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वन तथा वातावरण मन्त्रालय
Government of Nepal
Ministry of Forests and Environment

GREEN CLIMATE FUND

Food and Agriculture Organization of the United Nations

Critical Ecosystem Restoration Plan (CERP)

of

Gideri River System

Building A Resilient Churia Region in Nepal
(BRCRN)
Project Management Unit, Babarmahal, Kathmandu

Building a Resilient Churia Region in Nepal (BRCRN)

Government of Nepal
Ministry of Forest and Environment
Building a Resilient Churia Region in Nepal
Project Management Unit
Babarmahal, Kathmandu

National Project Director

मिति २०७८।०२।२७ को वन तथा वातावरण मन्त्रालयको श्रीमान् सचिवस्तरीय निर्णयबाट स्वीकृत भएको Critical Ecosystem Restoration Plan (CERP) Preparation Manual को बुँदा नं. ४ को प्रावधान बमोजिम PPMU हरुको सिफारिशमा PMU को मिति २०८०।०२।२३ को निर्णयबाट प्रारंभिक स्वीकृत (Initially Approve) भएको यस नदी प्रणालीको CERP मिति २०८०।०२।२६ मा बसेको आयोजना निर्देशक समिति (Project Steering Committee) को निर्णय बमोजिम अनुमोदन (Endorse) भएको ।

2020/2/24

National Project Director

Disclaimer:

This CERP report has been prepared based on the extensive field consultations, onsite visit and applying the RS/GIS tools and technologies. This report contains data and information collected and collated from the field applying CERP steps and methodology spelled -out in MOFE approved CERP manual. The draft report was shared in three provincial and one national validation workshops organized from December 2022 to February 2023 and incorporated the suggestions obtained from the workshops.

 As the CERP is public property, therefore, any plans or activities prepared under this report can be implemented by any organizations and institutions. The report attempts for higher precision, however, there may be areas for improvement. Intervention site locations and budget estimations mentioned in report are based on field consultation and observations. During the time of implementation, they are subjected to change based on the changes in field condition at the time of implementation. Considered as the lively planning instrument, the CERP has the window open for the revision along with its implementation at the river system.

Date: June 2023

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VAT No.: 302983230

GRID CONSULT (P) LTD.

APPROPRIATE TECHNOLOGY DEVELOPMENT AND RESEARCH

Date: 27th March 2023

DECLARATION OF AUTHENTICITY

We the following team members of CERP formulation process from Grid-ECN-Sunakhari JV hereby declare that the data and information provided in the CERP reports of Koshi province are correct to best of our knowledge and duly in-line as per MOFE approved CERP manual, using participatory approach with sample site verification. Thus, this document is our original outcomes of local, river cluster, province and federal level consultations/ validations. We hereby verify to prove its originality and authenticity; we will not allow our team and other sources to make it copied resources in one way or the other without citing copyright that is GoN-BRCRN project. We duly acknowledge BRCRN'S FAO-TA for their active involvement in every stage of CERP development..

Thanking you
Sincerely,
Angishor Shrestha
Director – Grid Consult (P) Ltd
On behalf of GRID Consult– ECN Consultancy – Sunakhari Research Consult JV

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ACRONYMS AND ABBREVIATIONS

AKC	:	Agriculture Knowledge Center
ANR	:	Assisted Natural Regeneration
BRCRN	:	Building a Resilient Churia Region in Nepal
CBFMG	:	Community Based Forest Management Groups
CBO	:	Community Based Organization
CBS	:	Central Bureau of Statistics
CCA	:	Climate Change Adaptation
CCM	:	Climate Change Mitigation
CERP	:	Critical Ecosystem Restoration Plan
CF	:	Community Forest
CFUG	:	Community Forest User Group
CRLUP	:	Climate Resilient Land Use Planning
D&FD	:	Deforestation and Forest Degradation
DFO	:	Division Forest Office
DHM	:	Department of Hydrology and Meteorology
DoS	:	Department of Survey
DRR	:	Disaster Risk Reduction
EIA	:	Environment Impact Assessment
FFS	:	Farmer Field Schools
FGD	:	Focus Group Discussion
FOP	:	Forest Operational Plan
FPIC	:	Free, Prior and Informed Consent
GESI	:	Gender Equality and Social Inclusion
ha	:	hectare
ICIMOD	:	International Centre for Integrated Mountain Development
IEE	:	Initial Environmental Examination
IP	:	Indigenous People
IPacks	:	Intervention Packages
IPM	:	Integrated Pest Management
Km	:	Kilometer
LRP	:	Local Resource Person
m	:	meter
MCA	:	Multi Criteria Analysis
MoFE	:	Ministry of Forests and Environment
PCTMCDB	:	President Chure Terai Madhesh Conservation Development Board
PCTMCMMP	:	President Chure Terai Madhesh Conservation and Management Master Plan
PPMU	:	Provincial Project Management Unit
RS	:	River System
SDFO	:	Sub-division Forest Office
SDG	:	Sustainable Development Goals
SFM	:	Sustainable Forest Management
SNRM	:	Sustainable Natural Resource Management
TOF	:	Training of Facilitators
VDC	:	Village Development Committee

EXECUTIVE SUMMARY

The project entitled "Building a Resilient Churia Region in Nepal (BRCRN)" aims to promote widespread adoption of climate-resilient land use practices; confront the challenges of deforestation and forest degradation (D&FD); better maintain the forest ecosystem in the Chure hills; and build resilience to climate-induced hazards by linking the Chure hills, Bhavar and Terai. BRCRN has adopted the river system-based approach and follows boundaries earlier identified and delineated by President Chure Terai Madhesh Conservation and Management Master Plan 2017. The said master plan projected integrated conservation plan on the basis of river systems. The Critical Ecosystem Restoration Plan (CERP) is prepared to foster Climate Resilient Sustainable Natural Resource Management (CR-SNRM) in the river system so that this CERP will be launched to implement the concept of upstream-downstream linkage based on perspectives of the ecosystem services. The CERP process has followed participatory rural development planning approach including civil society organizations (CSOs), community-based organizations (CBOs), women lead organization, and groups, and government entities at different levels. It is based on 'Theory of change' approach integrating problem and solution tree analysis that explains how a given intervention, or set of interventions, is expected to lead to specific development change, drawing on a causal linkage based on available evidence. From problem and solution tree analysis the main problems along with their causes and effects are recorded, to come up with clear and manageable goals and the strategies to combat them. There are two main stages to this process: (1) the identification of negative aspects of existing situations (or key challenges) in the form of problem trees, and (2) the change of the problems into objectives leading to solution trees showing potential solutions or strategies that respond to the main drivers and underlying causes. In addition, the integrated and gender-specific approach was adopted during the process to ensure gender equality and women empowerment in sustainable natural resource management. The integrated approach adopted gender-inclusive actions such as ensuring equal participation, gender prospect in problem-solution analysis, and ensuring participation of women lead organizations in the consultation workshops. However, due to the limited involvement of women in the integrated approach, a gender-specific approach was adopted, and a separate study focusing only on women and women lead organizations was conducted during the process. In addition, the approach adopted particular research tools such as seasonal calendars, problem and solution community workshops, and focus group discussions among women, Dalits, IPs, women, and other marginalized communities. Also, the consultation process includes a consultation with women and women lead organizations.

Gideri river system originates from the Chure, and passes through the Dun valley and finally join Saptakoshi river. It is extended over 26.774325°to 26.898249°N and 86.943563°to 87.082445°E. The river system constitutes of Chure hill in the north as well as in south. The river system faces rapid urbanization at the annual rate of 13.16% per year from 2000 to 2019. It appears that the total forest area decreased by 343.2 ha at the annual rate of 0.24% during these 19 years. The ecosystem degraded areas termed as "hotspot" areas are identified initially by spatial analysis of 16 different variables from secondary spatial data sources. The variables were categorized into adaptation and mitigation themes and Geographical Information System (GIS) based Multi-Criteria Analysis (MCA) was used to identify preliminary hotspot areas. The maps generated from spatial analysis were taken to problem and solution workshops that took place at the local level. Participants from Community Based Organizations (CBOs) user groups- with a focus on women, indigenous people, poor and Dalit (community and collaborative forest user groups, farmer groups, and climate-induced disaster management groups, soil and water conservation groups) as well as government organizations (forest sub-division offices and local government at community level) were represented in the workshops. Identification of key drivers, problem analysis, solution analysis, and hotspot map delineation were done in two thematic groups of

climate change adaptation and mitigation. The mapped hotspot locations were verified/updated in workshops and visited-verified in the field followed by discussions with the local communities. Additional two-day expert planning workshop in the river system discussed and validated the findings, focusing on identifying drivers and underlying causes of the two thematic problems.

Deforestation and forest degradation are related to climate change and pose threats to biodiversity and livelihood of forest dependent local communities. Forest degradation relates to loss of biomass (carbon) and reduction in the capacity of forests to produce ecosystem services on longer terms. The findings from local stakeholder and expert consultations indicate that unsustainable/ illegal harvesting of forest products, forest fire, open/uncontrolled grazing, adopting inappropriate cropping systems, encroachment of forestlands, ineffective forest management practices and infrastructure development are major drivers of deforestation and forest degradation in Gideri river system. Climate-led hazards like erosion/landslide and flood are other drivers contributing to forest loss and degradation. These drivers are the results of several underlying causes- high forest resource dependency; poverty and limited livelihood opportunities available to local communities; ineffective forestry sector governance; weak law enforcement; ineffective sustainable forest management; financial and human resource constraints in community based forest user groups and forest offices; and weak coordination and cooperation among concerned agencies that have led to such degradations in this river system.

Climate induced disaster and climate impact on agriculture productivity are two key challenges representing vulnerable ecosystem and community in the river system. Erosion/landslide, flood and weak disaster risk management are major drivers, and are triggered by both natural and anthropogenic factors. Inappropriate land use practices like cultivation in slopy areas more than 30 degree, forest degradation, unplanned and unregulated road construction, and unmanaged riverbed material excavation are main human-induced causes. Heavy/erratic rainfalls, steep slopes and other topographic conditions are major natural causes. Climate stress on agriculture productivity has direct impact on people's livelihood especially women, elderly and children through low family income and food insecurity. It eventually makes forest ecosystem vulnerable through increased burgeoning pressure on forest resources. The major drivers identified are inadequate farm skills and financial resources; insufficient irrigation; pests and diseases; and soil quality degradation.

The strategic actions identified to reduce deforestation and forest degradation include reducing forest dependency by addressing poverty and alternative livelihood issues; promoting agroforestry, livestock management and private forestry; strengthening forest fire control system; controlling open grazing; improving law enforcement and overall forestry sector governance; promoting sustainable forest management; controlling further encroachment of forestlands; and capacity enhancement of user groups and government forestry staffs. Afforestation and reforestation activities are proposed to enhance forest density and species richness for improving ecosystem services. One of the important aspects of enhancing adaptation/resilience of ecosystem and community would be climate resilient farming practices and enhancing agricultural productivity. Increase in agriculture productivity will improve livelihood of small holding farmers and at the same time, it will decrease dependency on nearby forest resources. Strategic actions proposed for disaster risk reduction are landslide treatment, erosion control, riverbank stabilization and strengthening disaster risk management. In addition, the focus is also on enhancing gender inclusive governance to mainstream women, Dalits, indigenous people, and marginalized communities in the implementation of ecosystem restoration plans for the river system.

Based on the activities and key results identified from local stakeholder workshops, via problem tree and solution tree analysis, six intervention packages (IPacks) have been developed. This CERP only covers those key results and IPacks that correspond to local level interventions. CERP brings out issues on a

number of vital areas of interventions that can take place at national level such as- resolution of land tenure issues; and interventions to regulate infrastructure development in forest area, however does not suggest specific interventions as guided by CERP manual. Feasibility analysis is used to assess the strengths and weaknesses of the IPacks where risks and obstacles to implementation of each IPacks were assessed. Safeguard analysis is done to identify social and environmental risks or threats, as well as to identify where CERP interventions can contribute to significant social or environmental co-benefits. The measures to mitigate risks and enhance benefits are also assessed. Budget plan and monitoring protocol for CERP are also prepared adopting several matrixes. However, geographic focus of activities is not considered as a primary criterion for activity grouping during IPack formulation.

The IPacks developed mainly focused on reducing deforestation and forest degradation; enhancing adaptation/resilience of vulnerable ecosystem and local communities; raising awareness and enhancing capacity of CBOs and government staffs; and integrating gender and social equity issues. The IPacks provide adaptation and mitigation activities for forest management and subsequent carbon enhancement; climate resilient agriculture and land use practices; and reducing ecosystem and community vulnerability to climate-induced disasters. Since the upstream is not protected, the people at the Dun valley are facing serious problems of siltation in their private lands and loss of their properties and hence CERP activities are designed with focus on upstream-downstream linkages based on perspectives of the ecosystem services. The activities such as agroforestry, enhancing forest cover (enrichment plantation/assisted natural regeneration in forests of Chure), gulley control, landslide treatment, and climate resilient land use practices to build resilience of smallholder farmers against climate change impacts in upstream are intended to enhance resilience against climate-induced soil erosion, reduce runoff and enhance infiltration, thus reducing risks related to sedimentation and flooding in the Dun valley. Riparian plantation is proposed to enhance tree cover, as well as riverbank stabilization together with embankments and bioengineering. Majority of the woodlots development and climate resilient agriculture projects are concentrated at the valley. These projects are believed to reduce pressure on remaining upstream forests and hence improve resilience to climate change impacts. Reducing rate of deforestation and forest degradation in Chure and enhancing tree cover in Dun valley will produce important climate change mitigation benefits while also preserving and enhancing vital ecosystem services that are essential to the resilience of communities throughout the river system.

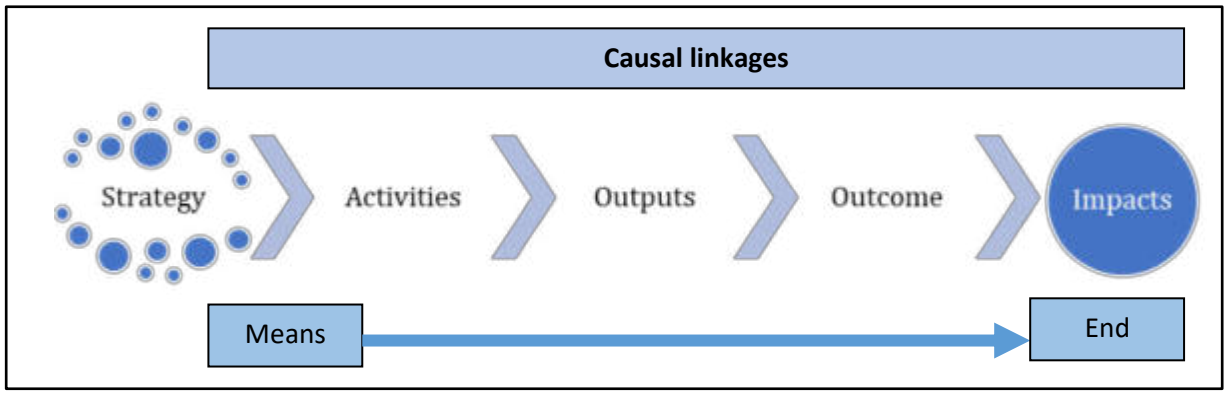
CHAPTER I : INTRODUCTION TO CRITICAL ECOSYSTEM RESTORATION PLAN

1.1 Background

The project entitled "Building a Resilient Churia Region in Nepal (BRCRN)" is implemented in 26 critical river systems (RS) in the southeast region of Nepal, covering parts of Provinces 1, Madhesh and Bagmati. The project will be linking the Chure hills, Bhavar and Terai, and aims to promote widespread adoption of climate-resilient land use practices, confront the challenges of deforestation and forest degradation (D&FD), better maintain the forest ecosystem in the Chure hills, and build resilience to climate-induced hazards so that the ecosystem services perpetuated in the longer terms.

The Chure Hill is an ecologically highly sensitive and risk-prone landscape due to complex geology, tectonics, climate, hydrology, and biodiversity. Ecologically Churia is an integral part of Terai, thus, it should be considered as a landscape. Watershed level institution building and its well-functioning including upstream and downstream stakeholders can contribute in conservation and management of upstream watershed resources. This CERP has been planned in a way which ensures protection of upstream areas and hence downstream will have perpetuated ecosystem services on longer terms. The region is particularly vulnerable to erosion, landslides, drought and flooding due to ongoing tectonic processes, fragile geological composition, and prolonged and intense rainfall during monsoon (Ghimire, 2011). A changing climate is further contributing to landslides, erosion, and flash floods in the hills. These processes in the hills have shaped the active geomorphological activities in the Bhavar region through aggradation and transportation of sediments. Over the last half-century, Bhavar have undergone tremendous changes in demography, land use, settlement and urbanization, and road infrastructures, which have extremely altered the landscape. Moreover, haphazard extraction of the riverbed material has altered the geomorphic processes in the Bhavar (Dahal & Paudyal, 2022). Higher sediment yield in Chure hill and alteration of geomorphological processes in Bhavar have profound impact on the morphology of the river and related disaster in the downstream area of Terai flood plain (Ghimire, 2020). The agricultural land of Bhavar and Terai are already in stress of climate variability, further jeopardizing the livelihoods of the inhabitants.

In these connections, Critical Ecosystem Restoration Plan (CERP) has been prepared to foster Climate Resilient Sustainable Natural Resource Management (CR-SNRM) at river system level. CERP activities are designed with focus on upstream-downstream linkages based on perspectives of the ecosystem services The CERP has followed a participatory rural development planning approach including civil society organizations (CSOs), community-based organizations (CBOs) and government entities at different levels. This methodology and process is based on international best practices, including the 'Theory of change' approach to planning, implementation, monitoring & evaluation and impact assessment in different time intervals.



(Source: CERP manual, 2021)

Figure 1: Establishing casual linkages with theory of change analysis

The "Theory of change" approach explains how a given intervention, or set of interventions, is expected to lead to specific development change, drawing on a causal linkage based on available evidence. It includes an understanding of the desired activities, inputs, outputs, outcomes and impacts of the project as well as the current situations and dynamics including their incentives for change.

1.2 River System Concept: Holistic Approach of Integrated Watershed Management

The President Chure Terai Madhesh Conservation and Management Master Plan 2017 projected integrated conservation plan based on river systems. A river system is a land mass of drainage basin where all river and its tributaries meet to have a common outlet. BRCRN follows the river system boundaries earlier identified and delineated by President Chure Terai Madhesh Conservation and Management Master Plan (PCTMCDB 2017). It is a part of watershed management system that should ideally follow hydrological boundary, however, river system delineation in PCTMCMMP also considers land mass as a management unit that is delineated based on the geographical and socio-ecological variability.

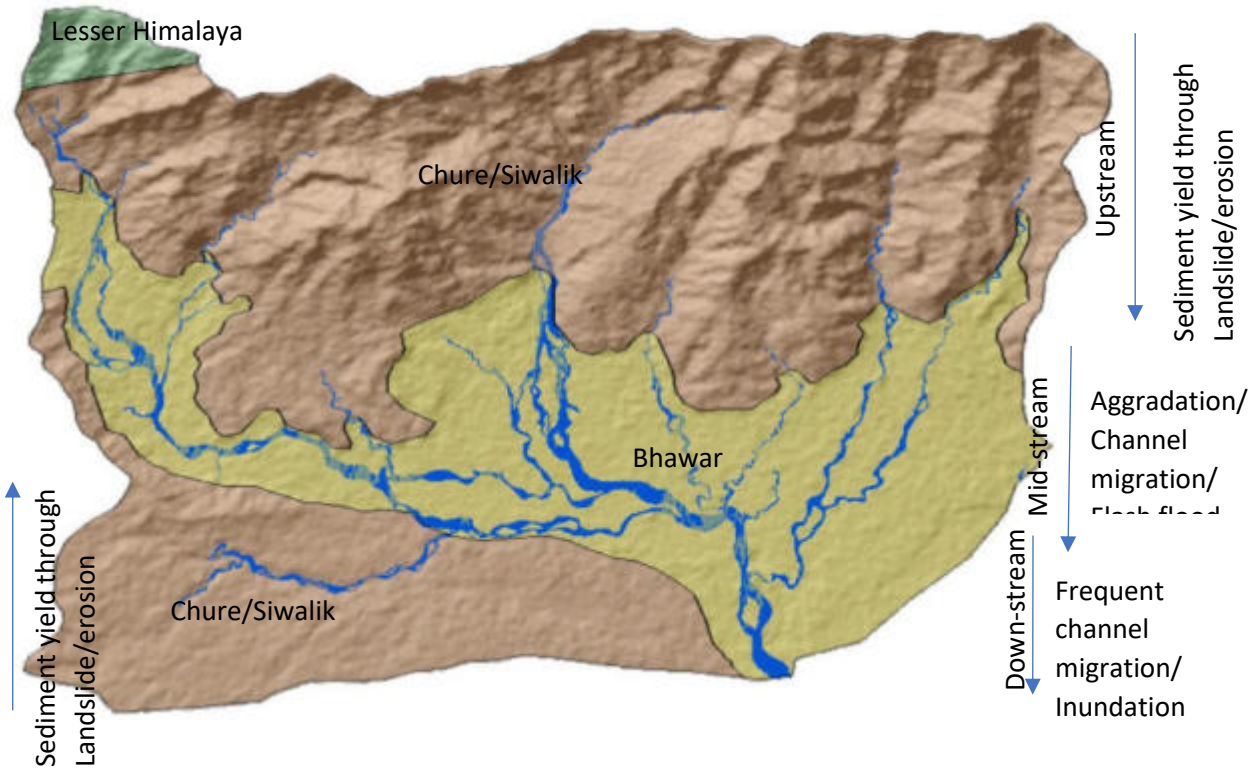


Figure 2: Upstream-downstream linkages in Gideri river system

Sediment generates through erosion and slope failure process in the upstream cause aggradation in Bhavar region, which leads to bank scour/cut/erosion and then channel migration. Flowing downstream, channel become wider and channel migration is prominent due to the loose and unconsolidated sediment in river bank.

