



AsCAP
Asia Community Access Partnership



Pilot Study to Investigate a Participatory Approach for Roadside Protection of Rural Roads in Nepal

Inception Report Phase 2



HELVETAS SWISS INTERCOOPERATION NEPAL
RECAP12090
NEP2071D
SEPTEMBER, 2017

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Cover Photo: Tomatoes being carried to the road head market, at the Chhintang Illaka Police Station, Hile – Chhintang – Jyamire Bhanjyang District Road, Dhankuta District.
Photo by Hari Gurung.

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Abstract

This report documents the inception phase of a three-year pilot study aimed at developing an innovative and participatory approach for roadside protection on rural roads in Nepal. It builds on an earlier short initiation phase conducted at the beginning of 2016.

The introduction of Right of Way (RoW) along rural roads of the District Road Core Network (DRCN) combined with poverty alleviation is a new proposal. A clear legal provision for this purpose has not yet been enacted in Nepal. However, various policy and legal provisions have been endorsed with regard to plantations and maintaining greenery in the RoW through local authorities. Based on this, appropriate legal instruments for the application of the RoW are to be developed.

Following investigations on legal, engineering and socio-economic conditions, suitable plant species have been selected. Cost benefit analysis of the selected plants show that planting the RoW land for productive use can be profitable. By involving nearby local landless villagers, organised in local user groups, there is an opportunity to improve their livelihoods.

A combined work plan including activities and milestone deliverable documents has been compiled for monitoring the implementation of this pilot study in five phases.

Key words

Rural roadside plantation, road slope protection, land use policy, Right of Way utilisation, productive land use, participatory approach, livelihood, poverty alleviation, local self-governance, socio- economic analysis.

RESEARCH FOR COMMUNITY ACCESS PARTNERSHIP (ReCAP)

Safe and Sustainable Transport for Rural Communities

ReCAP is a research programme, funded by UK Aid, with the aim of promoting safe and sustainable transport for rural communities in Africa and Asia. ReCAP comprises the Africa Community Access Partnership and the Asia Community Access Partnership. These partnerships support knowledge sharing between participating countries in order to enhance the uptake of low cost, proven solutions for rural access that maximise the use of local resources. The ReCAP programme is managed by Cardno Emerging Markets (UK) Ltd.

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Acknowledgement

This report is the outcome of a huge amount of work, dedication and research. However, implementation would not have been possible without the support of many organisations and individuals. Therefore, we would like to express our sincere gratitude to everybody.

We would like to thank Mr Jiwan Shrestha (New DG DoLIDAR), as well as the former DG of DoLIDAR, Mr Ram Krishna Sapkota for their overall support. Special thanks to Mr Mohan Chapagain, SDE, DoLIDAR appointed Focal Person for this Study, as well as Mr Bed Raj Regmi, Engineer, DoLIDAR, accompanying the Pilot Study team to both field and mission visits. We would also like to thank Mr Jiwan Guragain (SDE, Chief of Rural and Agricultural Road Section, DoLIDAR) for the provision of the Nepal map with Districts (see Annex).

And, last but not least, we would like to express our sincere thanks and gratitude to our colleagues and families for their kind cooperation and encouragement during the implementation of this pilot study.

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Abbreviations, Acronyms, Units and Currencies

AfCAP	Africa Community Access Partnership
AsCAP	Asia Community Access Partnership
B/C	Benefit Cost Ratio
CFD	Community Forest Division
DADO	District Agricultural Development Office
DCC	District Coordination Committee
DDC	District Development Committee
DDG	Deputy Director General
DFO	District Forest Office
DG	Director General
DoA	Department of Agriculture
DoF	Department of Forest
DoLIDAR	Department of Local Infrastructure Development and Agricultural Roads
DoR	Department of Roads
DRCC	District Road Coordination Committee
DRCN	District Road Core Network
DRILP	District Decentralised Rural Infrastructure and Livelihood Project
DSC	Department of Soil Conservation
DSM	District Stakeholders Meeting
DTO	District Technical Office
ESMF	Environmental and Social Management Framework
FECOFUN	Federation of Community Forest Users
GBP	Great Britain Pound (1 UK Pound 135.- NRs)
GESU	Geo Environmental and Social Unit
GoN	Government of Nepal
GP	Gaon Palika (Rural Municipality)
HQ	Headquarters
ICIMOD	International Centre for Integrated Mountain Development
IRR	Internal Rate of Return
LDO	Local Development Office
MoFALD	Ministry of Federal Affairs and Local Development
MoFSC	Ministry of Forest and Soil Conservation
MoLD	Ministry of Local Development
MoPPW	Ministry of Physical Planning and Works
MoU	Memorandum of Understanding
NGO	Non-Governmental Organisation
NP	Nagar Palika (Urban Municipality)
NPV	Net Present Value
NRs	Nepalese Rupees
NRRS	Nepal Rural Road Standards
PMU	Programme Management Unit
PST	Pilot Study Team
ReCAP	Research for Community Access Partnership
RoW	Right of Way
RTM	Regional Technical Manager
SNRTP	Strengthening for National Rural Transport Programme
RRRSDP	Rural Reconstruction and Rehabilitation Sector Development Programme
RTM	Regional Technical Manager
SDC	Swiss Development Cooperation
SDE	Senior Divisional Engineer
UK	United Kingdom
US\$	United States Dollar (US\$ 1.00 ≈ NRs 101.-)
VDC	Village Development Committee
WOCAT	World Overview of Conservation Approaches and Technologies

