated. And there should be a provision of audience research to know the degree of readability and communicability to up-date the information to be disseminated.

10.2 Investigations should be focused dealing with perceived attributes or characteristics of research activities, like "Relative Advantage" indicating the idea or practice is superior to one it is intended to replace; "Compatability" in terms of client's own value and mode of operation; "Simplicity" in terms of easy substitution or adoption of idea; and "Observability" in terms of measurable outputs. In addition, there is a need for forestry research on (1) differential perception to know the use of research among different groups (2) measurement of perceived attributes, and (3) study of innovation bundles to prioritize research work to determine target audience or users.

10.3 There should be a regular workshop/seminar/ conference in each region to help policy makers, researchers, district forest officers, field level

technicians and project personnel to interact on research information suitable to local problems. It may help the project to prioritize and to decide on production of research information in the form of diary, booklet, calendar, leaflet, circular, pamphlet and to exercise on other possible media for information dissemination process.

10.4 District forest officers, rangers, community forestry assistants, nursery headmen and forest watchers are the forestry extension agents in Nepal. Their role should be attached with the fundamental principles of forestry extension to strengthen linkage between research and the social system to tackle the local problems. For this, the country needs a workable and a sustainable forestry extension model to fit into the system.

10.5 There should be a district level demonstration and trial for research, information centre come library to encourage district staff to consult research information. A flip-chart should also be placed in each district to display district forest information for immediate reference both to the researchers and other technicians. This will help the organisation to create an environment of

exchanging ideas within and among the monomorphic and polymorphic forestry staff based on the level of their readership and reading habits.

11. RECOMMENDATIONS

11.1 Clear cut policy guidelines should be developed to disseminate and to implement FRP/FRD findings. The guidelines need to focus the mechanism of information dissemination with interdepartmental co-ordination. Regional and district programmes need to be reflected with the forestry research information and it should be within the annual programme so that DFO's, Rangers, Forest Guards will develop a feeling of commitment to the entire programmes.

11.2 The project should concentrate and refocus its study to the present publications to identify the draw-backs and to find measures to improve wide distribution. The Manual of Afforestation should also be published in Nepali version and be made available at cheaper price. Abstract of research findings should be published in readable form for wide distribution and practicality of research should be assessed every year.

11.3 The forest extension activities implemented through various projects in Nepal should be co-ordinated with the FRP/FRD activities. The council of Forestry sector Research and Development under the Ministry of Forest and Soil Conservation should lead for the co-ordination mechanism to strengthen research-extension linkage within and outside the ministry like, Institutes of Forestry and the Ministry of Agriculture. Research plots established in different districts should be used extensively for training and demonstration purposes. It will help to exchange and disseminate research information through homophilic and heterophilic interaction patterns among the researchers, field workers and trainees.

ANNEX M

KEY EVENTS DURING THE PROJECTS' HISTORY

May 1975	Visit by forestry consultant to prepare project outline.
1976	Formulation of Nepal National Forestry Plan.
June 1977	Visit by ODA forestry adviser to assist in preparation of project proposal.
1978	HMGN adopts NNFP.
Sept 1978	Arrival of first TCO.
July 1979	SRP officially begins.
May 1981	Submission of draft National Forestry Research Plan by SRP to Ministry.

Oct 1981	ODA agreement to provision of additional local costs.
Dec 1981	Official establishment of FRIC.
Nov 1982	Mid-term review of SRP by ODA and HMGN.
July 1984	Official end of SRP.
Oct 1984	Approval of FRP within ODA.
Dec 1985	Signature of FRP with HMGN.
Jan 1986	FRP officially begins.
Jan 1987	ODA approval of additional funds for building programme.
June 1988	Completion of new FRIC buildings.
Nov 1988	Acceptance by HMGN of Master Plan for the Forestry Sector.
Dec 1988	Mid-term Review of FRP.
Jan 1989	ODA agreement in principle to continuation of FRP after July 1990.
July 1990	Official termination of FRP I.
Nov 1990	Completion of FRP I, beginning of FRP II.