1.3 Ecosystem Restoration

Ecosystem degradation is a negative trend in ecosystem condition, caused by direct or indirect human-induced processes including anthropogenic climate change perpetuated by anthropogenic factors, expressed as long-term reduction or loss of at least one of the following: biological productivity, ecological integrity, or value to humans in one way or the other.

Ecosystem restoration is any intentional activities that accelerate the recovery of degraded, damaged, or destroyed functional services that an ecosystem provides. The restoration planning requires multi-dimensional observation and analysis of core problems followed by a multi-stakeholder engagement and decision making process. Relating ecosystem services with relevant stakeholders for their perceptions of the services is vital for informed decision making about land use changes and resource management. Likewise, the site-specific information on land use and their changes is equally important. Hence, CERP processes have ensured rigorous field level discussions and consultations in each river system as well as exercised tools and techniques of land use and change dynamics to accommodate all the aspects of ecosystem restoration. The findings of the processes at multiple levels are then turned into the intervention packages of the CERP so that the specific ecosystems are restored.

In fact, CERP focuses on river system scale intervention planning to achieve ecosystem restoration at landscape level. Moreover, the CERP is guided by and perfectly in-line with the principles of ecosystem restoration of United Nations decade 2021-2030 that highlights following 10 principles that underpin ecosystem restoration:

- Ecosystem restoration contributes to the UN SDGs and goals of Rio conventions.
- Ecosystem restoration promotes inclusive and participatory governance, social fairness and equity from the start and throughout the process and outcomes.
- Ecosystem restoration includes a continuum of restorative activities.
- Ecosystem restoration aims to achieve the highest level of recovery for biodiversity, ecosystem health, integrity, and human wellbeing.
- Ecosystem restoration addresses the direct and indirect causes (drivers) of ecosystem degradation.
- Ecosystem restoration promotes knowledge generation and exchange throughout the process.
- Ecosystem restoration is based on well-defined goals.
- Ecosystem restoration is tailored to the local ecological, cultural and socio-economic contexts, while considering larger landscape.
- Ecosystem restoration includes monitoring, evaluation and adaptive management throughout and beyond the lifetime of project.
- Ecosystem restoration is enabled by policies and measures that promote its long term progress, replication and scaling-up.

1.4 Rationale of CERP

Most part of Churia is covered by forests while some parts are inhabited and cultivated. Increasing human interferences and expanding infrastructures coupled with climate vagaries on top of its own fragile-composition are causing serious threats to this region and downstream also. It has varying elevation, climate and vegetation from one to another part. Churia (upstream) area has been considered to be very important for conservation to protect downstream Terai and its agriculture land. CERP has been formulated in a way which implements the concept of upstream-downstream linkage based on perspectives of the ecosystem services. The development of CERPs will contribute to the provision of climate-informed extension, leveraging the resources and advisory services. It ensures that adaptation to climate change (CC) and Disaster Risk Reduction (DRR) has been integrated into provincial and local development planning cycle. The project achieves this through promotion and integration of climate resilient land use practices in agriculture and forestry, subsequently integrating them into local decision-making processes. This will ultimately guide the adoption of prioritized low-carbon and climate resilient – integrated Sustainable Natural Resource Management in the Chure region.

The goal is that government and development partners together improve local and provincial service delivery through river system interventions in CR-SNRM sector. The CERP is also the basis for monitoring and evaluation (M&E) of ecosystem restoration actions at the landscape scale as well as outreach and targeted budgeting on local level. Additionally, the data generated in the annual follow-up of the CERP intervention packages, and their success or failure will inform government reporting on climate change related international commitments and instruments. The reports on the cumulative impacts of the CERPs can also inform country's overall Nationally Determined Contributions (NDC) reporting on land use change and greenhouse gas emissions at a national scale.

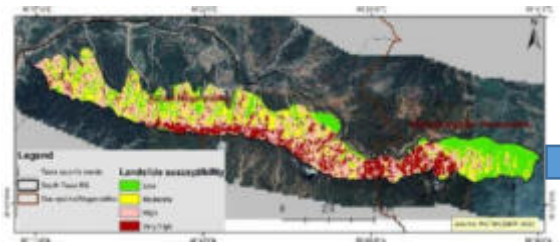
CERP is envisioned at a river system scale to foster upstream-midstream-downstream connectivity by analyzing complex inter-linkage of cause and effect dynamics of climate vulnerability over the specific geographic regions and interventions to help build the climate resilience with interlinked and cascading impact from head to tail of the river systems. In this sense, it adopts a holistic integrated watershed management approach.

CHAPTER 2 : METHODOLOGY AND THE PROCESS

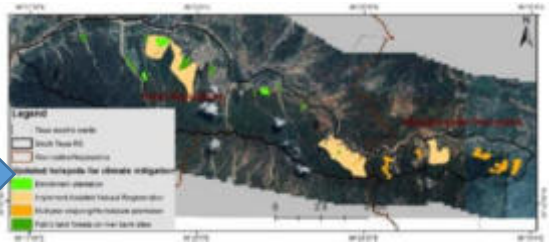
2.1 CERP Development Phase

Following nine steps were followed during the CERP development phases:

Step 1: Preparatory spatial analysis of land cover change, forest loss/gain, forest fires, slopes, landslide, flood, river geomorphology and settlement vulnerability



Step 2: Spatial Multi-criteria Analysis (MCA) to identify problem hotspots

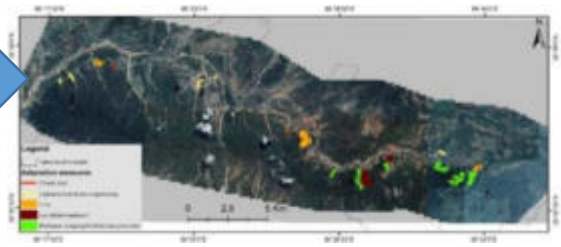


Step 3: Participatory spatial planning using hotspot map for prioritization of drivers, barriers, and identification of specific problem locations

Step 4: Formulation of problem and solution trees, identification, and mapping of solutions

Step 5: Field visits to verify locations of problem-solution

Step 6: Compilation of information and desk verification on problem-solution locations and interventions planned



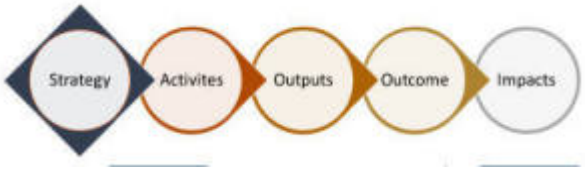
Step 7: Expert planning workshop for finalization of IPacks and analysis of risks & benefits

Step 8: Finalizing monitoring mechanism and budgeting of interventions through expert consultation

Monitor

Budget

Step 9: Development of workflow and finalization of intervention packages



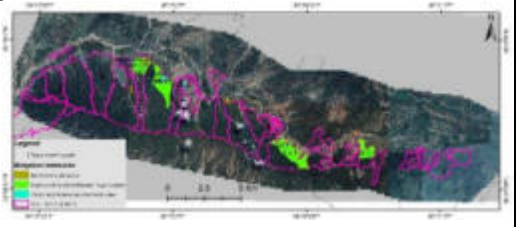


Figure 3: Steps of spatial analysis for CERP development

2.2 Spatial Planning as a Base for CERP

Mapping and spatial analysis have a vital role in the CERP development process. Maps and spatial analysis are generated by a combination of geospatial tools (i.e. GIS, Remote Sensing), desk-based research and fieldwork. Relevant analogue maps and data prepared by national and international agencies were collected and reviewed for the inclusion of the information in the digital spatial data as well as integration in the GIS.

Table 1: Data types, acquisition and their processing methods

Themes	Parameters	Data types	Sources	Processing methods
Climate mitigation	Deforested area	Forest loss (2000-2020)	Global Forest Watch data.globalforestwatch.org	- Revised & update from temporal Google earth images
	Degraded forest	Open forest (Canopy <20%)	Sentinel image, 2021	- NDVI and supervised classification - Inputs, revised & update from temporal Google earth images
	Forest fire	Fire incident	NASA's Website (https://firms.modaps.eosdis.nasa.gov)	- Overlay analysis on temporal GE images and draw tentative burnt area which will verify during participatory workshops
	Potential enhancement area	Private land/Public land forest (Proxy indictors)	Cultivated land & Riverbed (DoS, 1996)	- Abandoned agricultural land (Cultivated land in the 1990's/2000's and barren/bushes in 2020's): Google earth overlay & Mapping - Abandoned river/reclaim (River in 1990's/2000's and other land use in 2020's): Google earth overlay & Mapping
	Firewood consumption	Household using firewood for cooking	CBS, 2011	- Household using firewood attributed in then VDCs and transferred into RS
	Landslide on forest area	Landslide	PCTMCDB (TU-CDG, 2021)	- Landslide distribution in forest
	Road network on Chure hillslope	Road network on Chure hillslope	PCTMCDMP (PCTMCDB, 2016)	- Updated form Google earth
Climate adaptation	Agricultural land in slope area	Agricultural land Slope (Digital elevation model)	ALOS DEM (12.5m) (asf.alaska.edu)	Overlay analysis
	Agricultural land exposed to landslide hazard	Landslide hazard	PCTMCDB (TU-CDG, 2021)	
	Agricultural land exposed to Flood hazard	Flood hazard	PCTMCMMP (PCTMCDB, 2016)	
	Land capability	Land capability	Soil and Terrain Database (SOTER) (FAO, 2009)	

Themes	Parameters	Data types	Sources	Processing methods
	Landslide hazard	Landslide hazard	PCTMCDB (TU-CDG, 2021)	Overlay analysis
	Flood hazard	Flood hazard	PCTMCDMP (PCTMCDB, 2016)	Flood hazard is revised and updated based on recent geomorphic change in flood plain using the temporal images of GE
	Settlement exposed to landslide hazard	Settlement	Land cover, 2015 (PCTMCDB, 2016)	Overlay analysis
	Settlement exposed to flood hazard	Settlement	Land cover, 2015 (PCTMCDB, 2016)	
	Wetland/water recharge	Wetland/water recharge	Wetland (DoS, 1996 & PCTMCDB, 2016)	
	House structure	Indices	CBS, 2011	Spatial representation was created on then VDCs and transferred into river systems
	Ethnicity			
	Female literacy (Gender)			

CERP is the core process of the project in identifying the problems and solutions that lead to project interventions (activities). The CERP objectives were to balance both mitigation and adaptation for climate resilience building of local vulnerable communities. Hence, mitigation and adaptation potentials of the project are considered as primary entry points for MCA to identify hotspot sites and considered as major themes. Mitigation potential is addressed through identifying areas (hotspots) where BRCRN interventions have potential to reduce emissions and enhance the subsequent carbon stock. Similarly, adaptation potentials are addressed through identifying areas (hotspots) where BRCRN interventions have potential to address vulnerable ecosystems and vulnerable local communities.

Following graphics demonstrate adaptation and mitigation logic adopted for which careful choice of themes, variables, process and results were:

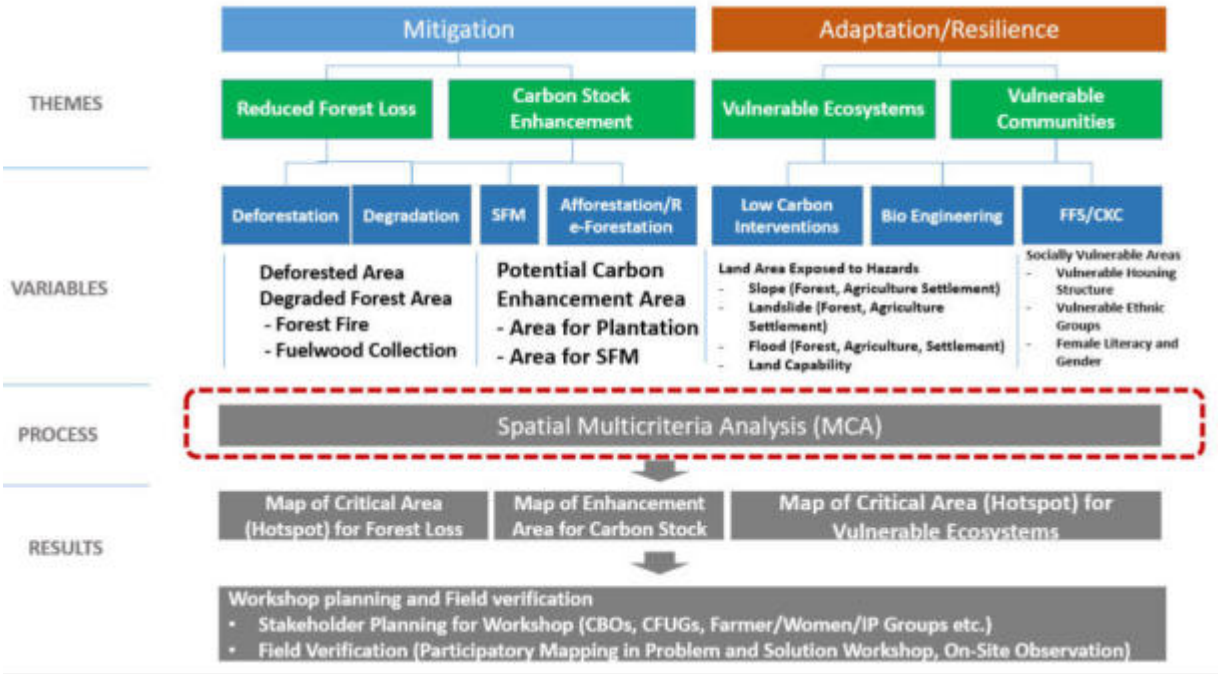


Figure 4: Multi-criteria analysis

2.3 Local Stakeholder Consultation

2.3.1 Selection of Participants

The selection process of participants for the two consecutive workshops i.e. Problem Analysis and Solution Analysis was vital for the validity and quality of CERP process. The selection process was carried out in collaboration with Division Forest Office (DFO) of Udayapur district. The selection process prioritized to include women and women lead organizations including Indigenous Peoples and their institutions at the river system level. The DFO informed respective sub-division offices to support in selecting participants, who are well informed about the issues of Gideri River System. Similarly, the study team coordinated with local government (P*alikas* and wards) to trace out the representatives who are directly associated with the agriculture and disaster issues. The participants were from Community Forest User Groups, Farmers Group, Tol Development Committee and Belaka Municipality Office while considering social inclusion i.e. representatives from women, poor, Indigenous Peoples (IPs) and Dalits. There were 23 participants in total. Among the participants, 13 were from IP groups and altogether 6 female and 17 male (Annex 2).

2.3.2 Workshop

The two-day workshop was organized on 8 and 9 January 2022 at Belaka municipality office Hall at Rampur, Udayapur. The day one of the workshop was focused to prepare problem tree while day two was dedicated to develop solution tree as per the problem tree developed in day one.

A. Problem Analysis (Day One)

The workshop facilitator/s firstly briefed about introduction of the BRCRN project and the objectives of the workshop. This session was followed by the discussion on the topics of 'Climate Change Mitigation' and 'Climate Change Adaptation'. The aim of this session was to bring common understanding among the participants, facilitators regarding the concept of 'Climate Change Mitigation' and 'Climate Change Adaptation' that would be instrumental to bring clear, and precise local issues associated with Gideri River System. This would be robust basis to design intervention packages for the BRCRN.

The participants were divided into two groups viz. 'Climate Change Mitigation (CCM)' and 'Climate Change Adaptation-(CCA). Each group nominated their spokespersons for the documentation of thematic issues and women were encouraged to be a spokesperson. Adding to this, CCM group was requested to discuss on the issues of deforestation, forests degradation and enhancement activities whereas CCA group was focused on the issues of agriculture and disaster. Both the groups were oriented on how problem and solution trees were to be formulated. They were asked to identify the key problem, direct and underlying causes of the problem and impacts of problem. The participants were also oriented about mapping hotspots for interventions. For this map of the river system, overlaying boundary and satellite image were display through projector. Printed maps were also used for orientation. Participants were oriented about the features of maps like forest area, cultivated area, river/streams, roads etc.

All issues of four thematic areas (deforestation, forest degradation, agriculture and disaster) were documented in the meta cards. Meta cards were displayed in walls of the workshop hall. Meta card with key problem/challenge was attached at the top. Following it, meta cards with direct drivers were attached and then meta cards with underlying causes at the bottom to prepare a problem tree.

- **Group Exchange**

The problem trees prepared by each groups were displayed and group exchange was done for verification and inputs. The spokespersons of respective CCM and CCA groups were assigned to present their problem trees. During the presentation, CCM groups received input from participants of

CCA groups and vice versa. This process provided ample space to refine the local issues on case to case basis mutually.

B. Solution Analysis (Day Two)

On the second day, same participants were asked to remain in their respective groups of CCM and CCA. As informed them on the day before each group was asked to prescribe solutions of respective issues identified in problem analysis. They were asked to identify activities against problems, output of the activities, outcomes and finally impacts. The facilitators played same role as in problem analysis. All solutions were documented in the meta cards and displayed for the group exchange. Meta card with outcomes was pasted at the top followed by outputs and activities at the bottom to develop a solution tree.

- **Group Exchange**

The group exchange processes were carried out same as in Day One.

2.3.3 Identifying and Mapping of Hotspots

In the problem analysis day, the map of Gideri River System was displayed in both hardcopy and power point presentation including interactive Google Earth Images and carried out participatory discussion to identify hotspots of the respective River System (RS). These participatory discussions were instrumental to trace out the hotspots of Gideri RS in terms of their severity, which would be basis for designing intervention packages for the BRCRN project with reference to climate change mitigation and climate change adaptation discussed in the problem analysis and solution analysis. The study team noted the name and physical location of the hotspots identified by the participants for field verification.

2.3.4 Field Visit and Focus Group Discussions (FGDs)

The study team went to field after the two-day workshops to verify identified hotspots. Maps and checklists were used for field verifications of hotspots. The study team had also conducted key informants interview to understand the depth of the problems in the respective hotspots. The study team discussed with local people on the major problems of the hotspots and rationale interventions to address the problems along with the local safeguard information. Indigenous people (IPs), Dalits social groups, and women were focused in consultations for inclusiveness, customary practices, norms, values and existing indigenous institutions, their roles in community and encourage them for their meaningful participation and insist them to be vocal on their problems in the face of climate change mitigation and climate change adaptation. The study team documented all the issues raised in field consultations, which would be reflected in the CERP.

2.4 Expert Planning Workshop

2.4.1 Expert Planning Workshop Participants

The experts from Division Forest Offices, Sub-division Forest Offices from respective river systems, Province Forest Directorate, Ministry of Forest Environment and Soil Conservation, Koshi Basin Management Center, President Chure Terai Madesh Conservation Development Board, Soil and Water Management Office, and Agriculture Development Center participated in the two-day workshops. Experts were invited in collaboration with BRCRN-PPMU and FAO-TA and Province ministries. All participants were informed though formal letter from Ministry of Agriculture and Ministry of Forest, Environment and Soil Conservation.

2.4.2 Workshop

The two-day expert planning workshop was conducted at Gaighat of Udayapur district on 21st and 22nd of August 2022. The workshop was conducted for Tawa South, Adheri-Baruwa-Dwar, Gideri and Sunkoshi river systems of Udayapur district. The workshop was intended to validate the preliminary

CERPs prepared from local stakeholder consultations. In the workshop, BRCRN-PPMU firstly briefed about introduction of the BRCRN project and objectives of the study. This session also included study process followed. In the workshop, detailed outcome derived from problem analysis, solution analysis and hotspot verification were shared. Issue related with deforestation, forest degradation, agriculture and disaster raised in local stakeholder workshops were shared with respective experts. Problem tree, Solution tree, Hotspot map, intervention packages, activities, safeguard analysis matrix, benefit enhancement activities were shared and discussed/verified in the workshop for individual river system. Comments and suggestions collected from the workshops are incorporated in relevant sections for improvement of the Critical Ecosystem Restoration Plan.

CHAPTER 3 : INTRODUCTION TO GIDERI RIVER SYSTEM

3.1 Physiography, Land Cover and Hydrology

Gideri river system originates from the Chure, and passes through the Dun valley and finally join Saptakoshi river. It is extended over 26.774325°to 26.898249°N and 86.943563°to 87.082445°E. The river system constitutes of Chure hill in the north as well as in south.