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Executive Summary

HELVETAS Swiss Intercooperation has been assigned by ReCAP to conduct a pilot study on "Developing a participatory approach for roadside protection of rural roads in Nepal". The study aims at developing an innovative approach for the sustainable management of the Right of Way (RoW) area recently expanded to 20 m for the District Roads Core Network (DRCN). The pilot study shall identify and promote the productive utilization of land falling under the RoW by establishing suitable plantations in collaboration with local community groups. The study shall furthermore identify an appropriate model/approach for the utilisation of Right of Way (RoW), so that also the poorer members of communities, in particular landless, can benefit from the cultivation and harvesting of economically beneficial plants. The local governments should benefit through reduced maintenance costs and slope protection of the road surface.

A research team was mobilized by Helvetas from July 2017 onwards to take up the second phase of this pilot study. After a start-up meeting of the second phase on 7th of July 2017, the research team consulted DoLIDAR and other agencies to review the documents of the first phase. Despite heavy monsoon rains, two preliminary field visits were conducted to Kailali in the Far-west and Dhankuta in the East in order to assess the district selection, the district road selection and particularly the pilot sections. Preliminary photo and video documents were prepared for further photo monitoring.

The various existing work plans, the activity plan and milestones list were compiled into one comprehensive "Activities and Milestones Plan" starting from July 2017 and adjusted for a period of three years. The selection of Kailali district, representing the Terai region, and Dhankuta district representing Nepal's Hill region were reconfirmed, as were the respective pre-selected district roads. Although several alternative proposals for pilot sections were assessed during Phase 1, the final suggested pilot sections were reconfirmed with minor adjustments.

For the pilot roadside section in the Terai district, the roadside plantation of "Banana" (*Kera, Musa paradisiaca*) species were found most suitable as already proposed in Phase I, but with the suggestion to intercrop the banana with Kagati (lemon tree, *Citrus × limon 'meyeri'*) in order to reduce the endemic problems of unnatural monocultures.

For the hill road pilot section in Dhankuta, the proposed primary plant species "Broom Grass" (*Amlisso, Thysanolaena maxima*) species (ref. DoR/HMG-N, ROADSIDE Bio-engineering, Reference Manual, p. 14) was found most suitable as already proposed in Phase I, with the suggestion to intercrop with a smaller bamboo species (*Malbans, Bambusoideae/ Bambusa nutans cupulata*) (ref. DoR/HMG-N, ROADSIDE Bio-engineering, Reference Manual, p. 185) frequently found in the Himalayan Mid-hills. The proposition of these species is also based on the choice by the community members and the financial analysis.

In order to accommodate the piloting of roadside protection in a more diversified land ownership context, the promotion of RoW is suggested in public forest land, but expanded to private land, and to rural as well as a peri-urban area; therefore, the extension of the pilot section by around 500 m along the Sukkhad - Bhajani, road in the Kailali district is recommended.

The "Activities and Milestones Plan" was further outlined and specified within the five following phases:

- Phase I - Start-up (July' 17)
- Phase II - Preparatory Activities (Aug' 17 – Nov' 17)
- Phase III - Implementation - Plantation and Training (Dec' 17 – Oct' 18)

- Phase IV - Field Implementation- Plantation Growth, Maintenance and Harvesting (Oct' 18 - Dec' 19)
- Phase V - Pilot Study Completion and Documentation (Jan' 20 – June' 20)

This report presents the works done during the inception period with the proposed methodology in more detail. The observations and findings followed by recommendations have been presented and discussed during the Inception workshop held on 28th of August 2017.

1. Introduction

Two representative pilot sites have been selected and confirmed for this Pilot Study in Nepal. One is located in the far-western part of the country, in Kailali District, representing the southern plain Terai area. The second site is located in the eastern Dhankuta District, representing the Mid-hill belt of the lower Himalaya range (see Annex D) in Nepal.

The central-level counterpart agencies involved are the Department of Local Infrastructure Development and Agriculture Roads (DoLIDAR) under Ministry of Federal Affairs and Local Development (MoFALD) of Nepal. The consecutive local level agencies are the District Coordination Committees (DCC, former DDC) of Kailali District and of Dhankuta District with their affiliated District Technical Offices (DTO).

2. Background

Helvetas Swiss Intercooperation Nepal (Helvetas) was selected as a service provider through competitive bidding by the Research for Community Access Partnership (ReCAP) managed by Cardno Emerging Markets (UK) Ltd. on behalf of the United Kingdom's Department for International Development (DFID / UK-AID) who are funding the programme. Whilst the Initiation Phase 1 of this Pilot Study was conducted from January to April 2016, the current Implementation Phase 2 started from 1st of July 2017 with due date on 31st July 2020. The gap of roughly 15 months between the end of Phase 1 and Phase 2 occurred due to several administrative complications. The revised start of the Implementation Phase II towards July 2017 shifts the initial plantation implementation by one year to the monsoon period of 2018, which allows enough time for preparatory activities (see Annex A Work Plan).