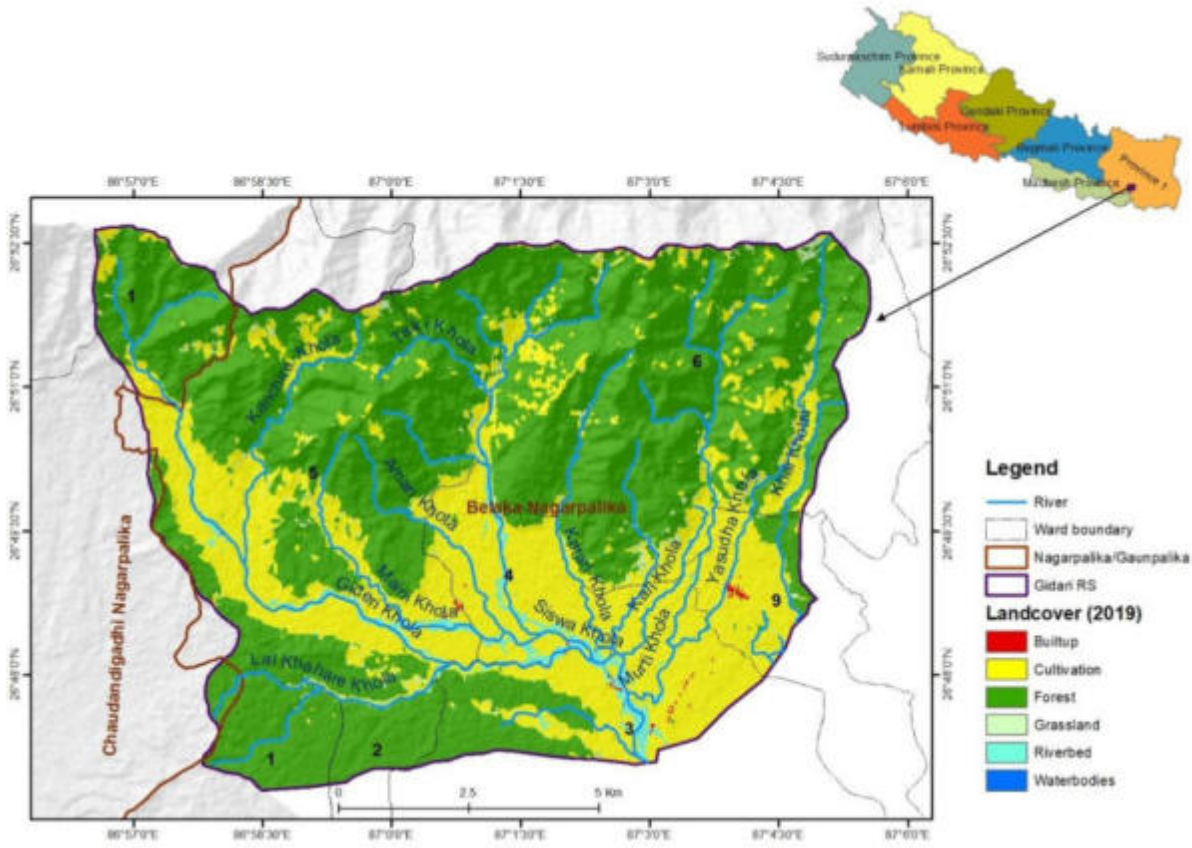


Figure 5: Location of Gideri river system

Dun valley is composed of quaternary deposit, is generally flat or rolling plains, and comprises fan terraces characterized by areas of population concentration. Alluvial fans, river terraces, and floodplains are the major geomorphic units in this region, and the valley fills have been described as Dun fan gravels or Dun gravels. These formed unconfined to semi-confined or leaky confined aquifers. Whereas, hillslope is composed of Lower Siwaliks (LS), Middle Siwaliks (MS) and Upper Siwalik (US) (DMG, 2007). Interbedded mudstones and fine sandstones or siltstones are composition of LS, present in the northern ridge and foot hill of RS. Similarly, northern mid hill slope of Chure is composed of MS, which comprises higher proportion of sandstone in a sequence of interbedded sandstone and mudstone. Sharp topography with high relief, steep slopes and escarpments are formed on the Middle Siwaliks, which is attributed to a higher proportion of beds of thick massive hard and resistant sandstones. This RS lies on tectonically active zone as Kamala-Tawa Thrust dissected from the middle and northern edge is characterized by the Marin Khola thrust. Moreover, presence of Siswa fault and others have shaped complicated geological

structures such as complex folds, faults or thrusts, different types of joints and fractures, and varying bed orientations and inclinations.

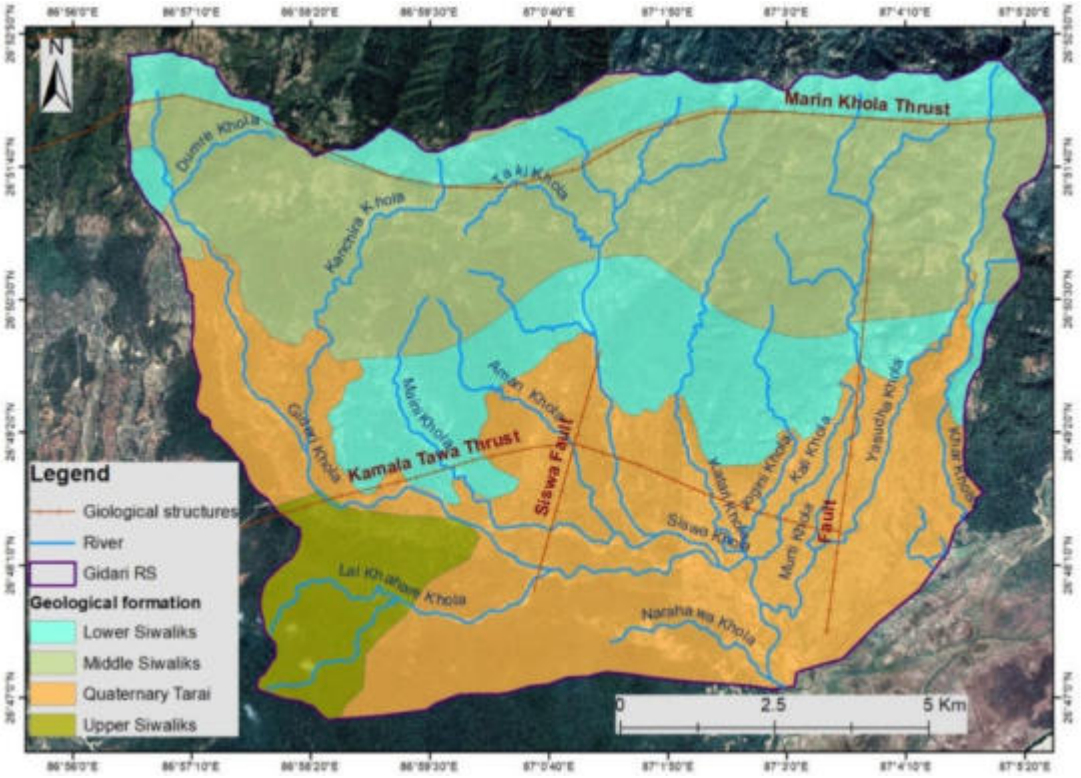


Figure 6: Geology of Gideri river system

Forest[1] is the dominant land cover of RS, covering 62.6% of total area, which has been decreased by 343.2 ha at the annual rate of 0.24% during 2000-2019. Expansion of agricultural land at expanses of forest land is still active in the river system (Choudhary & Pathak, 2016). Major patches of such loss are distributed in and around of Maini, Ramite, Bhachuwatol and Gudkelose settlement. This river system is also facing the rapid urbanization along the Madan-Bhandari highway, resulting increase of 14.6 ha built-up. Similarly, recently fish farming has been increased in the area, contributing to increase in water bodies in the river system.

Table 2: Land cover change in Gideri river system

Land cover	2000		2019		Change area (ha)	Rate of Change (%/yr)
	Area (ha)	Percentage (%)	Area (ha)	Percentage (%)		
Built-up	1.5	0.0	16.1	0.1	14.6	13.16
Cultivation	3717.5	31.2	4002.1	33.6	284.6	0.39

[1] Land with tree crown cover of more that 10 percent and area covering more than 0.5 ha, with minimum height of the trees to be 5 m at maturity and in-situ conditions. The land may consist either of closed forest formations where trees of various storied and undergrowth cover a high proportion of the ground, or of open forest formations with a continuous vegetation cover in which tree crown cover exceeds 10 percent.

Forest	7794.5	65.4	7451.3	62.6	-343.2	-0.24
Grassland	120.2	1.0	182.7	1.5	62.5	2.23
Water bodies	0.4	0.003	1.8	0.015	1.4	8.11
Riverbed	277.3	2.3	257.5	2.2	-19.7	-0.39

Source: (ICIMOD & FRTC, 2021)

Gideri and its tributaries are originated from the Chure hillslope and most of them are ephemeral stream, only contain surface water for few hours in rainfall period. However, Gideri and Sisuwa are intermittent streams having discharge throughout the rainy season. The Hydest WEC-DHM method estimated that overall discharge at the driest month (March) is 1.13m^3/s and high discharge (21.39m^3/s) occurred on August.

Table 3: Average monthly discharges in Gideri and its tributaries

Month	Long Term Average Discharge (m^3/s)
January	1.54
February	1.31
March	1.17
April	1.18
May	1.56
June	5.75
July	17.64
August	21.39
September	16.52
October	7.22
November	3.24
December	2.11

The shape of the RS is oval, because of which lower outlet region received higher discharge in shorter flow duration, causing the frequent channel migration and inundation (Bogale, 2021).

3.2 Climatic Conditions

The RS has subtropical climate and is heavily influenced by the monsoon (June-September), with an average annual rainfall of 2134.8 mm (Table 4). The temperature ranges from 3.4° to 40.8° Celsius.

Table 4: Rainfall distribution in Gideri river system

Station	Average long-term rainfall (mm)		
	Annual	Monsoon	Maximum 24 hours
Phatepur	1695.7	1371.3	270
Barahkshetra	2539.2	2163.3	405.3
Chatara	2169.6	1767	348

Source: (DHM, 2021)

Moreover, Climate change scenarios analysis performed for National Adaptation Plan (NAP) process indicated that average annual mean temperature of Udayapur district is likely to rise, Representative Concentration Pathway (RCP) 4.5 projected that increased by 0.81^{0}C and 1.17^{0}C in medium-term and long term respectively. The highest rates of mean temperature increase are expected for the post-monsoon season followed by the winter season (MoFE, 2019). Rising temperature further will create the water stress during the dry months through decreasing the agricultural production and thereby increasing food insecurity. Increasing temperature is also likely to contribute for spread of the crop diseases, insects and pest, weeds and alien invasive (Pandey, 2012; Bhandari et al., 2019).

Table 5: Climate change scenario in Gideri river system

Temperature	**^{0}C**	**Change (^{0}C)**			
	RCP 4.5			**RCP 8.5**	
	Reference Period (1981-2010)	Medium Term (2016-2045)	Long Term (2036-2065)	Medium Term (2016-2045)	Long Term (2036-2065)
	19.9	0.81	1.17	1.02	1.72
Precipitation	**mm**	**Change (%)**			
	RCP 4.5			**RCP 8.5**	
	Reference Period (1981-2010)	Medium Term (2016-2045)	Long Term (2036-2065)	Medium Term (2016-2045)	Long Term (2036-2065)
	1653	3.37	4.58	3.55	7.93

Source: (MoFE et al., 2019)

Similarly, average annual precipitation is likely to change in both the medium-term and long-term periods. It is likely to increase by 4.58% and 7.93% in the long period based on RCP 4.5 and RCP 8.5 respectively.

According to the local stakeholders, increasing temperature is already evidential and causing water stress through lowering availability of both surface and ground water in Dun valley. Similarly, local people perceived that duration of precipitation has been decreased; however, intensity has been increased in last two decades.

3.3 Socio-ecological Process

According to the local stakeholders, settlements residing the southern region were the older villages in the RS, whereas other were growth from the migrated peoples from the adjoining districts such as Bhojpur, Khotang, Okhaldhunga and Solukhumbu. Prior to 1990's, migrated peoples themselves used to clear the forest to establish agricultures and settlements. But in the recent decades, villagers who were already settled in the places are engaged in forest clearance and thus encroached land sold to newly migrated families. Nevertheless, this tendency has been decreased after handover the government managed forest to communities.

Farmers of the Chure hillslope are practicing subsistence farming including crops like maize and millet together with livestock. Among others, goat farming is mostly adopted one. In recent years, farmers are increasingly adopting multiyear farming practices such as banana and Amriso (*Thysanolaena maxima)*, governed by the market demand together with improved accessibility. In the meantime, more than 90 ha of cultivated land in Chure hill has been kept fallow due to the low productivity and labor shortage. Nonetheless, farmers in Chure hills are also comply to dwell in risk area due to lack of other viable alternatives for livelihood. For instances, farmers in Lamidandagaun once left their houses and cultivated land during early 2000's due to land subsidence and reoccupied during 2015's, even though risk were not properly mitigated.

Figure 7: Reoccupied debris flow failure area (Left: GE-2004 & Right: GE-2020) within the span of 16 years in Belaka municipality, Udayapur

Considering the Dun valley, rapid urbanization is prominent, especially in the Madan-Bhandari highway corridor. Markets like Rampur, Lal Bazar and Salghari-Thoksila are expanding in recent years. However, paddy field is still abundance in the lowland region adjacent to the flood plain.

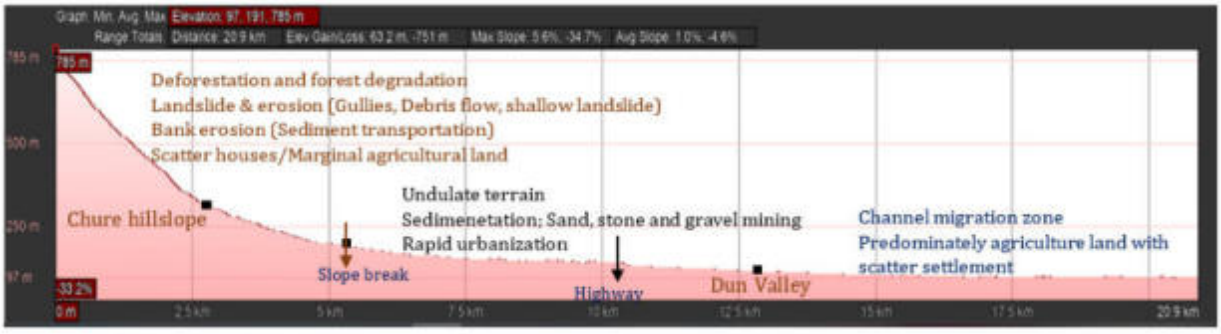


Figure 8: Elevation profile of Gideri RS, showing natural and social process

Terai and hill indigenous communities are dominant in the lowland region and Chure hill-slope respectively, whereas mixed communities are residing across the Chure foothill as well as highway corridor region. Traditional gender roles prescribe tasks such as collection of firewood, water, and fodder as women's jobs. This has increased women's vulnerability as they often rely on forest resources, and it requires venturing into the forest for this reason. Due to climate change, water sources frequently change which might require women to venture deeper into forests. Additionally, wildlife attacks on agricultural resources have increased food insecurity in the area. The women of Gideri are also under

mental duress due to the fear of wildlife attack as they are the ones responsible for protecting children and elderly when their male counterparts are away.

The vulnerability in the Chure hillslope is governed by the lower productivity of the land and lack of alternatives which compounded by the prominent erosion and slope failure process. Sedimentation and channel migration together have damaged more than 300 ha of cultivated land across the Dun valley, affecting the livelihood of the farmers.

CHAPTER 4 : PROBLEM AND SOLUTION ANALYSIS

4.1 Problem Analysis

Theme 1: Climate Change Mitigation

4.1.1 Drivers and Underlying Causes of Deforestation and Forest Degradation (D&FD)

The major challenges of the forest sector identified at Gideri River System are deforestation and forest degradation. Causes of deforestation and forest degradation are usefully separated into direct drivers and underlying causes. Drivers of D&FD are mostly associated with anthropogenic activities.

The drivers are prioritized and presented in sequential order in Table 6.

Table 6: Direct drivers and underlying causes of deforestation and forest degradation

Drivers of D&FD	Underlying Causes	
Unsustainable harvesting and illegal logging	Poverty and limited livelihood opportunities for women, IPs, Dalit, poor and marginalized groups	Forest products being a source of income generation to poor/marginalized
	Demand-supply gap of forest products	Population growth; Higher demand for timbers due to urban growth; Delay in silviculture operations, harvesting and utilization in CFs; Centralized timber distribution system from District Forest Products Supply Committee (DFPSC); Households with unregistered lands deprived of timbers and firewood distributed legally; Less community forest area for growing population
	Insufficient private land forests	Insufficient fodder and firewood production in private lands due to small landholdings; Inadequate knowledge and technology among local people for species selection, plantation, nurturing and management of private land forest; No legal provision in registration and use of forest products from private forests in unregistered lands
Forest fire	Lack of awareness among men and women	
	Carelessness from herders and forest dwellers	Throwing of cigarette butts etc.
	Intentional fire	Fire burnt for poaching; fire burnt for new grasses
	Inadequate preparations for forest fire management	Inadequate skilled human resources for firefighting; Inadequate firefighting equipment in CFUGs; Inadequate management of fire lines; Inadequate

Drivers of D&FD	Underlying Causes	
		efforts in removal of dry biomass accumulated in forest floor; Limited water availability within forest area to combat forest fire
	Inadequate coordination among CFUGs and concerned agencies to control forest fire	Spread of fire from neighboring CFUGs and government forests
Open and uncontrolled grazing	Inadequate fodder production in private lands	Small landholdings
	Low investment capacity of farmers for stall feeding	
	Weak forest protection	Lack of fencing; poor enforcement of rules and regulations
Encroachment of forestland	Population growth	Settlement expansion; Agriculture land expansion; Shifting cultivation (Khoriya Phadani)
	Poverty and limited livelihood opportunities	
	Unmanaged settlers/settlements	Inadequate efforts of government in addressing land ownership issues; Ineffective law enforcement
Ineffective forest management practices	Limited capacity and resources of CFUGs	Low income of CFUGs; Inadequate skill, equipment and technicians for forest management in CFUGs
	Poor forest enhancement	Problems associated with plantation & its protection- inadequate irrigation, open grazing, riverbank cutting and cutting of saplings by fodder, firewood collectors
	Weak governance	Declining accountability of CFUGs; Deficiency in forest sector transparency; Weak coordination and cooperation among stakeholders; Lack of accountability of local government and forest users; Low engagement of women and marginalized groups in preparing sustainable forest operational plans of CFUGs
Infrastructure development	Disproportionate population distribution	Construction of roads, playground etc. to serve scattered settlements

Drivers of D&FD	Underlying Causes	
	Socio-cultural practices	Construction of religious and cultural sites; Customary practices; local norms and values; relationship between different religious groups etc.
Climate-led hazards	Erosion/landslide	Forest degradation in Chure; Construction of road without adopting detail engineering study and design; Heavy/erratic rainfall
	Flood	Heavy/erratic rainfall

❖ **Problem Analysis**

The findings from local stakeholder consultations and expert consultations indicate that unsustainable/ illegal harvesting of forest products, forest fire, open/uncontrolled grazing, encroachment of forestlands and infrastructure development are the major drivers of deforestation and forest degradation in Gideri River System. Climate-led hazards like erosion/landslide and flood are other drivers of forest loss and degradation. Ineffective forest management practices also contribute to forest degradation.

Direct drivers of deforestation and forest degradation are the results of several underlying causes. The major underlying causes are high forest dependency; poverty and limited livelihood opportunities; ineffective forestry sector governance; weak law enforcement; lack of sustainable forest management; financial and human resource constraints in CFUGs and forest offices; and weak coordination and cooperation among concerned agencies.

Deforestation and forest degradation are related to climate change and pose threats to biodiversity and livelihood of forest dependent local communities. Deforestation refers to complete loss of forest cover. One of the major drivers is encroachment of forestlands for agriculture land and settlement expansion. Agricultural expansion can be further categorized into permanent conversion of forestland to farmland, and shifting cultivation. The underlying causes are population growth, limited livelihood options of households and unmanaged settlers (land tenure issues) near to forest areas. Nowadays, in community forests, encroachment is minimal due to regular monitoring of forests by local community forest user groups. Any expansion is limited to minor shifting of boundaries into forestland at some locations. Infrastructure development in forest area is found to be other driver of forest loss. Unplanned and unregulated opening of road networks to serve scattered settlements, construction of religious and cultural sites, and playgrounds etc. are other causes of forest loss. Landslide and flood triggered by both human-induced and natural factors also cause forest loss. Inappropriate land use practices are main human-induced causes; and heavy/erratic rainfalls, steep slopes and other topographic conditions are the major natural causes (Figure 9).

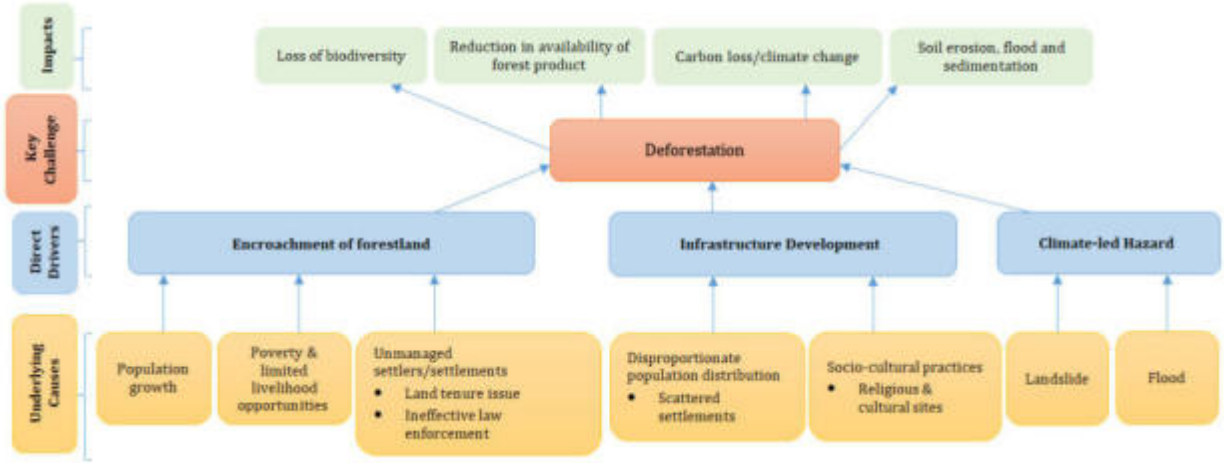


Figure 9: Problem tree for deforestation

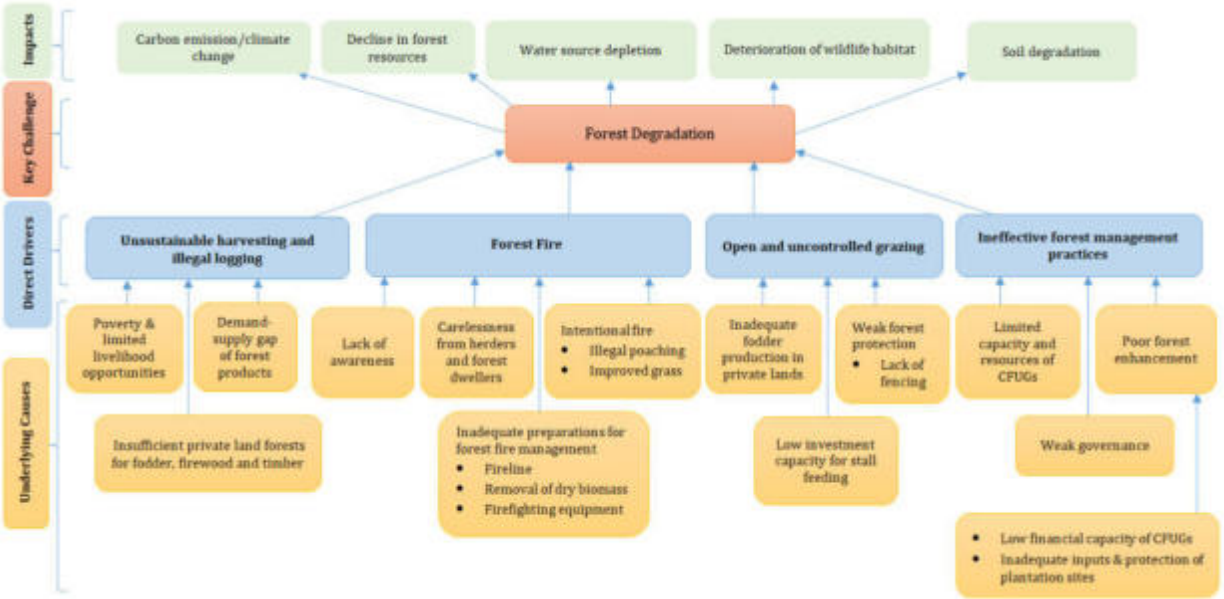


Figure 10: Problem tree for forest degradation

Forest degradation relates to loss of biomass (carbon) and reduction in the capacity of forests to produce ecosystem services. Unsustainable and illegal harvesting is one of the drivers of forest degradation. Harvesting of forest products comprise felling of trees and saplings (mostly illegally) for timber and poles, firewood collection for household use and sell, and repeated and unsustainable harvest of fodder. Unemployment has motivated many people for illegal collection of timber, firewood for sale. Demand-supply gap of forest products through legal channel also motivates people for illegal and unsustainable harvest. The other important causes are unregistered lands and insufficient private land forests due to small landholdings. Households with unregistered lands are deprived of timbers and firewood distributed legally. The forest regulation also prohibits felling and sale of forest products from unregistered lands. It has demotivated local people for developing private land forest. Forest fire is other major drivers of forest degradation. It damages and hinders regeneration, seedling growth and destroys non-timber forest products under lower strata of the forest floor. It is also believed to trigger soil erosion due to the destruction of natural vegetation. Forest fire is caused either due to careless handling of fire by forest dwellers and herders or intentionally by poachers for hunting and local communities for grass

improvement. The spread of forest fire has been difficult to handle due to inadequate trained human resources and firefighting equipment. Early preparations for forest fire like fire line management, removal of dry biomass are also inadequate. Open and uncontrolled grazing negatively affects regeneration and growth of seedlings and ultimately causes forest degradation. People are dependent on forests for grazing due to loss of grazing lands, inadequate fodder production in private lands and lower financial capacity to switch to stall feeding.

Ineffective forest management practice is also one of the drivers of forest degradation. It is mainly associated with institutional weakness caused by lower financial capacity and technical resources; poor forest enhancement; and weak forest governance due to deficiency in forest sector transparency, declining accountability, and weak coordination and cooperation among forest stakeholders (Figure 10).

❖ **Key Observations**

- The people residing nearby forest first encroach forestlands and then sell to in-migrants. Once the number of households increases, it becomes difficult to deal with the issue. Moreover, these encroached settlements have political protection as they are considered as vote banks.
- An elite influence in CFUGs is one of the major causes of weak governance. Persons holding major posts in executive committees of CFUGs resign once they find better opportunities. The other reason is competitive feelings where one who does not get hold on major posts files complaints against others to hinder his/her work.
- The major cause behind illegal logging is unemployment. The other cause is unregistered lands. The households with unregistered lands are deprived of timbers distributed from District Forest Products Supply Committee (DFPSC). It also creates difficulties in private land forests, as sell of forest products from unregistered lands is illegal.
- At present, timbers are distributed from District Forest Products Supply Committee, which is also causing demand-supply gap. Distant users are unwilling to buy from DFPSC due to additional cost of transportation.
- Women, IPs, Dalits, poor and marginalized groups not having access to finance, technology and skill to address the deforestation problems and policy gaps in addressing gender governance.
- Women are not able to ask for their equal rights to natural resources management. Women and marginalized groups not having adequate knowledge and awareness in policies and law for sustainable forest management.
- Not having sufficient alternative energy programs. Traditional use of energy sources and inadequate alternative energy programs to reduce drudgery of women.

Theme 2: Climate Change Adaptation

4.1.2 Drivers and Underlying Causes of Vulnerable Ecosystem and Community

Climate induced disaster and climate stress on agriculture productivity are two key challenges representing vulnerable ecosystem and community in Gideri River System. These two key issues have impacts on the ecosystem and livelihood generation through damage to natural vegetation, loss and damage of agricultural lands, loss of life and properties, low family income and food insecurity.

The drivers are prioritized and presented in sequential order in Table 7.

Table 7: Direct drivers and underlying causes of vulnerable ecosystem and community

Drivers	Underlying Causes	
Climate Induced Disaster		
	Topography	Fragile geological condition and slope terrain

Drivers	Underlying Causes	
Erosion/ landslide	Forest degradation	Forest fire, unsustainable harvesting, open grazing etc.
	Heavy/erratic rainfall	High intensity rainfall and continuous rainfall for several days
	Road construction without adopting engineering study and design	Construction of roads to serve scattered settlements and market access for agriculture products; Use of heavy machineries in road construction
	Cultivation in slopy land	Limited productive lands for the community
Flood	Heavy/erratic rainfall	High intensity rainfall and continuous rainfall for several days
	Upstream landslide and erosion	Fragile geological condition and slope terrain
	Unmanaged excavations of river bed materials	Lack of environment assessment; Higher demand of river bed materials due to urban growth
	Riverbank encroachment	Risk acceptance due to poverty, economic opportunity of land
Weak disaster risk management	Inadequate capacity and coordination	Insufficient and scattered investments; weak coordination and collaboration at national level
	Ineffective Disaster Risk Reduction (DRR) policy and planning	Low capacity of local governments in DRR planning and implementation; Less priority to disaster preparedness
Climate Stress on Agriculture Productivity		
Inadequate capacity and resources	Limited farm skill and technology use in climate resilient farming practices	Inadequate agriculture technicians at local level
	Low investment capacity of farmers	Difficulties in receiving loan due to unregistered lands
	Inadequate support and promotions	Governments failure to identify and support real farmers (dominance of elites/paper farmers)
	Poor market access	Higher cost of production and low market price of sale; Market domination by intermediaries
Insufficient irrigation	Depletion of water sources	Drying up of water sources; degradation of ponds, wetlands

Drivers	Underlying Causes	
	Lack of alternative irrigation technologies	Insufficient efforts to promote alternative irrigation technologies- rainwater harvesting, deep boring, drip irrigation and others
	Inadequate infrastructure and investment	
Pests and diseases	Decline in organic content of soil	Use of chemical fertilizers and pesticides and low organic inputs
	Use of less immune hybrid varieties	Loss or limited availability of native varieties; Low production from local native seeds and livestock; Higher production from hybrid varieties but less immune to pests and diseases
	Inadequate knowledge and skill of farmers for pest and disease control	
Soil quality degradation	Low organic inputs	Insufficient compost manure due to declining livestock farming
	Use of chemical fertilizers and pesticides	Inadequate skill and technology for compost, bio-pesticides production
	Sedimentation in farmland	Sedimentation due to erosion and flood

❖ **Problem Analysis**

Erosion/landslide, flood and weak disaster risk management are major drivers of climate induced disaster that enhances ecosystem and local community vulnerability. Landslide and flood have caused loss and damage of natural vegetation, agricultural land and properties affecting local people's livelihood. These disasters are triggered by both natural and anthropogenic causes. Inappropriate land use practices like cultivation in slope lands, forest degradation, unplanned and unregulated road construction, unmanaged riverbed material excavation and riverbed encroachment are main human-induced causes. Heavy/erratic rainfalls, steep slopes and other topographic conditions are major natural causes. Weak disaster risk management has further exacerbated exposure to these disasters. The reasons behind this are weak coordination and collaboration among concerned sectors and ineffective DRR policy and planning. The investments in DRR are inadequate and scattered without proper planning (Figure 11).

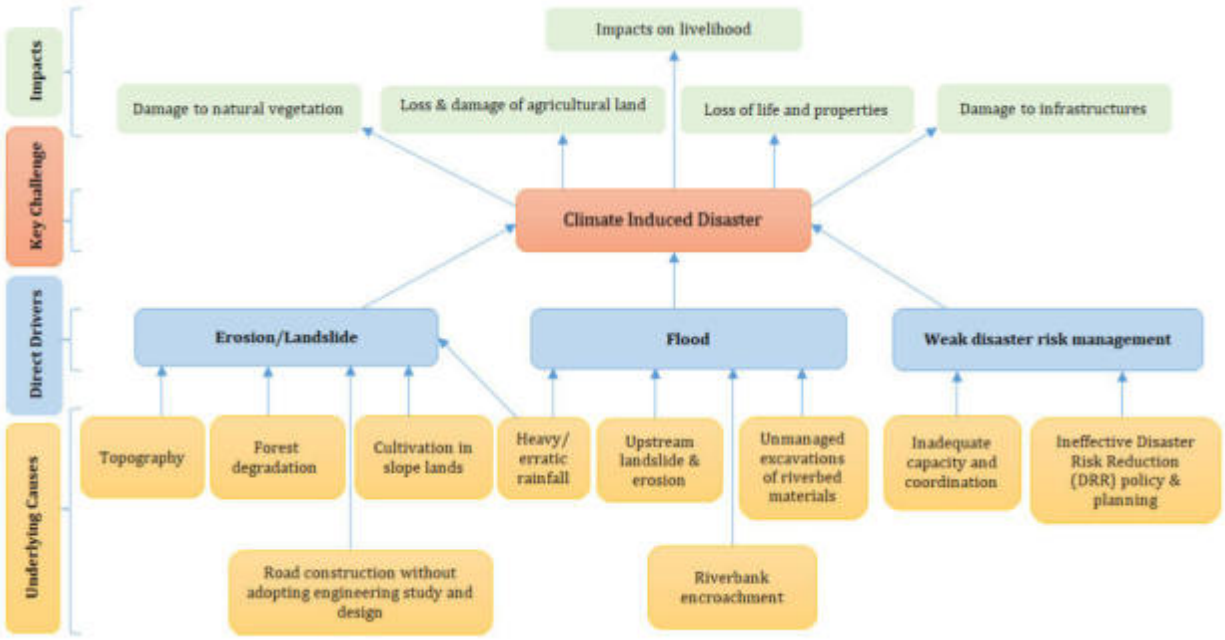


Figure 11: Problem tree for climate induced disaster

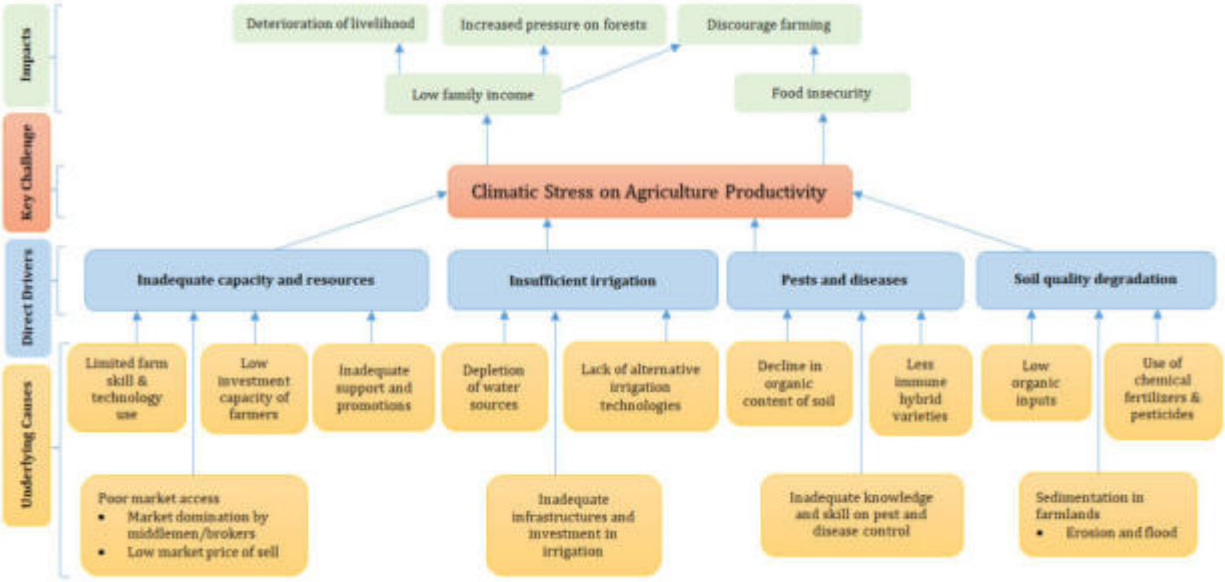


Figure 12: Problem tree for climate stress on agriculture productivity

Climate stress on agriculture productivity is the other aspect of vulnerable community. It has direct impact on people's livelihood through low family income and food insecurity. It eventually makes forest ecosystem vulnerable through increased pressure in forest resources. The major drivers are inadequate farm skills and financial resources; insufficient irrigation; pests and diseases; and soil quality degradation. Farmers have limited skill for commercial and climate resilient farming practices. There is less use of technology and equipment to enhance agriculture productivity. Irrigation facilities are not sufficient. Investment capacity of small farmers is low due to poor financial status. Government support is inadequate. One of the major problems is unregistered lands that make difficult in receiving bank loans. Lack of agriculture technician at local level and inadequate promotional programs (incentives, subsidies,

farm equipment support) are other problems in agriculture sector. Farmers depend on chemical fertilizers and pesticides for increasing agriculture yield. It has resulted in low organic content deteriorating soil quality. It also increases insects, pests and diseases. Crop pests and diseases are also increasing due to use of less immune hybrid varieties. Farmers lack technical skills on identification and treatment of pests and diseases. Moreover, poor market access and infrastructures; higher cost of production; and low market price of sale of products due to market domination by intermediaries have demotivated farmers to adopt commercial agriculture (Figure 12).

❖ **Key Observations**

- Security agencies mostly Armed Police Force is more involved in disaster management but they lack essential equipment.
- Unregistered lands make difficult for households to receive government incentives in farming.
- Though declared at policy level, provision of crop insurance is yet to be endorsed.
- Hybrid varieties are less pest resilient both in cultivation and storage.
- Farmers face unnecessary hurdles in registration of farmers group, acquisition of PAN number, approval for government incentives, auditing and renewals.
- Gendered governance, participation and integration was found to be low in all the issues and their voices are not heard or skills and technological access weak.
- Women not having land titles and illegal settlement do not allow women, IPs or marginalized communities to get benefits from the project interventions. For example illegal settlers can have access or benefits from subsidies and other project interventions.

4.1.3 GESI Issues Observed in Problem Analysis

Women, IPs, Dalits, poor and marginalized groups have less access to finance, technology and skill to address the deforestation problems and policy gaps in addressing gender governance. Women are not able to ask for their equal rights to natural resources management. Women and marginalized groups are not having adequate knowledge and awareness in policies and law for sustainable forest management. Gendered governance, participation and integration was found to be low in all the issues and their voices are not heard or skills and technological access is weak. Settlements with unregistered lands do not allow women, IPs or marginalized communities to get benefits from the project interventions.

The GESI issues identified from problem analysis are presented in Table 8.

Table 8: Problems associated with GESI

Drivers	Underlying Causes	
Inadequate exercise of gender-inclusive governance in climate change, sustainable natural resource management (SNRM) practice	• Male- supremacy and dominance in decisions • Limited access of women to information and communication (especially climate change and SNRM-related information, facility, fund, notice, and subsidies) • Less consultation with women regarding agenda and time of meetings • Unavailability of disaggregated data • Lack of recognition of traditional knowledge of women in climate resilient land use practices (CRLUP)/SNRM • Articulation of CRLUP/SNRM /DRR as scientifically complex subjects	• Hesitation to speak in meeting • Less knowledge on CFUG management • Less knowledge on climate change adaption • Insufficient women participation • Increased vulnerability of women towards environmental changes • Slower women leadership development in natural resource management

Drivers	Underlying Causes	
	• Limited knowledge on gender mainstreaming approach and value among officers/key people • Gendered power relations within households, society and restricted mobility of women	(NRM), forest management and DRR • Low income of women • Less control of women over high value forest products

4.2 Solution Analysis

Theme 1: Climate Change Mitigation

4.2.1 Activities for Reducing Forest Loss and Enhancing Forest Density

Various activities have been identified for reducing forest loss and enhancing forest density and enrichment. The activities are proposed to mitigate deforestation and forest degradation by providing solutions to direct and underlying drivers. The strategic actions include reducing forest dependency by addressing poverty and livelihood issues; promoting agroforestry, livestock management and private forestry; promotion of alternative energy; strengthening forest fire control system; controlling open grazing; improving law enforcement and overall forestry sector governance; promoting sustainable forest management; controlling further encroachment of forestlands; and capacity enhancement of user groups and government forestry staffs. Afforestation and reforestation activities are proposed to enhance forest density (Table 9).

Table 9: Activities for reducing forest loss and enhancing forest density

Drivers of D&FD	Activities against Drivers	
Unsustainable harvesting and illegal logging	Enhance income generation opportunities of women, IPs, Dalits, poor/marginalized forest users	Skill development trainings and equipment support (masonry, carpentry etc.); Support soft loans for entrepreneurship development targeting women, IPs, Dalits, poor/marginalized forest users
	Promote private forests and agroforestry	Seedling distribution and technical support for private land forests and agroforestry
	Promote alternative energy	Provide subsidies on alternative energy (induction stoves, Improved Cooking Stoves etc.)
	Improve legal supply system of timbers	Decentralize timber supply to sub-division forest offices; Policy interventions to facilitate timber distribution to households with unregistered lands
Forest fire	Sensitization/awareness programs	Sensitize communities on the impacts of forest fire on ecosystem functions/services and their restoration; Enhance coordination among CFUGs
	Construction and improvement of fire lines	Capacity development and funding support for fire line construction

Drivers of D&FD	Activities against Drivers	
	Firefighter training and support firefighting equipment to CFUGs	Coordination and collaboration with DFOs/DRRMC and security forces
	Enhancing water availability during forest fire	Construction of conservation ponds for water storage
	Removal of dry biomass	Removal of leaf litters and bush clearance prior dry season; Promote compost production from dry leaf litters and unwanted bushes
Open and uncontrolled grazing	Promote stall feeding	Training and support on commercial livestock farming and shed improvement
	Support fodder banks in private and public lands	Distribution of seeds/seedlings of fodder trees and nutrient grasses; Provide technical trainings
Encroachment of forestland	Forest boundary demarcation	Technical and financial support to DFOs/sub-DFOs
	Enhance income generation opportunities	Skill development trainings (production of bamboo stools, soap, detergent powder, incense stick, wood & bamboo furniture, cement blocks, tailoring, mobile repair, electronics etc.); Establish forest based industries for mass employment generation
	Resolving land ownership issues	Policy commitments/Policy interventions
Ineffective forest management practices	Implementation of sustainable forest management	Review/upgrade/renewal of forest operational plans (FOPs) of community forest user groups (CFUGs); Sensitization/awareness programs on sustainable forest management; Training on silviculture operations and equipment use
	Establish/upgrade nurseries	Demand based seedlings production
	Implement forest enhancement activities	Enrichment plantation, riverbank plantation, assisted natural regeneration etc.
	Strengthen forest governance	Joint coordination meeting of government staffs and CFUGs to enhance accountability and transparency
Infrastructure development	Regulate infrastructure development within forest areas	Promote environment friendly infrastructures; IEE/EIA & detail engineering study and design

Drivers of D&FD	Activities against Drivers	
Climate-led hazards	Landslide treatment	
	Erosion/gulley control	
	Riverbank stabilization	
	Regulate excavation works of riverbed materials	Coordination among local government, other associated government agencies and CFUGs to regulate excavation of riverbed materials; Environment assessment for riverbed excavation

❖ **Solution Analysis**

Solution trees are prepared to minimize deforestation and restore degraded forests. Deforestation is associated with encroachment of forestlands, infrastructure development and natural hazards. The foremost activity to control encroachment is to resolve land tenure issues. This requires intervention at policy level. Forest boundary demarcation also resolves land tenure issue and requires strong law enforcement to avoid further encroachment. Poverty and livelihood issues can be addressed by enhancing income generation opportunities for poor/marginalized groups through skill development training and forest based entrepreneurship. Infrastructure development in forest areas can be regulated through policy interventions; enhancing inter-agency coordination and cooperation; and provision of environment assessment (IEE/EIA), detail engineering study and designs. Infrastructures in forest areas should be environmentally friendly. Forest loss from natural hazards can be reduced through landslide treatment, gully/debris torrent control and riverbank stabilization (Figure 13).