As per the new Constitution of 2015 (2072BS), the Government of Nepal is currently in a substantial process of transformation towards a federal state. The new administrative structure will comprise of 7 new Provinces (Federal States) consisting of roughly 750 Palikas. At local level, the new Rural (Gaon Palikas) or Urban Municipalities (Nagar Palikas) will replace the previous Village or Town Development Committees (VDC/TDC). Elections at local Palika level have been carried out to date in all but one Province; Provincial- and National- level elections are announced and are expected to be held in late 2017. The whole government administrative setup at central and local level is currently being reformed as per the new Constitution. Thus there is considerable uncertainty amongst many civil servants as to where they may be posted.

3. Research Objective

The overall Study objective is:

- To analyse, test and document the utilisation of the recently expanded Right of Way (RoW) of rural roads within the District Road Core Network (DRCN).
- The expanded RoW to 20m width or 10m on either side of the DRCN centre line, can be utilised for productive plantation. This can provide livelihood opportunities for people living close to the road, building on the access to markets provided by the road and thus helping to reduce poverty. At the same time, the respective selected plantations shall provide improved road slope protection, particularly in steeper road slopes. This second study phase

seeks to implement and “fine-tune” the recommendations of the first phase, finally preparing a basis for nation-wide replication.

The objectives of the current Implementation phase are:

- To examine the current institutional structures and select the most appropriate structure as recommended (see Final Report Phase I).
- To test the proposed methodology and to complete the draft outline of the future RoW Manual through practical implementation.
- To test the proposed plant species for road side plantation, monitor the potential harvest, and compare commercial sales against those assumed under Phase 1.
- To link road side plantation with road maintenance and particularly road slope protection.
- To devise a means by which the revenue earned from the harvest of roadside plantations can be shared between beneficiaries and the local government in a fair and transparent manner.

The immediate objectives of the current Inception Start-up phase were:

- To establish the new Helvetas Pilot Study Team, introduce the team to the partner organisations, and familiarise them with the Phase I documents.
- To review the choice of representative Pilot Districts (Terai, Hill Region) and reconfirm them (Kailali, Dhankuta) based on the initial selection criteria, study reference literature, and direct consultation with the government representatives involved.
- To prepare the initial field visits of the joint DoLIDAR & Helvetas Study team to the Kailali and Dhankuta Districts Governments, their DCCs and DTOs, and to the proposed Sukhad-Bhajani Pilot District Road and to the Hile – Uttarpani - Chhintang-Pilot District Road.
- To visit the proposed Pilot Study Road Sections, study their feasibility based on their selection criteria and visual impression, consult the current local representatives, reconfirm their suitability and formulate proposed adjustments.
- To summarise and compile the findings in this inception report draft, prepare the inception phase presentation, revise and finalise the report based on the feedbacks and hand-over the final copy to the client for payment in line with the budgetary milestones.

4. Activities during the Inception Phase

On 19 June 2017, the NEP2071D Pilot Study Sub-Contractor Agreement was signed between Cardno Emerging Markets (UK) Ltd. and Helvetas Swiss Intercooperation - Nepal. The latter mobilised the pre-selected Pilot Study Team (PST) consisting of the Team Leader (TL), a Civil Engineer (CE) and two Social Mobilisers (SM). The official start of the Implementation Phase 2 was set on 1 July 2017 with a duration of 36 months ending on 31 July 2020.

On 7 July 2017, the initial Start-up Meeting was organised, attended by 26 representatives of DoLIDAR, essential representatives of GoN Departments, ReCAP/AsCAP and Helvetas Nepal (see Annexes B and C). On the same day, the Helvetas Pilot Study Support Team (PST) met for the first time and was introduced to the Helvetas-Nepal Management.

From 10 July 2017 onwards, the PST started with the collection and review of the NEP2071A key documents from Phase 1. These included:

- Inception Report - Phase 1, of March 2016,
- Final Pilot Study Report - Phase 1 incl. Annexes A – N excl. C1,D1, of May 2016,

- Sub-contractor Agreement for Phase 2, signed on 19. June 2017,
- Complementary NEP2071D tender documents, and
- Selected professional reference literature

From 17 July to 20 July 2017, the PST in company with the DoLIDAR's focal person's Representative, Engineer Mr Bed Raj Regmi, carried out their first field contact visit to Kailali District in Far-West Nepal and its District headquarter in Dhangadhi and to the proposed Pilot Sections along the Sukhad Bazar – Bhajani District Road (see Annex G).

From 24 to 27 July 2017, the PST organised again in company with DoLIDAR's focal person's representative, Engineer Mr Bed Raj Regmi the second Field visit to Dhankuta District in East Nepal and its District headquarter in Dhankuta and to the Pilot Sections along the Hile 'Thumba-Chowk' – Chhintang – Jyamire Bhanjyang District Road (see Annex H).

From 1st August 2017, the field visit documents, photos and consultation notes were reviewed, compared with the information of Phase 1, and compiled into the current Inception Report. Complementary to the field notes, a collection of photo and video documents was taken and compiled. This is saved on an external hard drive for future report illustration and internal monitoring purposes.

In the meantime, the various existing Work plans and Milestone Report Deliverables were compiled, updated, and the work plan adjusted and updated in several sequences (see Annex A). This was complemented by an assessment of the necessary staff input (Person Days).

The main results were presented in the Inception Workshop held on 28th of August 2017 at the DoLIDAR meeting hall. Open issues were discussed (See Annex M3).