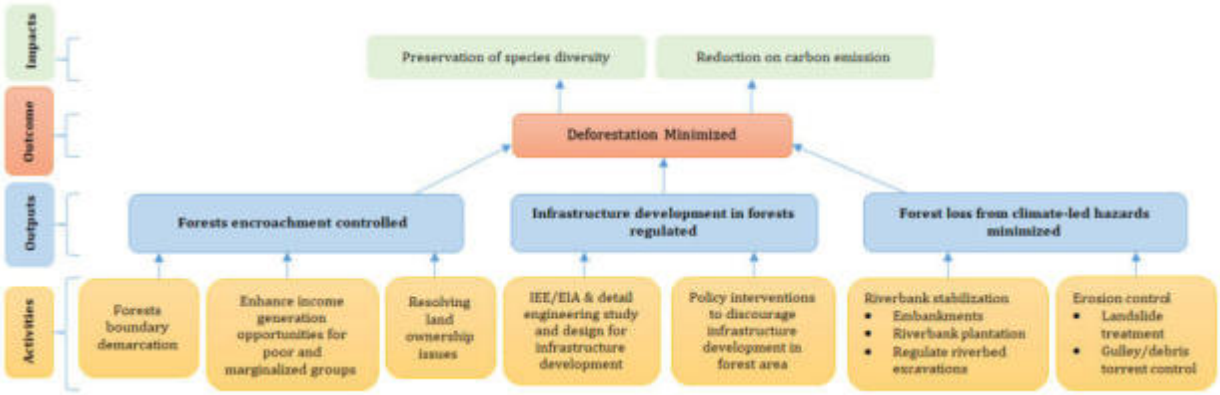


Figure 13: Solution tree for minimizing deforestation

Degraded forests can be restored through addressing direct and underlying drivers of forest degradation, improving natural regeneration and plantations. Illegal harvesting of forest products can be minimized by enhancing income generation opportunities for poor/marginalized forest dependent people and improving legal supply of forest products. The socially and economically marginalized forest dependent people can be provided with skill development programs and support for entrepreneurship development. Promoting alternative energy, agroforestry and private forestry also reduces forest dependency. Promotion of agroforestry and private forestry require seedlings and technical support. Fodder trees and nutrient grasses like Badame ghans, Bakaino (*Melia azedarach*), Epil Epil (*Leucaena leucocephala)*, Tanki (*Bauhinia purpurea)*, Kimbu (*Morus nigra)*, Badahar (*Artocarpus lakoocha)* etc. can be

promoted in private and public lands. This enhances fodder availability outside forests and reduces pressure of open grazing in forests. Open grazing can also be controlled through livestock breed improvement and stall feeding. Providing training and support on commercial livestock farming and shed improvement can be helpful in promoting stall feeding. Forest fire can be mitigated by enhancing firefighting capacity and early preparations. The CFUGs need to be well trained and equipped to control forest fire. In addition, collaboration with security agencies (Nepal Police, Armed Police Force) further enhances forest firefighting capacity. Periodic removal of dry biomass and construction of fire lines reduces forest fire spread. In turn, the bushes and dry leaf litters can be used for compost/manure production. Construction of water storage ponds in potential strategic locations enhances water availability during forest fire. Moreover, illegal poaching needs to be controlled by enhancing forest monitoring.

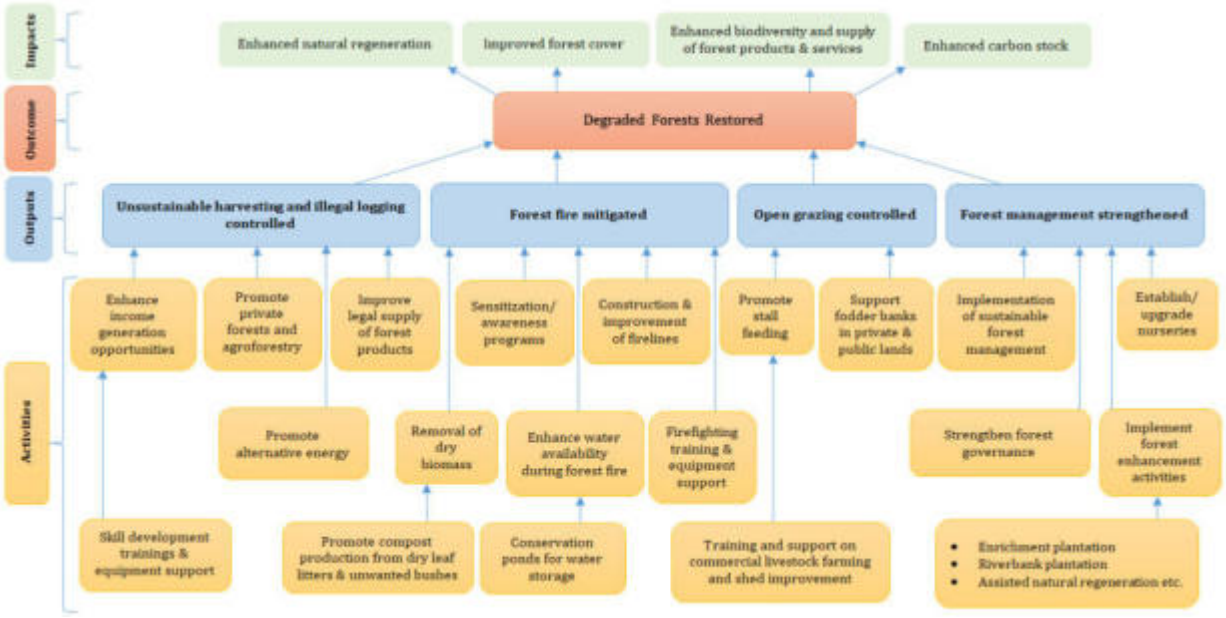


Figure 14: Solution tree for restoration of degraded forests

Forest management can be improved through FOP implementation and strengthening of sustainable forest management practices, implementation of forest enhancement activities and strengthening of forest sector governance. All the CFUGs should have a valid sustainable forest management operation plan. They should be well trained and equipped for its implementation. Forest enhancement can be done through afforestation and reforestation. Seedling/sapling availability can be ensured by construction/upgradation of nurseries. Priority should be given to local native species while other commercial species like can also be introduced through proper study and in line with safeguard measures. Nurseries should produce saplings of demanded species like - Badahar, Epil Epil, Tanki, Kimbu, Bakaino, Chiuri (*Diploknema butyracea*), Amala (*Phyllanthus emblica*), Kutmero (*Litsea monopetala*), Nebharo (*Ficus carica*), Teak (*Tectona grandis*), Masala (*Eucalyptus sps*), Aanp (*Mangifera indica*), Litchi (*Litchi chinensis*), Katahar (*Artocarpus heterophyllus*), Bamboo, Amriso (*Thysanolaena maxima*), Kurilo (*Asparagus racemosas*), Kagati (*Citrus aurantifolia*), Nibuwa (*Citrus limon*), Bhogate (*Citrus maxima*), Kola (*Musa paradisiaca*), Khayar (*Acacia catechu*), Sissoo (*Dalbergia sissoo*), Phaledo (*Erythrina arborescens*) etc. that will encourage plantation. Moreover, government staffs and CFUGs' executive committee members should be sensitized and capacitated to strengthen forest sector governance (Figure 14).

❖ Major Activities and Outputs

The major activities and outputs proposed for reducing forest loss and enhancing forest density are presented in Table 10.

Table 10: Major activities and outputs for reducing forest loss and enhancing forest density

Major Activities	Outputs
Forest fire control	Restored degraded forests area halting forest fire, illegal harvesting and grazing
Agroforestry promotion	
Income source of poor/marginalized forest users enhanced halting illegal harvesting	
Improvement of forest cover within national forest through enrichment plantation/ANR	Improved natural forest management and increased forest area outside the forest
Restoration, enhancement and maintenance of forests and tree cover in the river system landscape through Public and private forestry	
Strengthening forest management	

❖ **Recommendation from Expert Planning Workshop**

- Provide subsidies in electricity to promote use of electrical stoves.
- Industrial development would be better for the employment generation. Skill development training should be focused on construction works that can guarantee employment opportunities and can be effective in replacing outside workers.
- Riverbank plantations can be effective to avoid riverbank encroachment. Plantation in adjoining land can be cost effective and sustainable than active flood plain.
- It would be effective to enhance cooperation and collaboration with security agency for forest fire management. They should be provided with essential equipment like fire extinguisher, fireproof jackets, water jet spray etc. Security agencies can also provide firefighting training.
- Timber distribution should be decentralized with provision of distribution from sub-division forest offices. It can be effective in reducing demand-supply gaps.

Theme 2: Climate Change Adaptation

4.2.2 Activities for Enhancing Adaptation/Resilience of Ecosystem and Community

Various activities are identified for disaster risk reduction, supporting climate resilient farming and enhancing agriculture productivity based on direct and underlying causes of vulnerable ecosystem and community. The activities are proposed to cope with these drivers and enhance adaptation/resiliency of ecosystem and local community (Table 11).

Table 11: Activities for enhancing adaptation/resilience building of ecosystem and community

Drivers	Activities Against Drivers	
Climate Induced Disaster		
Erosion/landslide	Landslide treatment	Crown protection, drain management, seed broadcasting, check dam etc.
	Construction of check dams and bioengineering for gully/debris torrent treatment	

Drivers	Activities Against Drivers	
	Promote agroforestry on marginal land	Plantation of high value/multi-year species and grazing control in erosion prone areas; Conservation oriented agriculture in slopy lands
	Regulate infrastructure development	IEE/EIA & detail engineering study and design for road construction
Flood	Riverbank stabilization	Embankments and bioengineering
	Plantation of bamboo and other species along river corridors	
	Regulate riverbed excavation works	Coordination among local government, other associated government agencies and CFUGs; Environment assessment (EIA/IEE) for riverbed excavation
Weak disaster risk management	Enhance coordination and collaboration among concerned agencies for integrated DRR planning	Participatory planning approach including women, Dalit, IPs and poor and marginalized groups
	Strengthen disaster preparedness with equipment support	Preparation of Risk Sensitive Land Use Plan by local government and implementation
Climate Stress on Agriculture Productivity		
Inadequate capacity and resources	Establish Farmer Field Schools (FFS)to capacitate farmers	Training and incentives to promote climate resilient farming and land use practices
	Incentives to promote commercial farming	Provide seed money, soft loans, subsidies in equipment, production based subsidies, and support shed improvement for commercial farming
Insufficient irrigation	Promote alternative irrigation practices	Training and support drip irrigation, rainwater harvesting, deep boring, earthbag ponds etc.
	Conservation of water sources	Maintain greenery around water sources/avoid concretization
Pests and diseases	Train farmers on identification and treatments of pests and diseases	

Drivers	Activities Against Drivers	
	Promote conservation of resilient native crops and local livestock breeds	Training and support selection, grading and storage of seeds; Improvement of local livestock breeds and crop varieties for resiliency and higher production
Soil quality degradation	Promote organic farming and Integrated Pest Management (IPM) through FFS	Awareness programs and trainings on IPM and compost, bio-pesticides production; Equipment and technical support to produce compost manure; Promote livestock farming by supporting shed improvement and fodder banks; Support soil quality test

❖ **Solution Analysis**

The strategic actions proposed for disaster risk reduction are landslide treatment, erosion control, riverbank stabilization and strengthening disaster risk management. Landslide treatment can be done through crown protection, drain management, seed broadcasting etc. gullies/debris torrent can be treated by constructing check dams. To avoid erosion from human-induced causes like infrastructure development (road constructions) must be regulated. Promoting agroforestry, livestock management and conservation agriculture in slopy lands also help in reducing soil erosion. Plantation of high value species, multi-year plant species, fruits not only reduces erosion but also provides the source of income. Riverbank stabilization requires construction of embankments. Bioengineering can be integrated for effectiveness along with structural measures. It also enhances vegetation cover. Riverbed material excavation must be regulated in coordination among local government, other associated government agencies and CFUGs to reduce flood risk. The other important activity to minimize disaster risk is to enhance coordination and collaboration between different agencies working for disaster risk management. The disaster risk reduction plans of various agencies should be integrated that provides solution to inadequate and scattered investments thereby enhancing effectiveness of DRR activities. Local governments should be encouraged to prepare Risk Sensitive Land Use Plans and strengthen disaster preparedness. Disaster preparedness can also be strengthened through equipment support to concerned agencies (Figure 15).

One of the important aspects of enhancing adaptation/resilience building of ecosystem and local community would be climate resilient farming practices and enhancing agricultural productivity. Increase in agriculture productivity will improve livelihood of small farmers and at the same time, it will decrease forest dependency. To achieve this, foremost priority should be to enhance capacity of farmers. Farmer Field Schools can be the best solution where farmers will be trained on climate resilient farming practices and enhancing agriculture productivity. Training farmers alone would not be sufficient to encourage farmers. Providing seed money, soft loans, subsidies in equipment, production based subsidies, and improving irrigation facilities can encourage farmers to commercial farming. Alternative irrigation practices like rainwater harvesting, drip irrigation can be promoted along with conservation of water sources to improve irrigation facilities. Organic farming and Integrated Pest Management (IPM) can be promoted to improve soil quality by reducing use of chemical fertilizers and pesticides. It can be promoted by providing trainings and equipment support. Promoting commercial livestock farming can further enhance organic farming. Farmers should be provided with technical support and incentives for commercial livestock farming and shed improvement. They can be encouraged to establish fodder banks in private land by providing seedlings of fodder trees and nutrient grasses. It will be helpful in promoting

stall feeding and decreases impact on forest due to open grazing. Promoting organic farming and IPM can also be beneficial in reducing crop pests and diseases. Farmers can also be trained on identification and treatment of pests and diseases. Conservation of resilient native crops and local livestock breeds should be promoted. Improvement of native crop varieties/livestock breeds can enhance resiliency and enhance productivity (Figure 16).

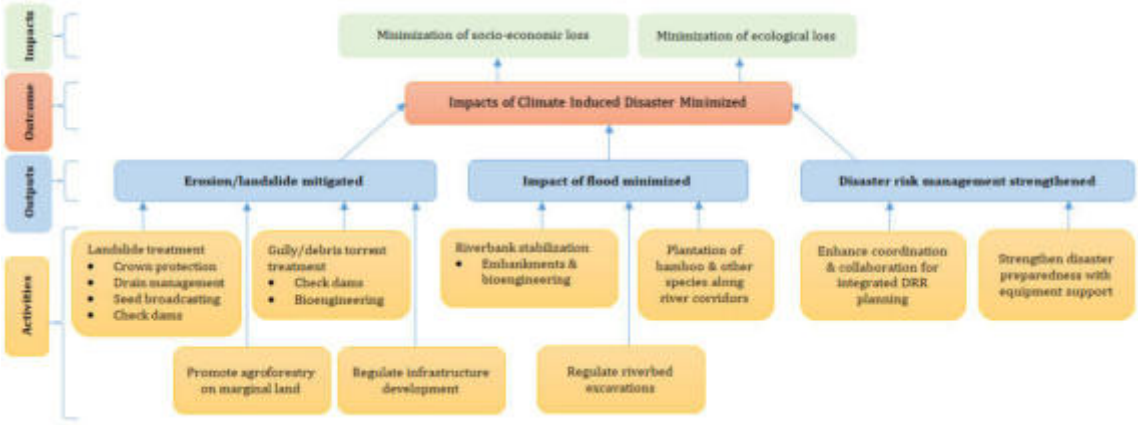


Figure 15: Solution tree for minimizing impacts of climate induced disasters

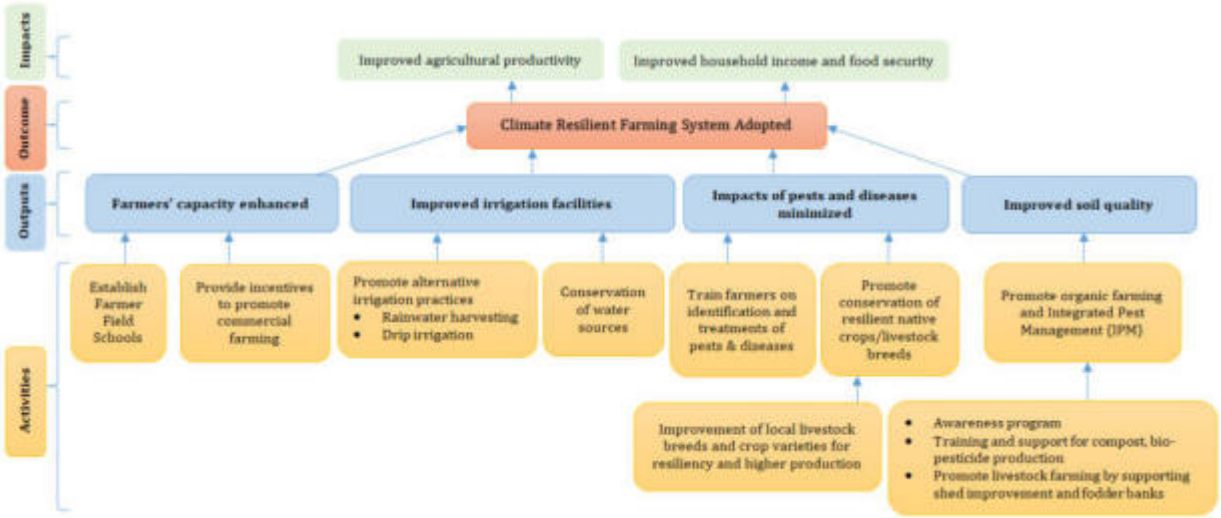


Figure 16: Solution tree for climate resilient farming practices

❖ Major Activities and Outputs

The major activities and outputs proposed for enhancing adaptation/resilience building of ecosystem and local community are presented in Table 12.

Table 12: Major activities and outputs for enhancing adaptation/resilience building of ecosystem and community

Major Activities	Outputs
Controlling erosion/landslide and management of sedimentation	Minimized impacts of climate induced disasters (erosion,
Agroforestry promotion in marginal/sloping lands	
Minimization of negative impact of flood	

Major Activities	Outputs
Strengthening disaster risk management and awareness creation on climate resilient NRM	landslides/ sedimentation and flooding)
Establish and operationalize Farmers Field Schools (FFS)	Farmers adopted climate resilient farming practices
Conservation and management of water sources	
Implementation of climate-resilient land use practices (pest and disease minimized, soil quality improved, irrigation facility enhanced)	

❖ **Recommendation from Expert Planning Workshop**

- Gullies/debris torrents are prioritized for treatment considering direct impacts on settlement and agriculture.
- Gulley treatment should be focused right from the upstream. Only downstream treatments will not be effective.
- Provide equipment support to security agencies for disaster management.
- Construct sediment trappers in river/torrents with higher sedimentation.
- Concretization should be avoided in water source conservation. Rather focus should be on greenery improvement.
- Households with unregistered lands can receive government support for agriculture on recommendation from respective ward offices.
- Address gender inclusive governance which has been the weakness in addressing policy issues and practicing good governance.

4.2.3 Gender Inclusive Action Plan and Process

Gender inequality and social norms limit women's access to resources and sufficient opportunity to participate in the decision-making process, particularly in sustainable natural resource management. Women are playing a significant role in the conservation of forests and increasing the adaptability of climate change impact. The entire CERP process has adopted gender-inclusive actions such as ensuring equal participation during the consultation. The process adopted a gender-specific approach to collect problems, especially among women's user groups, through the Himalayan Grassroots Women's Natural Resource Management Association (HIMAWANTI). The gender-specific approach adopted particular research tools such as seasonal calendars, problem and solution community workshops, and focus group discussions among women, Dalits, IP's women, and other marginalized communities. Also, the consultation process includes a consultation with women and women lead organizations. The male leaders were also involved in advocating gender equality and women's engagement in the climate change planning process. The gender mainstreaming approach is included in problem and solution analysis and the recommendation has been incorporated in the plan. Key issues and solutions on gender equality in SNRM:

Table 13: Gender issues and gender inclusive actions

Key issues	Solution
1. Unequal representation and influence of women in NRM, CCA, and DRR governance	1. Equal representation of women and consideration of specific adaptation needs is a must to realize inclusive SNRM and CCA
2. Women's issues and capacity are not considered in the planning process	2. Involvement and integrating women and women's concerns need to include in the programming process

Key issues	Solution
	(planning, budgeting, monitoring, evaluation, and redesigning of the plans and project)
3. Women are just counted as vulnerable groups and passive beneficiaries of development interventions	3. Plan/conduct gender mainstreaming training, learning events, and advocacy campaigning for gender integration for the government officers, CBOs executive, local resource persons, and other stakeholders
4. Women are more involved in labour contributions both in conservation and management of natural resources	4. Learning and sharing platforms for grassroots-level women at their settlements can help to identify their issues and problems in the group
5. Women have less control over high-value products such as timber and the commercialization of non-timber forest products as compared to men	5. Provide business opportunities, build the leadership skills to communicate or negotiate with men/leadership/decision makers to access information and resources and initiate entrepreneurship, promote men into governance-related activities, and present men as change makers "Champions."
6. Underrepresentation of women in the process is the major reason and the challenges to women's representation are the gender role, restricted mobility	6. Conduct a rapid assessment to generate the case study and build the capacity of municipality people to keep the record-gender disaggregated data
7. Lack of gender-disaggregated data in government offices	7. Building the technical capacity of women-led organizations helps to raise the collective voice of women contributing to advocating for gender-inclusive planning and budgeting at local levels
8. Lack of equal representation of women in decision-making process	8. Sensitization on the gender differential impact of climate change has been strongly suggested in a community workshop, focused group discussion, and discussion with women-led organizations
9. Loss of women's control over valuable resource	9. Institutionalization of gender analysis as part of program design helps to increase gender-related actions-such as promoting women's participation, providing information, and integrating gender in a planning process
10. Less achievement/progress on gender specific reports, activities, and progress	10. Application of gender budgeting for the effective implementation of gender-inclusive planning
11. Women are not aware about the plan, policy, subsidies, and other facilities	11. Capacity development of local government based on capacity need assessment for gender-inclusive planning and budgeting

Key issues	Solution
12. less agriculture productivity	12. Increased access of women to climate resilient agriculture practices, availability of drought tolerant plants, seeds through farmer's field school
13. Food scarcity and hunger especially among poor, Dalits, and indigenous women.	13. Promote cash crops such as seasonal and off-season vegetable farming through FFS. Promote the concept of community farming or group farming
14. Limited understanding about the socioeconomic impact of gender inequality	14. Advocacy campaign to promote gender equality (community radio, community theatre, communication materials; booklets, best practices, posters, flex with key messages, day celebration (International women's day celebration, 16 days of activism against gender-based violence, etc)

4.2.4 Solution to Gender Issues

Gender and women empowerment issues and concerns are integrated into all activities. However, considering the importance of gender-inclusive governance as a key element to mainstream gender into the implementation, the plan is focused on one gender-specific IPack on gender-inclusive governance. Therefore, the solutions to gender issues are associated with enhancing gender-inclusive governance.

The solutions to GESI issues are associated with enhancing gender-inclusive governance.

Table 14: Activities to enhance gender-inclusive governance

Drivers	Activities Against Drivers	
Inadequate exercise of gender-inclusive governance in climate change, SNRM practice	• Create informal learning and sharing platforms for grassroots-level women • Conduct local level policy discourses to ensure gender responsiveness and women's participation, access, control and leadership • Produce and publish best practices and learning in gendered governance • Conduct rapid assessment on women's contribution and involvement in SNRM/ CRLUP and management • Provide gender mainstreaming trainings/ workshops to local government and CBOs and concerned stakeholders • Conduct GESI focused social audits and public hearing • Conduct advocacy campaign to promote awareness on gender responsive information, available provisions and resources among CBOs/ women groups. This will include day celebration, integration of gender in local radio program, learning events, etc. • Engage male involvement to advocate gender and women's issues and concern in advocacy and media campaign.	• Increase women's participation • Share information about the latest news, update, notice, fund, plans and budget • Time information about training and meetings • Promote and engage leadership • Include and integrate males in advocacy campaigns and radio programs (the radio program will be integrated with other SNRM themes and activities)

❖ **Major Activities and Outputs**

The activities and outputs proposed for enhancing gender-inclusive governance are presented in Table 15.

Table 15: Major activities and outputs for enhancing gender-inclusive governance

Major Activities	Outputs
Increase access of women to SNRM and knowledge and information	Gender inclusive governance practiced and adopted climate resilient practices
Integrate gender and women's participation in local planning processes in SNRM	

4.2.5 Integration of GESI and IP's Issues into Solution Activities

The following special attention is required to mainstreaming women, Dalits, indigenous people, and marginalized communities in the implementation of ecosystem restoration plans for the river system:

a. Provide opportunities to build capacity in natural resource management for users, particularly women, indigenous peoples, Dalits, and forest-dependent marginalized communities.

b. Improve and synchronize CFUGs' operational plans in order to improve users' capabilities (women, Dalit, IPs, and marginalized users) and build a strong mechanism for GESI in the river system's forestry sector.

c. Provide an opportunity for women with specific, major actions in the restoration of the hotspots, for example:

- Provide women's capacity-building training in nursery establishment and seedling production
- Provide capacity-building training to CFUGs and farmers' groups on river bank and gully stabilization
- Provide skill-building training to women for the promotion of afforestation in river reclaimed lands and the promotion of agroforestry and other opportunities (for example, the development of fruit orchards)
- Invest in women's decision-making capacity building, especially in forestry activities for Churia regions' women and agriculture activities for lowland regions' women
- Minimize women's workloads in the collection of fuelwood: a) by providing cost-effective equipment and techniques, especially in alternative energy uses for cooking); b) by providing fodder seeds and access to woodlots in public and private lands
- Reduce social barriers (social and economic insecurity and lowered education and understanding level) for Dalit, indigenous, and other vulnerable ethnicity women to participate in ecosystem restoration activities such as sustainable forest management and agriculture land restoration (on both public and private lands)
- Engage women in agroforestry, FFS, IPM and trainings to ensure their incomes and knowledge enhancement

❖ **Inclusive Process and Plans for Indigenous People**

Special attention is given on FAO, FPIC Manual for Project Practitioners 2016, focused on an Indigenous Peoples' right and a good practice for local communities. Free, Prior and Informed Consent (FPIC) process is required for the implementation of any activities highlighted in the CERP. For this,

implementing agency (CBOs) and project manager must follow 6 steps in different actions during CERP implementation in the river system:

Step 1: Identification of Indigenous Peoples' concerns and their representatives

Step 2: Document geographic and demographic information through participatory mapping

Step 3: Design a participatory communication plan and carry out iterative discussions through which project information will be discussed in a transparent way

Step 4: Reach consent, document Indigenous Peoples' needs that are to be included into the project and agree on feedback and complains mechanism

Step 5: Conduct participatory monitoring and evaluation of the agreement

Step 6: Document lessons learned and disclose information about project achievements.

CHAPTER 5 : INTERVENTION PACKAGE

5.1 Formulation of Intervention Packages

From problem and solution tree analysis the main problems along with their causes and effects are recorded, to come up with clear and manageable goals and the strategies to combat them. There are two main stages to this process: (1) the identification of negative aspects of existing situations (or key challenges) in the form of problem trees, and (2) the change of the problems into objectives leading to solution trees showing potential solutions or strategies that respond to the drivers and underlying causes.

It is important to understand and recognize stakeholder engagement and listen to the voices and concerns of forest dependent and poor/marginalized social groups in the process of prioritizing the CERP activities. All these intervention packages (IPacks) were developed based on the activities and key results identified from local stakeholder workshops and verified from expert planning workshops involving most of the key stakeholders. The IPacks developed mainly focused on reducing deforestation and forest degradation; enhancing adaptation/resilience building of vulnerable ecosystem and local community; and integrating gender and equity issues in governance practices in natural resource management and climate resilient land use practices. It provides activities for forest and carbon enhancement; climate resilient agriculture practices and land use practices; and reducing ecosystem and community vulnerability from climate-induced disasters.

Problem, Solution analysis and map demarcations done by participants are considered as a foundational step for formulating IPacks to group the activities. First the similar activities that are identified in solution analysis and their map demarcations are carefully reviewed against the underlying causes obtained in problem analysis. In next step, the activities are grouped based on adaptation and mitigation themes making sure it addresses the underlying causes and major problems (key drivers) identified during problem analysis. In addition, the findings of gender – a specific field study conducted by HIMAWANTI are integrated into the ipack. The gender study identified three key interventions focused on gender and women empowerment. However, the intervention package integrated most of the gender-related concerns in the ipack and added one gender-responsive government ipack as an advocacy campaign in the plan.

Ipacks are formulated based on this grouping such that each Ipacks address the major problems (drivers) and activities relate with solution analysis process. However, all activities identified in solution analysis are not reflected in IPack activities – as in reference to guidance from CERP manual Box 14 and section C1.2 based on which policy level interventions that are already reflected in REDD+ national strategy are not included in IPacks. Ipacks geographic focus and coverage areas were also closely reviewed to make sure that the upstream-downstream linkage issues are addressed, although geographic focus are not considered as a primary criterion for activity grouping.

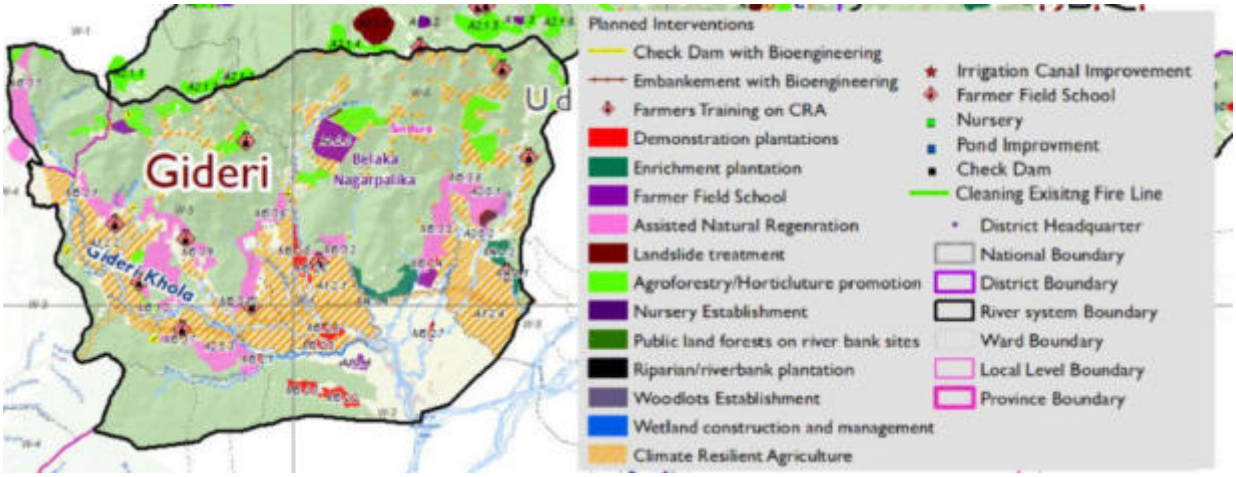
A number of activities that do not directly relate with ecosystem restoration were also noted during the problem-solution analysis process. These activities primarily include large scale infrastructure development along river corridors, revising national/provincial level policies, construction of local infrastructure, irrigation infrastructure, food security, water supply etc. Based on the guidance from project documents and CERP manual most strategic interventions that are feasible through activity prioritization are included in IPack formulation. IPack activities also reflect up-mid-downstream linkages to foster integrated management approach. An activity mapped below at river system scale demonstrates

that those activities under IPack 2 (such as landslide/erosion control, water sources conservation, flood mitigation) and IPack 3, 4 (such as ANR, Fire control, capacity building SFM) focus on upstream churia hill regions that are expected to reduce sedimentation and have profound impact on the morphology of the river and related disasters in the inner river valley. IPack 1 on CRA and IPack 5 on restoration of riverine landscape with plantation focus on these inner river valleys. Ipack 6 being an advocacy-Gender governance package, focuses on the entire river system.

Table 16: Intervention packages for CERP

Intervention Packages	Outputs	Drivers or barriers addressed
IPack 1: Climate resilient agriculture and land use practices	Farmers capacitated in climate resilient agriculture	Inadequate capacity and resource; Pests and diseases; Soil quality degradation
	Improved climate-resilient land use practices	
IPack 2: Improving/maintaining river system landscape through soil and water conservation	Agroforestry promoted	Erosion/ landslide; Flood; Unsustainable harvesting and illegal logging
	Erosion/landslide controlled and sedimentation managed	
	Water sources conserved	
	Negative impact of flood minimized	
	Disaster risk management strengthened	
IPack 3: Capacity enhancement for sustainable forest management	Forest management strengthened	Ineffective forest management practices; Unsustainable harvesting and illegal logging; Encroachment of forestland
IPack 4: Restoration and rehabilitation of degraded forests	Improved forest cover through enrichment plantation and ANR	Unsustainable harvesting and illegal logging; Forest fire; Encroachment of forestland
	Forest fire mitigated	
	Income source of poor/marginalized forest users enhanced	
IPack 5: Restoration of river system landscape (within and outside national forest)	Forests and tree cover are restored, enhanced and maintained in the river system landscape	Unsustainable harvesting and illegal logging; Open and uncontrolled grazing; Erosion/ landslide; Flood
IPack 6: Advocacy campaign: Gender-inclusive governance campaign	Increased access of women to SNRM and knowledge and information	Lack of gender integration in SNRM, CCA, and DRR planning and implementation process
	Integrated gender and women's participation in local planning processes in SNRM	

This CERP only covers those key results and IPacks that correspond to local level interventions. However, it also reveals a number of vital areas of interventions that can take place at national level such as- resolution of land tenure issues; interventions to regulate infrastructure development in forest area and Chure hillslope; and others. These higher-level measures or interventions should also be incorporated into national strategies for successful implementation of CERP.



❖ Strategies and Activities

For each of the IPacks there are strategies (Table 17) and activities (Table 18). Strategies are followed by activities and provision of incentives that could encourage stakeholder's participation, as well as change their current practices that would enhance resilience and mitigation benefits (Table 17). All the activities developed are considered realistic and practical as regards their implementation. Ambiguous activities that are difficult to obtain clear and measurable outcomes have been excluded.

❖ Summary of Feasibility Analysis

Feasibility analysis was used to assess the strengths and weaknesses of the IPacks (Table 19), which can lead to desired results of the CERP. In the feasibility analysis, the risks and obstacles to implementation of each IPacks were assessed, and this provided the basis for assessing the overall feasibility of each IPack. Cost-effectiveness is also a vital criterion in feasibility analysis. The scores obtained through overall feasibility analysis at output levels indicate that all the IPs are reasonably feasible (Table 20). The feasibility analysis was duly verified from expert planning workshop.

❖ Summary of Safeguard Analysis

Safeguard analysis was done to identify social and environmental risks or threats (Table 21), as well as to identify where CERP interventions can contribute to significant social or environmental co-benefits (Table 22) Social risks are negative social side effects on poor and marginalized social groups while implementing the proposed IPacks. Women, IPs and marginalized minority groups, including Dalits among others, can experience discrimination and may face additional barriers to their participation and engagement that could limit their engagement within the project. Similarly, environmental risks are potential side effects from proposed interventions such as natural forest conversion, negative effects on biodiversity or other ecosystem services among others. In safeguard analysis, the measures to mitigate risks and enhance benefits were also assessed. The safeguard analysis matrix was duly verified during expert planning workshop.

❖ Budget Plan

The budget plan for CERP activities has been prepared based on approved district rate, and in close coordination with government officials at expert planning workshop, The quantitative implementation targets defined in the planning stage are the starting point for the budgeting process, followed by detail analysis of the activities, tasks and resources needed. The summary of budget plan for each IPacks is presented in Table 23. The detail budget plan with locations for interventions is presented in Annex 4.

❖ **Monitoring**

It is clearly essential to monitor the CERP implementation both for adaptive management of CERP and to be able to compensate or incentivize local stakeholders for their contribution to positive outcomes. For this, a monitoring protocol has been prepared (Table 24).

5.2 General Description of Intervention Packages

Table 17: General descriptions of IPacks

Intervention Packages	IPacks description	Objectives	Strategies	Activities/incentives for Participation and Changing Stakeholder Practices
IPack 1: Climate resilient agriculture and land use practices	Farmers vulnerability have been increasing due to limited farm skill and technology, low investment capacity, inadequate irrigation facilities, increasing pest and diseases and poor market access which relates with inability to cope with climate change impacts. Eventually the result is increased pressure in forest resource. This intervention package thus provides solution to combat climate change impacts and enhance farm sustainability. Farmers are also facing problems of higher cost of agriculture input and low market price on sale.	• To capacitate vulnerable farmers, women, Dalits to adopt climate resilient agriculture practices • To enhance agriculture yield	• Improving resilience of farmers to climate change, disasters, price volatility and other shocks • Increase agricultural productivity of Forest dependent and other smallholders (equal participation of men and women)	• Train farmers (prioritizing women) on climate resilient agriculture • Incentivize poor/marginalized farmers (skill development and equipment support) • Promotion of alternative irrigation practice, local livestock breed/crop varieties' improvement and cooperative farming to enhance yield • Promote organic farming with provision of compensating yield loss to reduce chemical inputs • Disease/pest control • Support agriculture commercialization
IPack 2: Improving/ maintaining river system landscape through soil and water conservation	Landscape degradation within the river system is a combined effect of natural and anthropogenic causes. It is mainly associated with fragile topography, climate instability and unsustainable use of natural resources. Natural hazards like erosion, landslide, flood, forest fire and declining ecosystem services like declining water resource, forest	• To mitigate disaster risks to reduce community and ecosystem vulnerability • To enhance restoration of ecosystem services • To enhance local knowledge, awareness	• Increase non-carbon benefits of forest ecosystems • Minimizing erosion, landslide and floods through infrastructure development and also adopting indigenous knowledge, skills and customary practices • Promote changing annual crop into multiyear crop in Chure hill slopes	• Incentivize multiyear cropping/ horticulture • Promotion of agroforestry in marginal lands • Promote water conservation ponds in Chure hills as well as lowlands • Promote fodder grass in slopy public lands • Project implementation in-line with priority of local government

Intervention Packages	IPacks description	Objectives	Strategies	Activities/incentives for Participation and Changing Stakeholder Practices
	resource and agriculture yield all are associated with landscape degradation. This IPack thus focuses on restoration and maintaining the degraded landscape and livelihood improvement of local communities.	and capacity on CRLUP and SNRM	• Implementation of projects in the collaboration with local government • Awareness raising through schools, media and other relevant measures • Trainings for capacity enhancement in CRLUP and SNRM	• Formation of school based eco-clubs • Training/capacity building on soil and watershed conservation using bio-engineering
IPack 3: Capacity enhancement for sustainable forest management	Forest management regimes within the river system reflect Community Forest and Government Forest. These forest areas are subject to immense pressure with increasing population. The problem of unsustainable harvesting and illegal logging prevails due to demand and supply gap. There is robust legal and policy framework in forest sector but lacks compliance in many ways. Limited access of CFUG members in decision-making, lack of clarity and uncertainty over forestland use, tenure, and resolution of households with unregistered land, widespread reports of corruption among different actors and law breaking in forest sector have weakened forest management efforts, accountability	• To improve forest quality through effective implementation of sustainable forest management • To improve forest governance	• Improve capacity, institutional performance and service delivery of the forestry sector institutions (including intra district/province level coordination) • Improving capacity of CFUGs as well as other stakeholders for sustainable forest management • Improve collaboration, cooperation and synergy among sectoral policies, sectors and actors • Enhance the role of private sector in forestry to promote forest-based enterprises for livelihood and economic development • Promote GESI and increase access of indigenous people in sustainable forest management	• Financial and equipment support to encourage CFUGs for climate resilient sustainable forest management • Enhance forest sector transparency thereby, enhancing accountability of forest users and also reducing illegal activities • Promote women and GESI in participation and benefit sharing • Policy intervention for resolution of land tenure issues • Promote forest-based entrepreneurship • Decentralization of district based timber supply system • Development of compensatory mechanism for accidents during legal forest management activities • Incentive to security forces for capturing loggers and loggings.