In September/October 2017, the PST started with the preparations of the 2 field survey and information collection visits to the Kailali District in the Far-West and to the Dhankuta District in the Eastern Hills (see Annex D).

5. Findings and Conclusions

5.1 District Selection

Kailali representing the Terai Plain

Kailali District is located in Nepal's Far-Western Development Region, ca. 660km West of Kathmandu, and borders India to the South. Kailali represents one of the typical southern plain areas of Nepal, generally below 300 masl and composed of fertile alluvial sandy soils. Kailali is drained by a considerable number of North - South - oriented rivers originating from the northern Mid-hills. They challenge the major East - West transport links of Nepal's urban trading centres. Kailali was originally covered with tropical and sub-tropical forests, and has been gradually developed into vast areas of highly productive irrigated paddy (*khet*) and wheat land. The major ethnic groups are the indigenous Tharus, Madheshis migrating from the South, and Pahadis (hill peoples) migrating from the North to the fertile plains.

Kailali represents one of the 20 Terai districts covering 23% of the total land area. In the new government organisation as per the new Constitution of 2052 BS (2015), Kailali is located in the Far-western Province No.7.

Dhankuta representing the Mid-hills

Dhankuta District is located in Nepal's Eastern Development Region, ca. 440km East of Kathmandu, positioned in the East-West oriented Mid-Mountain Belt (Middle Mountains or Mahabharat Lekh), generally located at an elevation of around 900 to 3'000 masl. It is composed of deeply fractured

ridges and rather steep river valleys with rocky soils, with a pleasant climate, vegetated by temperate forests. The main ethnic groups are of Tibeto-Burmese origin (i.e., Gurung, Magar, Tamang, Rai and Limbu etc.) mixed with Indo-Arian groups, like Brahmin and Chhetri etc. originating from the West. There are also some Newar settlements, originating from the Kathmandu valley, with craftsmen and trading besides agricultural competence, living preferably in urban areas. Dhankuta represents one of the 39 Hill Districts covering about 42 % of the total area of Nepal. In the new government organisation as per the Constitution of 2072BS (2015), Dhankuta is located in Eastern Province No.1 with high chance to become provincial capital.

Overall, it can be assumed, that the Governmental reorganisation as per the new Constitution of Nepal of 2072BS will not extraordinarily interfere with the activities of the selected Pilot Study areas. Kailali, representing the Terai belt, and Dhankuta, representing the Mid-Hills, can be reconfirmed for the Pilot Study.

5.2 District Level Authorities Consultation

The preliminary consultative briefing and official debriefing meetings with the district administration authorities in Dhangadhi, capital of Kailali and in Dhankuta, capital of Dhankuta, could be organised as foreseen (see Annexes E and F). They included meetings with the Chairperson of the District Coordination Committees (DCCs), the respective Local Development Officers (LDOs), the Chief Engineers of the District Technical Offices (DTOs) currently still representing DoLIDAR and other Government representatives from the DFO, DSC, (see Annexes E and F).

Overall, it can be concluded from the field visits, that the district-level authorities are interested in this pilot study, and also expressed their willingness to co-operate and support.

An important limitation was observed due to the beginning of the substantial reorganisation of the District level authorities. Some offices will be transferred and centralized to the new Provincial headquarters yet to be defined, and some will be decentralised to the Municipalities (Palikas). Whilst in Kailali, the GoN structure seemed currently still unchanged, several government offices in Dhankuta were observed as already being changed, with furniture to be shifted.

The same reorganisation is supposed to happen soon at central level. Some ministries and departments will be reorganised and decentralised to provincial level. Many government staff may be transferred during the pilot study period, which may complicate collaboration with the GoN representatives, and the implementation of agreements and understandings. In order to remain in contact with the GoN responsible persons at central and local government offices, additional Pilot Study Team inputs may be required, but quantification is currently impossible.

5.3 District Road Selection

During the field visits, both pre-selected rural District roads could be visited as planned, despite the intensive monsoon period with frequent rainfall creating landslides blocking highways and airports.

Sukhad Bazar to Bhajani District Road in Kailali

The district road was found to be selected as per the criteria set in the NEP2071A Final Report (see chapter 6.2.1) and can be reconfirmed. Although about 24km of the road was significantly upgraded during past years under RAIDP, the current condition during monsoon was partly damaged by rills and deep potholes. According to the DTO engineer, regular maintenance support from the SNRTP at District level was interrupted during the last three years. Access to the pilot site during the monsoonal planting period might be difficult, but not completely blocked, as the site can be reached from Sukhad Bazar as well as from the Bhajani side via Tikapur.

The new municipality level should be requested to budget for a nominal regular maintenance support (by backfilling potholes with gravel etc.) so that access will be improved in the coming weeks.

The most frequent and regular traffic was observed to be bicycles - often used by women and students - and motorcycles. In addition, tractor-trailers, small trucks and passenger jeeps for public transport were observed plying the road, indicating an increasing traffic volume.

Hile to Chhintang-Jyamire Bhanjyang District Road in Dhankuta

The district road was found to be selected as per the criteria set in the NEP2071A Final Report, (see chapter 6.2.2) and can be reconfirmed.