Intervention Packages	IPacks description	Objectives	Strategies	Activities/incentives for Participation and Changing Stakeholder Practices
	and transparency. This IPack focuses on improving forest management to resolve disparity among CFUGs and government agencies and enrich forest resources.			
IPack 4: Restoration and rehabilitation of degraded forests	Forest encroachment, unsustainable harvesting and illegal logging, open grazing and forest fire are the major D&FD drivers in the river system. It is further worsened by weaknesses in forest enhancement. Limited livelihood opportunities of forest users and management weaknesses of CFUGs have hindered restoration and rehabilitation of degraded forests. This IPack seeks measures to tackle these weaknesses and restore degraded forests. It also supports enrichment of existing forests thorough assisted natural regeneration.	• To enhance forest cover through enrichment plantation • To capacitate CFUGs in handling forest fire • To provide forest dependent people with alternative resource and income generation opportunities	• Reduce carbon emissions, enhance forest carbon stocks, and improve supply of forest products • Promote livelihood improvement programs for poor and marginalized forest dependent people	• Support for nursery establishment and enrichment plantation • Enhancing technical capacity of CFUGs in plantation and nurturing of seedlings • Strengthen forest firefighting • Provide skill development trainings to increase income source of poor/marginalized forest users
IPack 5: Restoration of river system landscape (within and	Landscape degradation have been the concern and focused area of this project for restoration. Together with aforementioned IPacks, this IPack is focused on ecosystem restoration of this river system	• To enhance vegetation cover through public and private land plantation • To decrease pressure in natural forests	• Reduce carbon emissions, enhance forest carbon stocks, and improve supply of forest products • Promote private and public land forestry	• Support for nursery establishment with production of on-demand seedlings • Incentives for shed improvement and fodder banks to support commercial livestock

Intervention Packages	IPacks description	Objectives	Strategies	Activities/incentives for Participation and Changing Stakeholder Practices
outside national forest)	through enhancement of vegetation cover mostly in private and public lands			• Community ownership for plantation in public lands • Campaign for encouraging plantation in private lands with provision of tree insurance and production based subsidies • Promotion through demonstration plantation • Promote 50% share of woodlots development in lands with women and indigenous ownership
IPack 6: Advocacy campaign: Gender-inclusive governance campaign	The under-representation of women in the decision-making process has resulted in the exclusion of women's specific needs and capacities in SNRM, CCA, and DRR. Increased influence of women in governance is important to identify and include gender-responsive program interventions to increase the adaptive capacity of vulnerable women. The advocacy campaigns will include local-level stakeholders and the community and leverage local-level funds and resources.	• Increase women's leadership in NRM, CCA, and DRR • Building women's knowledge and skills in resource conservation and management Increase women's participation in decision-making forums • Increase common understanding towards gender equality and women empowerment in SNRM	• Build network among women and women-led organizations for an enabling environment • Engage male and government representatives in the campaign	• Consider women's convenience while setting meeting agenda and venue • Provide transportation costs for attending the trainings • Ensure that women are aware of meetings or activities in an appropriate way • Provide opportunity to participate in learning events /platforms for women leaders and women champions

5.3 Major Activities and Sub-Activities

Table 18: IPacks, major activities and sub-activities

Intervention Packages	Major Activities	Sub-activities
IPack 1: Climate resilient agriculture and land use practices	**Establish and operationalize Farmers Field Schools (FFS)**	Identification and operationalization of FFS
		Capacity-building in the use of weather information and its application in agricultural practices
	Implementation of climate-resilient land use practices	Implement climate resilient agriculture practices
		Train and support farmers to adopt and apply climate-resilient land use practices
IPack 2: Improving/maintaining river system landscape through soil and water conservation	**Agroforestry promotion**	Promote agroforestry with multiyear cropping/horticulture promotion/on-farm conservation
	Controlling erosion/landslide and management of sedimentation	Landslide treatment
		Construction of check dams and bioengineering for gully/debris torrent protection
	Conservation and management of water sources	Construction of water conservation pond and management
	Minimization of negative impact of Flood	Construction of embankments with bioengineering
	Strengthening disaster risk management and awareness creation on climate resilient NRM	Strengthening climate and disaster risk reduction mechanism in collaboration with local government
		Training/capacity building on soil and watershed conservation using bio-engineering
		Climate resilient awareness campaign through Eco-clubs

Intervention Packages	Major Activities	Sub-activities
IPack 3: Capacity enhancement for sustainable forest management	**Strengthening forest management**	Support review/upgrade/renew of forest operational plans (FOPs) of community forest user groups (CFUGs)
		Training and capacity development for implementation of FOPs
		Equipment support for implementation of FOPs
		Capacitate government staffs and CBOs on climate resilient forest management (ToF)
		Governance training to government staffs and CFUGs to enhance accountability and transparency
IPack 4: Restoration and rehabilitation of degraded forests	**Improvement of forest cover within national forest through enrichment plantation/ANR**	Enrichment plantation
		Implement Assisted Natural Regeneration
	Forest fire control	Firefighter training and support firefighting equipment to CFUGs
		Support firefighting equipment to security institution
		Training and equipment support to promote compost production from bushes and leaf litters
		Construction and improvement of fire lines
		Customize fire alert system in Community Based Forest Management
	Income source of poor/marginalized forest users enhanced halting illegal harvesting	Skill development trainings and equipment support
	Restoration, enhancement and maintenance of forests and tree	Establish and support multi-purpose tree nurseries
		Production of saplings

Intervention Packages	Major Activities	Sub-activities
IPack 5: Restoration of river system landscape (within and outside national forest)	**cover in the river system landscape through Public and private forestry**	Establish On-farm tree nursery
		Demonstration plantation
		Technical guidance and support to establish woodlots
IPack 6: **Advocacy campaign: Gender-inclusive governance campaign**	**Increase access of women to SNRM and knowledge and information**	Create informal learning and sharing platforms for grassroots-level women
		Conduct local level policy discourses to ensure gender responsiveness and women's participation, access, control and leadership
		Produce and publish best practices and learning in gendered governance
	Integrate gender and women's participation in local planning processes in SNRM	Conduct rapid assessment on women's contribution and involvement in SNRM
		Provide gender mainstreaming trainings/ workshops to local government and CBOs
		Conduct GESI focused social audits and public hearing
		Conduct advocacy campaign and promote awareness on gender responsive information, available provisions and resources among CBOs/ women groups
		Engage male involvement to advocate gender and women's issues and concern in campaign

5.4 Feasibility Analysis

Table 19: Feasibility analysis

Outputs	Activities	Implementation Risk or Obstacle	Risk Reduction Measures	Risk Reduction Targets	Indicators
IPack 1: Climate resilient agriculture and land use practices					
Farmers capacitated in climate resilient agriculture	Identification and operationalization of FFS	• Exclusion of poor and marginalized farmers • Lower investment capacity of small farmers • Drop out of participants of FFS	• Build transparent selection criteria • Incentives for small farmers • Encourage and incentivize the participants	• Selection criteria to include poor and marginalized are in place • 100 % farmers attending FFS are incentivized to adopt climate resilient agriculture • At least 80% of FFS participants complete FFS package	• Selection criteria • Proportion of farmers incentivized • % of participants who complete FFS package
Improved climate-resilient land use practices	Train and support farmers to adopt and apply climate-resilient land use practices				
IPack 2: Improving/maintaining river system landscape through soil and water conservation					
Agroforestry promoted	Promote agroforestry with multiyear cropping/horticulture promotion/on-farm conservation	• Unwillingness due to higher opportunity cost of land	• Promotion of high value agroforestry • Incentivize socially and economically marginalized households	• Agroforestry in 324 ha land • Proportionate sharing of benefits among women, Dalit Janajati and marginalized groups	• Land area with agroforestry • % of women, Dalit Janajati and marginalized groups incentivized
Erosion/landslide controlled and sedimentation managed	Landslide treatment	• Local knowledge and practices missing in the stabilization measures • Influential decision in implementation	• Integrate local knowledge and practices • Risk prioritization prior to implementation in coordination with local government	• At least 2 landslides treated with integration of structural & bioengineering measures and risk prioritization • Local knowledge and practices integrated for the landslide treatment	• Number of landslides treated • Number of landslide treatment with local knowledge and practices

Outputs	Activities	Implementation Risk or Obstacle	Risk Reduction Measures	Risk Reduction Targets	Indicators
	Construction of check dams and bioengineering for gully/Debris torrent protection	• Local knowledge and practices missing in the bioengineering for the protection • Influential decision in implementation	• Integrate local knowledge and practices with structural and non-structural (bioengineering) measures • Risk prioritization during mitigation	• At least 7 gullies/debris torrent stabilized with integration of structural & non-structural measures and risk prioritization	• Number of gullies stabilized with local knowledge and practices
Water sources conserved	Construction of water conservation pond and management	• Possible conflict in site selection and size of the ponds between the local communities and proposed sub activity • Community may be uninterested due to uncertainty of direct water use benefits	• Prior consultation with local community and local government • Promotion of livelihood options like fisheries	• At least 1 consultation meeting for each sites • At least 2 conservation pond constructed with focus on livelihood option like fisheries	• Number of sites screened and disputes addressed • Number of conservation pond with fisheries
Negative impact of flood minimized	Construction of embankment with bioengineering	• Higher cost of mitigation (higher opportunity cost of investment)	• Integrate indigenous knowledge, skills and customary practices and resources for low- cost solutions	• 520 m riverbank stabilization integrating structural & non-structural measures	• Length of riverbank stabilized with indigenous knowledge, skills and customary practices
Disaster risk management strengthened	Training/capacity building on soil and watershed conservation using bio-engineering	• Disparity in selection of participants	• Build transparent selection criteria	• At least 50 % women, 13 % Dalit and 31 % indigenous peoples representatives trained on soil and watershed conservation	• Number of women, Dalits and indigenous representatives trained
IPack 3: Capacity enhancement for sustainable forest management					

Outputs	Activities	Implementation Risk or Obstacle	Risk Reduction Measures	Risk Reduction Targets	Indicators
Forest management strengthened	Review/upgrade/renew of forest operational plans (FOPs) of community forest user groups (CFUGs)	• Unwillingness of CFUGs due to lack of budget and technical knowledge	• Provide financial and technical support	• At least 29 CFUGs receive financial and technical support	• Number of CFUGs receiving financial and technical support
	Training and capacity development for implementation of FOPs	• Disparity in selection of participants (recommendation of participants from CFUGs)	• Build transparent selection criteria for CFUGs	• At least 50 % women, 13 % Dalit and 31 % indigenous peoples representatives trained in implementation of FOPs	• Number of women, Dalits and indigenous representatives trained
	Equipment support for implementation of FOPs	• Inadequate technical knowledge in handling of equipment	• Sensitize about BRCRN project scope and deliverables • Technical trainings on equipment handling	• At least 29CFUGs receive equipment support with trained individuals	• Number of CFUGs receiving equipment and its handling support
	Capacitate government staffs and CBOs on climate resilient forest management (ToF)	• Level of understanding on climate resilient forest management practices among the trainee and trainers	• Adoption of peer learning method	• At least 3 events of joint training (government staff and CBO representatives)	• Number of joint trainings
	Governance training to government staffs and CFUGs to enhance accountability and transparency	• Gaps in understanding of governance in forest management procedures between government authority & CFUGs	• Joint trainings/ roundtable discussion	• Bi-annual joint trainings for 5 years	• Number of joint training events organized
IPack 4: Restoration and rehabilitation of degraded forests					

Outputs	Activities	Implementation Risk or Obstacle	Risk Reduction Measures	Risk Reduction Targets	Indicators
Improved forest cover through enrichment plantation and ANR	Enrichment plantation/ANR	• Conflict on site and seedling species selection	• Prior consultation with CFUGs	• At least 1 consultation meeting with each CFUGs	• Number of prior consultations
Forest fire mitigated	Firefighter training and support firefighting equipment to CFUGs	• Lack of technical knowledge in handling of equipment	• Technical trainings on equipment handling	• At least 10 CFUGs are well equipped with trained firefighting groups	• Number of well-equipped CFUGs with trained firefighting groups
	Training and equipment support to promote compost production	• Elite capture • Cheaper alternatives to compost in the market	• Transparent selection to include most fire prone CFs • Awareness raising programs on the significance of composting conducted for CFUGs with opportunities to the market linkages	• At least 3 most fire prone CFs are included • At least 3 awareness raising events conducted covering 3 CFUGs	• Number of most fire prone CFs included • Number of awareness raising events
	Construction and improvement of fire lines	• Selected sites might demand cutting of trees in significant number	• Selection of site with minimal tree removals • Improvement of fire lines will be prioritized	• At least 5 km of fire lines constructed/ improved	• Length of fire lines
Income source of poor/marginalized forest users enhanced	Skill development trainings and equipment support	• Low investment capacity of trainees on small and medium enterprise establishment	• Incentivize to develop small and medium enterprise (nursery, agroforestry)	• More than 50% trainees involved in income generation	• % of trainees involved in income generation
IPack 5: Restoration of river system landscape (within and outside national forest)					

Outputs	Activities	Implementation Risk or Obstacle	Risk Reduction Measures	Risk Reduction Targets	Indicators
Forests and tree cover are restored, enhanced and maintained in the river system landscape	Establish and support multi-purpose tree nurseries	• Disparity in site and species selection	• Prior consensus with communities for site and species selection	• At least 2 consultation workshops organized	• Number of consultation workshops conducted to select site and species
	Establish On-farm tree nursery	• Disparity in site and species selection	• Prior consensus with communities for site and species selection	• At least 1 consultation workshops organized	• Number of consultation workshops conducted to select site and species
	Demonstration plantation	• Disparity in species selection	• Consensus among user members	• 119 ha of demonstration plantation with prior consent	• Area of demonstration plantation
	Technical guidance and support to establish woodlots	• Unwillingness due to higher opportunity cost of land	• Distribution of high value and fast growing tree species • Provide financial support for field preparation, protection and management of woodlots	• 100% landowner who establish woodlots receives financial support	• % of landowner who establish woodlots receiving financial support
IPack 6: Advocacy campaign: Gender-inclusive governance campaign					
Increased access of women to SNRM and knowledge and information	Create informal learning and sharing platforms for grassroots-level women	• Social norms and values restricting women to participate and give time for informal learning and sharing platforms	• Identification of social and structural barriers faced by women through sensitization measures	• At least one gender sensitization learning event per year	• Number of gender sensitization events conducted

Outputs	Activities	Implementation Risk or Obstacle	Risk Reduction Measures	Risk Reduction Targets	Indicators
	Conduct local level policy discourses to ensure gender responsiveness and women's participation, access, control and leadership	• Women lack access and resources about local level policies making them vulnerable	• Awareness and sharing of policies	• At least one event held on policy dissemination among women groups • At least 70% of target population participated	• Event/ activity report • Proportion of target population reached
	Produce and publish best practices and learning in gendered governance	• Lack of resources	• Ensure availability of resources	• Allocate budget for production and publication	• At least one report containing five best practices published and disseminated
Integrated gender and women's participation in local planning processes in SNRM	Conduct rapid assessment on women's contribution and involvement in SNRM	• Inadequate budget	• Explore budget availability	• Integrate subcomponents on ongoing studies	• Assessment reports
	Provide gender mainstreaming trainings/ workshops to local government and CBOs	• Gender is not a priority	• Raise awareness about long-term benefits after participating in gender workshops/ workshops	• Conduct in-person meetings with potential participants to understand their needs	• Number of trainings conducted
	Conduct GESI focused social audits and public hearing	• Lack of transparency • Inadequate budget • Exclusion of women and marginalized groups	• Increase practices for transparency through networking meetings, regular meetings • Policy guidance for ensuring inter-sectionality in social audits and public hearing	• Regular meetings/ events conducted to increase transparency	• Number of social audit/ public hearings conducted • Percentage of women including Dalits and IPs participation • Number of issues raised on

Outputs	Activities	Implementation Risk or Obstacle	Risk Reduction Measures	Risk Reduction Targets	Indicators
			• Adopt participatory tools for public hearing such as role-plays		intersectional issues
	Conduct advocacy campaign and promote awareness on gender responsive information, available provisions and resources among CBOs/ women groups	• Inadequate interest and motivation of concerned institutions	• Raise awareness about long-term benefits of information dissemination	• Continuous follow-up meetings between institutions and women groups/ CBOs	• Number of events between institutions and women groups/ CBOs
	Engage male involvement to advocate gender and women's issues and concern in campaign	• Less priority	• Raise awareness about long-term benefits, social prestige	• Continuous follow-up meetings	• Frequency of male involvement in gender and women's issues and concerns

Table 20: Overall feasibility analysis of IPacks

Intervention Packages	Outputs	Implementation risks/obstacles L=3/M=2/H=1	Cost effectiveness of risk reduction measures H=3/M=2/L1	Cost to implement L=3/M=2/H=1	Opportunity cost L=3/M=2/H=1	Incentive Measures H=3/M=2/L=1	Total score
IPack 1: Climate resilient agriculture and land use practices	Farmers capacitated in climate resilient agriculture	3	3	2	3	2	13
	Improved climate-resilient land use practices	3	3	2	3	2	13
IPack 2: Improving/ maintaining river system landscape through soil and water conservation	Agroforestry promoted	3	3	2	3	2	13
	Erosion/landslide controlled and sedimentation managed	2	2	1	2	3	10
	Water sources conserved	2	2	1	2	2	9
	Negative impact of flood minimized	2	2	1	1	2	8
	Disaster risk management strengthened	2	3	3	3	2	13
IPack 3: Capacity enhancement for sustainable forest management	Forest management strengthened	2	3	2	2	3	12

Intervention Packages	Outputs	Implementation risks/obstacles L=3/M=2/H=1	Cost effectiveness of risk reduction measures H=3/M=2/L1	Cost to implement L=3/M=2/H=1	Opportunity cost L=3/M=2/H=1	Incentive Measures H=3/M=2/L=1	Total score
IPack 4: Restoration and rehabilitation of degraded forests	Improved forest cover through enrichment plantation and ANR	2	3	1	3	2	11
	Forest fire mitigated	3	2	2	2	2	11
	Income source of poor/marginalized forest users enhanced	2	3	2	1	3	13
IPack 5: Restoration of river system landscape (within and outside national forest)	Forests and tree cover are restored, enhanced and maintained in the river system landscape	3	3	2	2	3	13
IPack 6: Advocacy campaign: Gender-inclusive governance campaign	Increased access of women to SNRM and knowledge and information	2	3	3	3	3	14
	Integrated gender and women's participation in local planning processes in SNRM	2	3	3	3	3	14

5.5 Safeguard Analysis

Table 21: Safeguard analysis (risk)

Outputs	Activities	Social & Environmental risk	Risk reduction measures	Risk reduction targets	Indicators
IPack 1: Climate resilient agriculture and land use practices					
Farmers capacitated in climate resilient agriculture	Identification and operationalization of FFS	• Participation from elite groups might be high	• Ensure participation of farmers including socially and economically marginalized group (IPs, women, Dalit etc.)	• At least 50% women, 13% Dalit and 31% Indigenous people are included in group at FFS	• % of women, Dalit and Indigenous people included in group at FFS
Improved climate-resilient land use practices	Train and support farmers to adopt and apply climate-resilient land use practices	• Lack of commitment by marginalized farmers	• Ensure participation of farmers including socially and economically marginalized group (IPs, women, Dalit etc.) • Incentives for small farmers	• 50% women, 13% Dalit and 31% Indigenous people are included • 100 % farmers involved are incentivized to adopt climate resilient agriculture	• % of women, Dalit and Indigenous people included • Proportion of marginalized farmers incentivized
IPack 2: Improving/maintaining river system landscape through soil and water conservation					
Agroforestry promoted	Promote agroforestry with multiyear cropping/horticulture promotion/on-farm conservation	• Human-wildlife conflicts due to improved habitat and connectivity	• Sensitization events for human-wildlife conflict	• At least 12 sensitization events (1 at each hotspot) on reducing human wildlife conflict; improving habitat and connectivity)	• Number of sensitization events conducted
Erosion/landslide controlled and sedimentation managed	Landslide treatment	• Durability of the structure due to fragile geology and climatic extremes	• Ensure technically sound structure following the design guideline	• Number of planned structures follow design guideline	• Number of structure following the guidelines
	Construction of check dams and bioengineering for	• Durability of the structure due to fragile geology and climatic extremes	• Ensure technically sound structure following the design guideline	• Design guideline followed • 100 % construction workers aware about the	• Number of structures following the guidelines

Outputs	Activities	Social & Environmental risk	Risk reduction measures	Risk reduction targets	Indicators
	gully/Debris torrent protection	• Occupational hazard for the construction workers	• Provide awareness on the occupational hazards and the protective gear for the construction related works	occupational hazards with the protective gear	• Proportion of the construction workers aware on the occupational hazards with the protective gear
Water sources conserved	Construction of water conservation pond and management	• Damage from siltation • Drowning of children and adults as well	• Continuous monitoring and maintenance of ponds • Fencing around the pond	• Annual maintenance at least during monsoon (extraction of sediments, drainage management) • No cases of drowning	• Number of ponds damaged due to siltation • Number of drowning cases
Negative impact of flood minimized	Construction of embankment with bioengineering	• Improper design & implementation can lead to further degradation • Occupational health risks	• Ensure such infrastructure is planned in an integrated manner with involvement of DRR/ land use management/ engineers and/or watershed planning experts • Occupational Health and Safety training and equipment support	• 100% of planned structures follow design guideline • At least one OHS trainings for a site	• Proportion of structures following design guideline • Number of OHS trainings
IPack 3: Capacity enhancement for sustainable forest management					
Forest management strengthened	Review/upgrade/renew of forest operational plans (FOPs) of community forest user groups (CFUGs)	• Similar FOPs in varying topographical settings	• Incorporate sensitivity analysis including topography, geology & geomorphic process	• 100% updated FOPs are based on sensitivity analysis	• FOPs with sensitivity analysis

Outputs	Activities	Social & Environmental risk	Risk reduction measures	Risk reduction targets	Indicators
	Training and capacity development for implementation of FOPs	• Selection bias of participants can lead to lower level of outcome	• Establish transparent selection criteria	• 100% eligible and efficient personnel	• More than 90% achievement level in sustainable forest management
	Equipment support for implementation of FOPs	• Occupational health risks (injuries) due to inappropriate safety measures	• Training on OHS good practices, protocols and equipment to Trainers/ extension staff	• 10 trainings to CFUGs	• Number of person trained
IPack 4: Restoration and rehabilitation of degraded forests					
Improved forest cover through enrichment plantation and ANR	Enrichment plantation/ANR	• Introduction of nonnative species can pose a risk to the local biodiversity • Loss of species having current social use can worsen livelihood of marginal households	• Promote tree species which are locally adapted/native • Provision of alternatives to affected marginal households	• 100 % of the species will be locally adapted/native species	• Proportion of local species in enrichment planation
Forest fire mitigated	Firefighter training and support firefighting equipment to CFUGs	• Firefighting without sufficient protective equipment or with inappropriate practices could lead to personal injuries • Possibility of exclusion of women	• Ensure trained groups are well aware of protective measures and procedures of fire controlling in the field through demonstration & examination • Promote inclusion/ participation of women	• All members are trained • At least 20% participants are women	• Number of trained members on the use of firefighting equipment • Proportion of women participants
	Construction and improvement of fire lines	• Excessive construction of fire line can lead to habitat fragmentation and impact on habitat connectivity	• Use existing road/trail/ river/stream as fire line	• 5 Km of fire line constructed/ improved	• Length of fire line constructed/ improve