Although about 24km of road was significantly upgraded and expanded during the last years under RRRSDP, the current condition of several road sections during the monsoon was found to be critical. The road was particularly damaged in places, mainly by deep rills and potholes due to “road-widening” activities along the first few kilometres. Insufficient regular maintenance (drainage repairs) was evident. The road alignment primarily follows the major ridges from 1900 masl downhill towards the temporary road head of Jyamire Bhanjyang (km24+000, 1150 masl).

The most frequent and regular traffic was observed to be motorcycles, often carrying substantial material loads. Middle size trucks were observed buying the available crates of harvested tomatoes from the farmers. The production, harvesting and transporting of small tasty tomatoes was at its peak. It provides an important major source of cash income for small farmers along the road.

5.4 Selection of Pilot Sections

Sukhad Bazar –Khailadh - Bhajani District Road Pilot Section in Kailali (see Annexes K, G, I)

In Kailali, the proposed pilot section starts from km 22+215 (Kundi Chowk) up to km 23+340 from Sukhad Bazar (end not specified), and is about 1.125km long (see Final Report Phase 1 chapter 6.2.1). It was not possible to pin point exactly the recommended pilot areas from Phase I, but a best guess was made. Overall, the proposed pilot section remained in a fairly good condition since the initial field visit made in January 2016. The road alignment is straight and gently sloping. It leads through community forest land, i.e., the community forestry user group (CFUG) is responsible for maintaining the land on either side of the road. There were no significant problems regarding Right of Way observed or mentioned, since the road as well as the community forestry are public service utilities. The PST assumes that the “Kundi Chowk” may be the Road Starting Point leaving the End of the pilot section at no remarkable chainage point (see Annex K).

By expanding the Pilot Section about 150m towards Sukhad, the option of including private landowners bordering at one road side could be included, in order to study the issue of Right of Way and willingness of private land owners to provide land for productive road-side plantation.

By expanding the pilot section and the end of about 400m towards Bhajani as far as to the entry gate of the Mohanyal School. The issue of Right of Way as well as the willingness of land utilisation linked with maintenance could be studied in a peri-urban context, which will be most relevant in case of extension of the study.

Therefore, it is proposed to extend a stretch of 550m in Sukhad Bhajani Road, which can be accommodated within the available budgetary provision.

Hile- Chhintang- Ilaka Police Station – Shambu Gaon School Road Pilot Section in Dhankuta (see Annexes L, H, J)

In Dhankuta, the finally demarcated Pilot Section starts from km 20+250 from the Chhintang Ilaka Police Station with a length of 1.030 km to Shambu Gaon School (see Final Report Phase 1 chapter 6.2.2 and Annex H). The relatively horizontal road alignment follows the hill slope, creating many

horizontal curves. The vertical road alignment is rather horizontal with a slight inclining road gradient. In order to improve traffic safety by allowing the easy passage of trucks, additional by-passes are proposed. The by-passes can be selected in locations, where the roadside is gentle. No longitudinal extension of the pilot study section is proposed.

During the meetings along the road, local persons asked about the inclusion of further pre-selected pilot sections, since they were not informed about the final selection of the above mentioned single pilot section. Several discussions were held with local landowners requesting for an explanation on the latest expansion of the RoW to 20m after previous expansions to 6m width, later 10m and now to 20m.

5.5 Haphazard Road Widening Programmes along the Pilot Sections

A major conflict of interest of the Pilot Study road slope plantation activities could emerge from increasingly observed haphazard road widening activities. They appear to be increasing, and entail hydro-mechanical excavation of the mountain-side road slope, material disposal at the valley-side road slope creating slope instability followed by earth slips and landslides (*pahiros*). Very often, local people are insufficiently informed and unaware of the destructive consequences of such programmes. They are often carried out without any engineering design, risk assessments and standard estimates of quantities and costs, and are often implemented by external contractors utilising inappropriate heavy hydraulic equipment. This is particularly common before the end of the fiscal year. A typical example has been observed along the Hile –Chhintang Road, creating immense damage to the properly built and drained road section.

The concerned road agencies need to be requested to end any such unorganized and often unsystematic road widening works, in particular along the pilot section, in order to avoid the destruction of fresh roadside plantations. On-site road signal plates informing about the Pilot Study could help to remind and warn all concerned agencies .

5.6 Road Engineering Structures

A fair number of complementary engineering structures were included in the Phase 1 Report in order to raise again both pilot sections to the optimum official Nepal Rural Road standard, which is proposed to be financed and implemented through local government. Fortunately, the overall condition and specifically the drainage system of both pilot sections is currently in acceptable condition. In order to assess the current status of the road structures, a road condition observation survey for both pilot sections are proposed to be carried out in November.

A major difficulty in the next months will be the new classification of the two District Roads as per the new administrative set-up. District roads in general will be either classified as Provincial state highways to be managed by the provincial government, or as Rural – or Agricultural Roads to be managed by the Palikas.

5.7 User Group Consultation

Since the last Study Team visit during Phase 1 took place in February 2016, only very few persons could be met in the field, which could remember the first consultation conducted then. The current Pilot Study Team, visiting both pilot road sections in July 2017, more than 16 months after the first consultation, had extraordinary difficulties to meet persons and leaders remembering contacts with the previous Study Team. This is an indication of the relatively high rate of migration in both areas, and frequent changes of local leaders. Such changes may also be anticipated amongst national and local-level government representatives, many of whom are likely to be transferred.

In order to overcome this issue of high level of migration and to maintain regular contact with local representatives, local Field Assistants (see Annex A Work plan) will be organised to conduct regular field visits. Regular reporting by mobile phone will be introduced. In view of these migration and transformation movement, also a higher amount of PST inputs is anticipated, but cannot be quantified at present.

5.8 Selection of Plant Species

During all field visits in Kailali and Dhankuta, the selection of the optimal plant species for the road side plantations elicited much attention and discussion. Many interesting arguments were put forward with regard to the optimal selection of further plants.

However, the arguments put forward in the Final Report of Phase 1 (see Chapters 6.3, 7.3 and Annex I) are substantial, and take into account many relevant factors to focus on a few most suitable plant species. As a consequence, the PST proposes to increase the plant selection from one species (monoculture) with a complementary plant species. The justification of this intercropping is to reduce the risks of total failure and to act as an insurance against such failure of crop during abnormal circumstances. According to the meetings held with the local user groups, their preference for intercropping with fruit trees was found highly emphasised (See Annex E and F). Brief socio-economic considerations underline their economic value (see Annex N1 & N2)

Thus the most suitable plant species are found to be the following

- **In Kailali**, focus on local **Banana** (Kera, *Musa paradisiaca*) species and for complementary intercropping and soil cover protection, **Lemon Tree** (Kagati, *Citrus aurantifolia*) is suggested. Lemon Tree was also selected by the local community, as it causes less trouble amongst the wild forest animals i.e. monkeys.
- **In Dhankuta**, the focus on **Broom Grass** (*Amlisso*, *Thysanolaena maxima*) remained unchanged, and complementary intercrop plantation with a rather smaller bamboo species **Mal Bans**, (*Bambusoideae*) with good rooting characteristics for soil cover protection are proposed.

5.9 Plantation Protection Measures (Fencing)

In the Final Report of the Phase 1, Annexes K and L several options were proposed to protect the fresh plant species, mainly during the period immediately after plantation.

It is suggested, that the physical protection measures are discussed, evaluated, planned and implemented in close collaboration with the local user groups. Preference should be given to protection measures utilising local materials (i.e., bamboo). Impressive examples could be observed along the Hile – Jyamire Bhanjyang District road, for instance the fence protecting the Chhintang Ilaka Police Station.

5.10 Visual Monitoring

The field visit of the Phase 1 Study team took place in January, the driest period of the year with minimal plant cover in the forest and in the *khet* (irrigated) land. By contrast, our Phase 2 Pilot Study Team had to organise the field visits in July, when the monsoon was in full force and a maximum plant cover could be observed, along with the highest rain water levels.

In order to document the current vegetative cover, water level and monsoonal road condition, a number of photos and videos were taken along the pilot roads. This record serves as a base for monitoring changes in the plant cover and overall road condition over the pilot study phase.

Future regular roadside monitoring is proposed to be supported by mobile phone photos regularly taken by the field assistants (FA) and by the PST on field mission

5.11 Legal Aspects of roadside plantation

Issues for further discussion are a number of legal aspects of participatory roadside plantation within the Right of Way by a community group, the issue of incomplete land expropriation, and to whom a potential benefit of the fruits belong. Basically the "private landownership" has been guaranteed and redefined in the new Constitution of Nepal 2072BS (2015AD). The term "Right of Way" has been utilised in the Nepal Rural Road Standards (NRRS) 2055 BS of DoLIDAR, 2nd Revision 2071BS (December 2014AD) and was defined in terms of the following width:

- 20 m for the District Road Core Network (DRCN) and
- 15 m for the Village and Agricultural Roads

The legal content and definition the term of Right of Way has not been further defined (see NRRS, chapter 2 raising the below mentioned important issues:

- What are the legal implications of the RoW towards the landownership in case of provision of land ownership
- Does the initial landowner lose his complete ownership by introducing the RoW by the road owner
- What is the Compensation value of the land assumed for the RoW in case of land expropriation
- What happens, if the public road owner did/does not compensate the land losing owner

As per the decentralisation efforts of the new Constitution, the administrative level of the "District" shall be either further decentralised to the Municipality (Palika) level, or exceptionally centralised to the Province level, as it raises the below mentioned issues:

- What does this mean in regards to the Rural Road Classification of "District Roads" and the DRCN
- Which roads shall be upgraded as Provincial State Roads` and
- Which roads downgraded as Rural / Urban Municipal (Palika) Roads

Based on these decisions only, an expropriation as per Land Acquisition Act can be followed-up, the road management including maintenance, rehabilitation and upgrading be decided, and the roadside management partners be defined.

Furthermore, an initial Draft content outline for a future Right of Way Utilisation Manual has been prepared during the Phase 1 Pilot Study Team. It needs to be further developed and refined based on the study outcome and with the help of DoLIDAR and other specialised government agencies and a legal consultant at the end of the study. It needs to be updated and adjusted to the new situation of the New Constitution of Nepal 2072 BS.

6. Revised Work plan

The new Work Plan attached in Annex A has been compiled based on the existing Key Milestones Plan of the Final Report Phase 1, of the proposed activities plan compiled in the Helvetas Tender document and Cardno/Helvetas Nepal Subcontractor Agreement signed on 19 July 2017 and outlined in section 3. Scope of Work.

There are about 39 defined activities including the preparation of 17 reports.

The activities have been divided into 5 Phases:

Phase I: Start-up (July' 17)

Phase II: Preparation Activities (Aug' 17 – Nov' 17)

Phase III: Implementation – Plantation (Dec' 17 – Oct' 18)

Phase IV: Field Implementation – Plantation Growth, Maintenance & Harvesting (Oct' 18 – Dec' 19)

Phase V: Pilot Study Completion & Documentation (Jan' 20 – June' 20)

These activities cover the new pilot study duration, between July 2017 and July 2020.

The table below shows the activities and milestones from the year July 2017 to June 2020

S.N.	Activities and <u>Milestones</u>	Phase-wise Timeframe Schedule Proposed, Reporting
	PHASE - I START-UP	Jul 2017
1	Introductory Meeting of the Pilot Study team with HELVETAS and AsCAP	Jul '17
2	Kick-off meeting with DoLIDAR	Jul '17
	PHASE - II PREPARATORY ACTIVITIES	Jul - Dec 2017
3	Preparation for site visit to Kailali & Dhankuta (ReCAP, DoLIDAR & DCC)	Jul '17
4	Preliminary meeting with DCC/DTO Kailali & Dhankuta & other District-based Offices	Jul '17
5	Visit Pilot sites as suggested by Phase -1 Report, re-assess the Pilot sections and interaction with LRUCs and existing CBOs	Jul '17
6	Meeting with DCC/DTO and confirmation of selected Roads and Pilot sections	Jul '17
7	Review proposed design-, quantity and cost estimate of civil engineering structures as needed, review site clearing and bioengineering needs	Nov '17
8	Preparation & Legalization of Memorandum of Agreement (MoA) of Understanding (MoU) re Right of Way (RoW) & Road-side temporary land-lease	Dec '17
9	<u>Preparation, Submission & Presentation of Inception Report Phase-2, Report 1</u>	Aug'17 / Dec'17
	PHASE - III IMPLEMENTATION – PLANTATION	Dec 2017 -Oct 2018
10	Identification of Road-side Land Owners & Settlement of RoW Issue	Nov '17
11	Formation of User Groups (UG) and establishment MoU between UG and Gaon/Nagar Palikas (GP/NP) under auspices of DCC including benefit sharing modality	Nov '17
12	Preparation of Participatory Plantation Plan along the Pilot Sections including assessment of Fencing Structures	Nov '17
13	Preparation & Conduction of Socio-economic Baseline Field Survey of Beneficiaries	Nov '17
14	<u>Preparation & Submission of Baseline Survey Report - Report 2</u>	Aug'17 / Dec'17
15	<u>Preparation & Submission of Site Plantation Plan Report - Report 3</u>	Feb '18
16	Development of Plantation training materials	Feb '18
17	UGs Training on Plantation, Plant management and Financial Literacy	Apr '18
18	Site preparation for Civil structures and for plantation	May '18
19	Collection and preparation of plant saplings for plantation	Jun '18
20	Construction of civil structures (if required) by DoLIDAR/Palikas	May '18
21	Plantation and site protection (fencing if required)	Aug '18

22	Preparation and Organisation of First Knowledge Sharing Workshop (Re-imb C.)	Sep '18
23	<u>Preparation & Submission of First Workshop Report on Knowledge Sharing - Report 4</u>	Mar'18 / Oct'18

PHASE - IV FIELD IMPLEMENTATION - PLANTATION GROWTH, MAINTENANCE & HARVESTING		Oct 2018 - Dec 2019
24	Plantation maintenance, i.e. manuring, watering, weeding etc. by UGs	Jun'20
25	Plantation Growth Monitoring; disease treatment and UG backstopping	Jun'20
26	UGs 2nd Training on Fire protection, Composting, Market Linkage	Oct '18
27	UGs Exposure Visit to successful plantation sites/nurseries	May'18
28	Monitoring of the Road slopes and sides and interaction with DCC/DTO	Jun '18/Jun '19/Jun '20
29	Harvest and Sale of Products – Linkage to Traders, Maintaining Records etc.	Oct '19
30	<u>Preparation & Submission of 7 Quarterly Progress Reports - Report 5, 6, 7, 8, 9, 10, 11</u>	Jul '18/Oct '18/Jan '19/ Apr '19 to Jul '19/Oct '19/ Jan'20
31	(Midterm Evaluation)	Feb'19
32	<u>Preparation & Submission of Field Implementation Report - Report 12</u>	Sep'19 / Dec'19
PHASE - V PILOT STUDY COMPLETION & DOCUMENTATION		Jan - Jun 2020
33	<u>Preparation & Submission of Revised Draft Manual & Pilot Study Report - Report 13</u>	Oct'19 / Feb'20
34	Organization of Second Knowledge Sharing Stakeholders' Workshop (Reimb C)	Jan '20
35	<u>Preparation & Submission of Second Workshop Report on Knowledge Sharing – Report 14</u>	Dec'19 / Feb'20
36	<u>Preparation & Submission of Training Materials – Report 15</u>	Mar'20 / Feb'20
37	Preparation and Organization of National Level Training Course (3 Days for 75 participants) (Reimb C)	Mar'20
38	<u>Preparation & Submission of Training Course Report (National Level) - Report 16</u>	Apr'20 / Mar'20
39	<u>Preparation & Submission of Final Pilot Study Report - Report 17</u>	Jun'20 / Jun'20

7. Proposed Adjustments

The work plan needed to be revised based on the new Pilot Study Start in July 2017 and the fixed plantation season in June/July 2018. The implementation/submission dates have been adjusted as follows:

- The inception report (1) is being finalised by September 2017.
The Baseline Survey Report (2) will be prepared between the two major annual festival periods of Dashain /Tihar (Sept / Oct) 2017 and its draft to be delivered by the end of November 2017.
- The Site Plantation Report (3) as outlined in the Work plan can only be prepared and compiled after complete plantation at site. Therefore it has to be shifted from September 2017 to September 2018.

Instead, the preparation of a Participatory Roadside Plantation Plan document (see Work plan activity 12) including site preparation works is planned to be prepared by end of November 2017.

- A supplementary Pilot Roadside Condition Observation Report shall be prepared in order to evaluate the current road surface and drainage structures condition and to compare them with the reconstruction estimates assessed in Final Report Phase I Annexes K, L for Kailali and Annex L for Dhankuta. Financing is expected to be provided by the Road-owning Government.

A separate Annex regarding Road-site Clearance and Road-slope Preparation with estimate of quantities and costs shall be attached. Shared financing is proposed.

- The preparation of the First Workshop Report (4) on knowledge sharing needs to be shifted from October 2017 to October 2018 following the workshop implementing after monsoon 2018.
- The major plantation and cultivation progress will be documented in the 7 regular Quarterly Progress Reports. Initially starting in December 2017, shall be shifted in quarterly terms to July 2018 (Report No.5) and continued until January 2020, ending with the last Quarterly Progress Report No.11.
- The Field Implementation Report (12) shall be prepared after product marketing has been shifted from September 2019 to December 2019.
- The Draft Manual and Draft Pilot Study Report (13) for presentation at the Stakeholder Workshop held in January 2020 shall be prepared between November 2019 and January 2020.
- The second Stakeholders Workshop Report (14) outlining the Stakeholder Workshop outcomes shall be prepared in February 2020.
- The Training materials (15) for the Training Course planned to be held in February/March 2020 needs to be prepared in January 2020.
- The Training Course Proceedings (National for 75 Participants) and Training Report (16) shall be prepared in February 2020 in view of the Course planned in March 2020.
- The Final Pilot Study Document (17) including the Manual, Implementation Recommendations and Training Materials shall be submitted in June 2020 as planned.

8. Risks

The Implementation of this innovative Pilot Study in Nepal is timely linked with a number of significant governmental changes. Many of them are also directly or indirectly linked with the efforts of implementing the new Constitution of Nepal, which was approved only two years ago in 3rd Asoj 2072 BS (20th Sept '15). The direct consequences on the Pilot Study cannot be planned or assessed yet, since further legal decisions need to be taken to implement the constitution.

Some of the most prominent risks are listed as follows:

- A substantial transfer of the existing administrative set-up from earlier (Panchayat Period 1962 / 2018BS) of about 36'000 Wards, 3'915 (3276) VDCs, 927 Ilakas, 75 DDC, 14 Zones, and 5 Development Regions into 10'000 new Wards, 481 Rural Municipalities (Gaon Palikas), 246 Urban Municipalities (Nagar Palikas), 11 Sub-Metropolitan Cities and 6 Metropolitan Cities, and 7 Provinces (federal states) in 2017 / 2074 B.S causing a drastic transfer of the GoN staff.
- Significant changes of the authority and responsibilities over the whole District Road Core Network (DRCN) may cause delays in road maintenance, repairs, upgrading, resulting in early road degradation and road-side disorder.

- Risks of adhoc planned and un-coordinated indiscriminate road-widening and upgrading activities (emergency repairs) hampering road access to the pilot sides, disturbing the plantation activities at the pilot sections or in the worst case destroying plantation activities
- Delayed GoN budget availability due to new directions of financial transfers, new budget decentralization and funding provisions influencing the road reconstruction work along the 2 Pilot Sites in Fiscal Year 2017/18 agreed to be financed by public (DoLIDAR) funding.
- Fast and rapid changes in the Government administration structure, i.e., location of the new Provincial headquarters and its government offices shifting from district either to provincial or to Palika headquarters. Lacking Government office and working space at the new Provincial and Palika headquarters, still to be located after election.
- Fast changes of the political representations at the local and national levels may shift interests and commitments.
- Risks of private/public land ownership disputes along the pilot study road sections concerning Right of Way (RoW) utilisation between the land owners and the new road owner agency to be appointed.
- Delays in preparation and clearance of legal ROW at the Pilot Study sites ready for implantation.
- Growing public resistance and mistrust against absent government bodies may challenge the plantation works.
- Changes of several parts of the national legal framework, delayed legalisation processing, legalisation implementation and procedures may cause delays of the pilot study implementation.
- Emigration of local population groups from the rural areas to urban centres may cause temporary labour shortage in certain rural areas.
- Delayed handing-over of road ownership from central government to the local governments may create temporary road ownership uncertainties.
- Natural calamities during monsoon (water floods, earthquakes, landslides) closing airports, national and local road networks hindering access to the pilot sites.

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