Outputs	Activities	Social & Environmental risk	Risk reduction measures	Risk reduction targets	Indicators
IPack 5: Restoration of river system landscape (within and outside national forest)					
Forests and tree cover are restored, enhanced and maintained in the river system landscape	Establish and support multi-purpose tree nurseries	• Land tenure issues on nursery site • Limited availability of quality seed of demanded species	• Consultation meetings • Demand analysis for choice of seedlings species	• At least 1 consultation meeting to screen and address the land tenure issues • At least 50% seedlings produced are of native species	• Number of nursery sites screened and land tenure issue addressed • Proportion of native species' seedlings produced
	Establish On-farm tree nursery	• Land tenure issues on nursery site • Limited availability of quality seed of demanded species	• Consultation meetings • Demand analysis for choice of seedlings species	• At least 1 consultation meeting to screen and address the land tenure issues • At least 50% seedlings produced are of native species	• Number of nursery sites screened and land tenure issue addressed • Proportion of native species' seedlings produced
	Demonstration plantation	• Introduction of nonnative species can pose a risk to the local biodiversity • Loss of current social use can worsen livelihood of marginal households	• Promote tree species which are already locally adapted • Provision of alternatives to affected marginal households	• At least 50% of enrichment plantation will use native species	• Proportion of native species in enrichment planation
	Technical guidance and support to establish woodlots	• Conflicts with neighboring landowner • High value alternative crop can change woodlot practice	• Provide support to group of landowners rather than individual	• 90% landowners who received support will develop woodlots	• Area of woodlots established
IPack 6: Advocacy campaign: Gender-inclusive governance campaign					
Increased access of women to	Create informal learning and sharing	• Possibility of elite women capture	• Promote inclusion/participation of Dalits and IPs (Women)	• At least 20% participants are Dalits and IPs women	• % of Dalits and IPs women

Outputs	Activities	Social & Environmental risk	Risk reduction measures	Risk reduction targets	Indicators
SNRM and knowledge and information	platforms for grassroots-level women	• Possibility of the exclusion of Dalits and IPs women • Social norms and values restricting women to participate and give time for informal learning and sharing platforms	• Organize sensitization learning events to remove restrictions	• At least one gender sensitization learning event per year	• Number of gender sensitization learning events
	Conduct local level policy discourses to ensure gender responsiveness and women's participation, access, control and leadership	• Change in gender roles not easily accepted posing threats to social norms and values	• Conduct GESI trainings and awareness campaigns and policy reviews to strengthen the GESI initiatives	• 50% men and women know about the GESI policy and integration strategies	• Province and local level policy reviewed
	Produce and publish best practices and learning in gendered governance	• Gendered governance restricting women to participate • Women participation in NRM sectors can pose threat to social change	• Document of good and best practices in gendered governance that has minimized social discrimination and women empowered reducing GBV as well	• Gendered governance best practices documented and learning shared for social change	• Best practices in gendered governance documented and published
Integrated gender and women's participation in local planning processes in SNRM	Conduct rapid assessment on women's contribution and involvement in SNRM	• Women not being empowered could hinder their participation • Leadership discrimination among women and elite captures	• Rapid assessment on women's contribution and involvement in NRM/CRLUP and management to be conducted and shared for minimizing social barriers	• % of women's contribution and involvement analyzed and further plans developed	• Rapid assessment conducted

Outputs	Activities	Social & Environmental risk	Risk reduction measures	Risk reduction targets	Indicators
	Provide gender mainstreaming trainings/ workshops to local government and CBOs	• GESI not prioritized	• Trainings to be provided to mainstream gender increasing the trend of preparing action plans as GESI priority	• % of understanding level and mainstreaming of GESI well adopted	• GESI mainstreaming training and workshops raised awareness
	Conduct GESI focused social audits and public hearing	• Inclusive transparency and practices limited and not prioritized	• Regularly conduct GESI focused audits and public hearing to increase transparency and good governance	• % of local institutions practice GESI focused social audits and public hearing for social and strong governance practice	• GESI focused social audit and public hearing conducted regularly
	Conduct advocacy campaign and promote awareness on gender responsive information, available provisions and resources among CBOs/ women groups	• Gender responsive awareness not shared or available as they are not prioritized	• Awareness promotion on gender responsive information and ensure to make available to all	• % of CBOs and women groups made aware on gender responsive information and access to resources increased	• Gender responsive information and availability access made easy
	Engage male involvement to advocate gender and women's issues and concern in campaign	• Men not interested for social change and not supportive too • Women participation not ensured in NRM/CRLUP and management	• Advocating GESI and women's issues among male and inform on transformative change and recognizing women's voice for change, reduce GBV	• % of male engagement in GESI and women's issues help change the social norms and values	• Male involvement increased in advocacy of GESI and women's issues and minimized social disparities

Table 22: Safeguard analysis (benefits)

Outputs	Activities	Benefits	Benefit enhancement measures	Benefit enhancement targets	Indicators
IPack 1: Climate resilient agriculture and land use practices					
Farmers capacitated in climate resilient agriculture	Identification and operationalization of FFS	• Increased farm productivity	• Continuity of FFS for longer period (one crop cycle may not be sufficient) • Integration of FFS in municipal agriculture section2	• FFS operated for whole project period • All FFS will be integrated in respective municipal agriculture section	• Number of FFS operated for whole project period • Number of FFS owned and run by local government
Improved climate-resilient land use practices	Train farmers on climate-resilient land use practices	• Enhance soil organic carbon • Sustain farm productivity	• Provide financial, equipment and technological support to farmers adopting climate resilient land use practices3 • Promote climate resilient commercial farming in collaboration with local government4 • Promote organic farming and Integrated Pest Management system	• At least 50% farmers adopting climate resilient land use practices will be supported • Project will support at least one municipality for institutional procedures and marketing • At least 50% share of fertilizer and pesticides is organic	• Proportion of farmers supported • Number of municipality assisting institutional procedures and marketing • Decrease in use of chemical fertilizer and pesticides
IPack 2: Improving/maintaining river system landscape through soil and water conservation					
Agroforestry promoted	Promote agroforestry with multiyear cropping/horticulture	• Erosion control • Enhance income generation opportunities	• Prioritize cash crops, fast growing fodder trees and grasses	• At least 50% cash crops and fodder trees	• Proportion of cash crops and fodder trees in plantation

[2] Development of FFS as on-farm learning center in the long run (even after project completion)
[3] Seed money, soft loans, crop/livestock insurance, production based incentives, seed bank, subsidies in farm equipments, support for alternative irrigation facilities (earthbag ponds, drip irrigation, rainwater harvesting, deep boring, solar pumps and others), storage (cold store, chilling center) and processing facilities
[4] Assist in institutional procedures including registration, PAN acquisition, accounting, renewal and others; marketing support (branding, packaging, negotiations)

Outputs	Activities	Benefits	Benefit enhancement measures	Benefit enhancement targets	Indicators
	promotion/on-farm conservation	• Decrease in forest dependency			
Erosion/landslide controlled and sedimentation managed	Landslide treatment	• Reduce loss and damage • Reduce sedimentation	• Prioritize high value multipurpose plant species for bioengineering	• At least 50% use of high value multipurpose plant species for bioengineering	• Proportion use of high value multipurpose plant species for bioengineering
	Construction of check dams and bioengineering for gully/Debris torrent protection	• Reduce sedimentation in downstream • Reduce risks of flash floods and minimize settlement vulnerability	• Prioritize high value multipurpose plant species for bioengineering	• At least 50% use of high value multipurpose plant species for bioengineering	• Proportion use of high value multipurpose plant species for bioengineering
Water sources conserved	Construction of water conservation pond and management	• Enhanced water availability	• Construction of ponds with focus on ground water recharge too	• All the ponds are constructed with focus on supporting ground water recharge	• Number of ponds constructed with focus on supporting ground water recharge
Negative impact of flood minimized	Construction of embankment with bioengineering	• Reduce riverbank erosion and loss and damage from flood	• Construction of sedimentation dams in midstream • Extraction and utilization of siltation through detail environmental assessment • Use of bamboo/other income generating plants for bioengineering	• At least 3 sedimentation dams • 100% embankments with plantation	• Number of sedimentation dams • Proportion of embankments with plantation
IPack 3: Capacity enhancement for sustainable forest management					

Outputs	Activities	Benefits	Benefit enhancement measures	Benefit enhancement targets	Indicators
Forest management strengthened	Review/upgrade/renew of forest operational plans (FOPs) of community forest user groups (CFUGs)	• Support annual silvicultural operations for sustainable forest management	• Update FOPs with sensitivity analysis based on local scenario • Integrate forest based entrepreneurship development and income generation • Multi-stakeholder sharing for quality assurance of FOPs	• 100% CFUGs update FOPs with sensitivity analysis and integrating forest based entrepreneurship development	• Proportions of CFUGs with updated FOPs
	Training and capacity development for implementation of FOPs	• Enhance capacity of CFUGs on sustainable forest management	• Involve all CFUGs within River System in trainings	• 100% CFUGs participate in trainings	• Proportion of CFUGs participating in trainings
	Equipment support for implementation of FOPs	• Enhance capacity of CFUGs on sustainable forest management	• Support all CFUGs within River System	• 100% CFUGs receive equipment support	• Proportion of CFUGs receiving equipment support
	Capacitate government staffs and CBOs on climate resilient forest management (ToF)	• Increase skilled manpower on climate resilient forest management	• Sensitize 100% users of community forest on climate resilient forest management	• At least 90% users will be aware of climate resilient forest management	• Proportion of users participating in sensitization program
	Governance training to government staffs and CFUGs to enhance accountability and transparency	• Good forest governance	• Public hearing • Make information available in DFO websites	• Bi-annual public hearing and update of website information	• Number of public hearings annually • Availability of information in websites
IPack 4: Restoration and rehabilitation of degraded forests					

Outputs	Activities	Benefits	Benefit enhancement measures	Benefit enhancement targets	Indicators
Improved forest cover through enrichment plantation and ANR	Enrichment plantation/ANR	• Enhance forest quality and carbon stock	• Plantation of fast growing and locally adapted plant species • Promoting natural regeneration • Bio-fencing for protection	• At least 70% of fast growing and locally adapted/native plant species	• Proportion of fast growing and locally adapted/native plant species
Forest fire mitigated	Firefighter training and support firefighting equipment to CFUGs	• Enhance capacity on forest fire control	• Collaborate with security institutions and also provide equipment support	• At least 10 sets of firefighting equipment to security institutions	• Sets of firefighting equipment supported
	Training and equipment support to promote compost production	• Increase in soil organic content in farmlands	• Compensate litter collectors and provide subsidy to compost manure • Production based subsidy in organic farming	• At least 50% share of fertilizer is compost manure	• Number of households practicing composting
	Construction and improvement of fire lines	• Provides barrier to slow or stop the progress of wildfire	• Regular maintenance • Construct fire line as forest product collecting route	• Annual maintenance before fire season	• Number of fire line free of litters in dry season
IPack 5: Restoration of river system landscape (within and outside national forest)					
Forests and tree cover are restored, enhanced and maintained in the river system landscape	Establish and support multi-purpose tree nurseries	• Enhance seedling availability for plantation	• Demand based seedling production (fruit, fodder etc.)	• Seedling production will meet 100% demand	• Proportion of seedlings used for plantation
	Establish On-farm tree nursery	• Enhance seedling availability for plantation	• Demand based seedling production (fruit, fodder etc.)	• Seedling production will meet 100% demand	• Proportion of seedlings used for plantation
	Demonstration plantation	• Increase biodiversity • Enhance carbon stock	• Ecotourism promotion and research center	• At least 1 demonstration plantation site used for ecotourism promotion and research center	• Number of demonstration plantation site used for ecotourism promotion and research center

Outputs	Activities	Benefits	Benefit enhancement measures	Benefit enhancement targets	Indicators
	Technical guidance and support to establish woodlots	• Reduces forest dependency and hence forest degradation • Enhance carbon stock	• Facilitate woodland development in unregistered lands on collaboration with local government • Additional incentives to promote woodlots in adjacent private land along river banks	• At least 50% additional incentives for woodlot development in adjacent private land along river banks	• Number/area of woodlots in adjacent private land along river banks
IPack 6: Advocacy campaign: Gender-inclusive governance campaign					
Increased access of women to SNRM and knowledge and information	Create informal learning and sharing platforms for grassroots-level women	• Women empowered and their voices being respected	• Create and manage learning platform	• Five learning events	• Number of learning events
	Conduct local level policy discourses to ensure gender responsiveness and women's participation, access, control and leadership	• Women's participation, access, control and leadership developed and supported	• Interaction held between policy makers and targeted women	• One event	• Number of events
	Produce and publish best practices and learning in gendered governance	• Documentation and publication of gendered governance strengthened and institutionalized	• Sharing and publicity	• One best practice documented	• Number of best practices documented
Integrated gender and women's participation in	Conduct rapid assessment on women's contribution and involvement in SNRM	• Women's contribution and participation increased	• Gender data disseminated	• One Sharing event	• Number of sharing events

Outputs	Activities	Benefits	Benefit enhancement measures	Benefit enhancement targets	Indicators
local planning processes in SNRM	Provide gender mainstreaming trainings/ workshops to local government and CBOs	• Women's capacity enhanced in GESI integration and local government and CBOs take the issues seriously	• Knowledge enhancement, accountability	• One training event for 20 government staffs	• Number of training events
	Conduct GESI focused social audits and public hearing	• Social transparency increased and regularly practiced	• Coverage of wider audience target group	• Two events	• Number of events
	Conduct advocacy campaign and promote awareness on gender responsive information, available provisions and resources among CBOs/ women groups	• Gender responsive information making women and marginalized groups empowered	• Awareness raising sessions	• Three events	• Number of events
	Engage male involvement to advocate gender and women's issues and concern in campaign	• Male roles changing and supportive for women empowerment	• Continues encouragement of male change agent to promote gender	• Two events	• Number of events

5.6 Budget

Note: Budget estimations are tentative and done based on consultation workshops with key stakeholders at river system level during 2022. However, during time of implementation, the rate and amount mentioned in the CERP plans are subjected to change based on the changes in market situation as well as the field condition. Respective Provincial Project Management Offices (PPMUs) can make necessary changes based on field situation following the norms and rates as per the Nepal government rules and regulations.

Table 23: Budget plan

Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)
IPack 1: Climate resilient agriculture and land use practices				
Identification and operationalization of FFS	No	4	700,000	2,800,000
Capacity-building in the use of weather information and its application in agricultural practices	No	2	100,000	200,000
Implement climate resilient agriculture practices	ha	2,641.2	2,000	5,282,483.88
Train and support farmers to adopt and apply climate-resilient land use practices	Events	10	450,000	4,500,000
Total Budget for IPack 1 (NRs)				**12,782,483.88**
IPack 2: Improving/maintaining river system landscape through soil and water conservation				
Promote agroforestry with multiyear cropping/horticulture promotion/on-farm conservation	ha	324	6,000	1,944,000
Landslide treatment	No	2		5,000,000
Construction of check dams and bioengineering for gully/Debris torrent protection	Gulley/Debris torrent	7		14,000,000
Construction of water conservation pond and management	No	3		5,000,000
Construction of embankment with bioengineering	m	520	30,000	15,600,000

Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)
Strengthening climate and disaster risk reduction mechanism in collaboration with local government	Municipality	1	300,000	300,000
Training/capacity building on soil and watershed conservation using bio-engineering	Event	1	500,000	500,000
Climate resilient awareness campaign through Eco-clubs	School	4	50,000	200,000
Total Budget for IPack 2 (NRs)				**42,544,000**
IPack 3: Capacity enhancement for sustainable forest management				
Review/upgrade/renew of forest operational plans (FOPs) of community forest user groups (CFUGs)	No	29	200,000	5,800,000
Training and capacity development for implementation of FOPs	No	29	250,000	7,250,000
Equipment support for implementation of FOPs	No	29	200,000	5,800,000
Capacitate government staffs and CBOs on climate resilient forest management (TOF)	Event	3	300,000	900,000
Governance training to government staffs and CFUGs to enhance accountability and transparency	Event	10	240,000	2,400,000
Total Budget for IPack 3 (NRs)				**22,150,000**
IPack 4: Restoration and rehabilitation of degraded forests				
Enrichment plantation	ha	94	50,000	4,700,000
Implement Assisted Natural Regeneration	ha	254	20,000	5,070,000
Firefighter training and support firefighting equipment to CFUGs	CFUG	10	300,000	3,000,000

Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)
Support firefighting equipment to security institutions (APF, Nepal Police, Nepal Army)	Sets	10	150,000	1,500,000
Training and equipment support to promote compost production from bushes and leaf litters	CFUG	3	150,000	450,000
Construction and improvement of fire lines	Km	5	300,000	1,500,000
Customize fire alert system in Community Based Forest Management (CBFM)	No	1	LS	300,000
Skill development trainings and equipment support	Hh	100	25,000	2,500,000
Total Budget for IPack 4 (NRs)				**19,020,000**
IPack 5: Restoration of river system landscape (within and outside national forest)				
Establish and support multi-purpose tree nurseries	No	2		1,500,000
Production of saplings	No	200,000	40	8,000,000
Establish On-farm tree nursery	No	1	600,000	600,000
Demonstration plantation	ha	119	500,000	59,500,000
Technical guidance and support to establish woodlots	ha	20	250,000	5,000,000
Total Budget for IPack 5 (NRs)				**74,600,000**
IPack 6: Advocacy campaign: Gender-inclusive governance campaign				
Create informal learning and sharing platforms for grassroots-level women	Event	5	50,000	250,000
Conduct local level policy discourses to ensure gender responsiveness and women's participation, access, control and leadership	Event	1	50,000	50,000
Produce and publish best practices and learning in gendered governance	Event	1	50,000	50,000

Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)
Conduct rapid assessment on women's contribution and involvement in SNRM	Event	1	100,000	100,000
Provide gender mainstreaming trainings/ workshops to local government and CBOs	Event	1	100,000	100,000
Conduct GESI focused social audits and public hearing	Event	2	150,000	300,000
Conduct advocacy campaign and promote awareness on gender responsive information, available provisions and resources among CBOs/ women groups	Meeting	3	50,000	150,000
Engage male involvement to advocate gender and women's issues and concern in campaign	Event	2	50,000	100,000
Total Budget for IPack 6 (NRs)				**1,100,000**
Grand Total Budget (NRs)				**172,196,483.88**

Note: Budget estimations are tentative and are subjected to change based on the changes in market situation as well as the field condition.

5.7 Monitoring and Reporting Protocol

River system level monitoring and reporting will be carried out by Ministry of Forest and Environment through PMU and PPMU of BRCRN.

Following monitoring protocol will be adopted to monitor the outputs of the CERP:

Table 24: Monitoring Protocol

Results	Indicator	Baseline	Target	Means of verification	Assumption
Output 1: Restored degraded forests area halting forest fire, illegal harvesting and grazing	Area (in ha.) of natural forest restored through ANR	0	254 ha of natural forest restored through ANR	PMU and PPMUs reports Project report	This river system has 7398.7 ha of forest with 394.97 ton/ha biomass and 153.5 ha of other wooded land with 53.58 ton/ha biomass (Baseline survey report 2022)
	Area (ha) of new plantation within national forests (enrichment and barren land plantation)		Area: At-least 94 ha. Survival rate: 80%	PMU and PPMUs reports Project report	
Output 2: Improved natural Forest management and increased forest area outside the forest	xx ha of forest area of xx groups under implementation through updated forest management plan	0	5690 ha. of forest area managed by 29 groups	PMU and PPMUs reports Project report	The river system has 29 community forestry user groups (including 2 inactive groups) managing 3690 ha of forest. The forest include 4718 ha (82.02%) of natural forest, 138 ha (2.43%) plantation forest and 834 ha (14.66%) degraded forest
	Increased (in %) forest density in terms of biomass	Forest biomass: 394.97 ton/ha Other wooded land biomass: 53.58 ton/ha	2% increase in biomass	Baseline and endline survey	

Results	Indicator	Baseline	Target	Means of verification	Assumption
	Area (ha) of new plantation outside forest area; and their survival rate (public land forestry and private forestry)	0 ha.	Area: 139 ha. Survival rate: 80%	PMU and PPMUs reports Project report	Local government supported and owned public land and private forestry initiatives under their own jurisdiction
Output 3: Minimized Impacts of climate induced disasters (erosion, landslides/ sedimentation and flooding)	Volume of sedimentation	NA	25% in comparison to before constructing structures	In-person assessments at lower gabions Project report	Other climate-resilient SNRM practices (including Activities on climate-resilient land use, sustainable management of forests and reforestation) are successfully implemented, further reducing potential for erosion and sedimentation
Output 4: Farmers adopted Climate resilient farming practices	Ha. of agricultural land under climate resilient agriculture	0 ha	2,641.2 ha	PMU and PPMUs reports Project report	Including horticulture development in 324 ha
	Proportion of farmers trained by the project who begin to apply climate-resilient land use practices on their fields in the relevant season following their respective trainings	0	At least 80% of the farmers involved in project trainings begun to apply project- promoted climate-resilient land use practices in the season following their training	PMU and PPMUs reports Project report	The final selection of practices to be promoted at each specific training site are highly relevant to targeted farmers' cropping systems and conditions, as well as the climate change challenges with which they must contend. Trainings are delivered in a form and manner that is accessible to and relevant for, targeted farmers.
Output 5: Integrated gender and equity issues in	% of women in leadership positions of CBO's executive committee	Out of 274 leadership positions in 29 CFUGs,	At least 50% women in leadership position	PMU and PPMUs reports	Proportional representation of all social groups ensured

Results	Indicator	Baseline	Target	Means of verification	Assumption
governance practices in NRM/ CRLUP and management		122 (44.5%) are women		Project report	
	Access of women in Natural resources management, CRLUP, knowledge and information	0	At least 50% women participation in all events	PMU and PPMUs reports Project report	Proportional representation of all social groups ensured
	Integrate gender in local planning processes in NRM/ CRLUP and management	0	29 Gender sensitive forest management operational plan of forestry user groups	PMU and PPMUs reports Project report	Gender dimensions ensured in climate resilient plan including forest management operational plan of groups This river system has 29 CFUGs

Outcome and impact level result assessment will be carried out based on result framework of CERP (Annex-1) using BRCRN monitoring and evaluation framework. Output level results of this CERP fully aligned with the BRCRN outcome and impact indicators.

Activity level monitoring will be carried out based on work plan and budget. Joint monitoring mechanism will be established to monitor the activity and results.

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Annex-1: Result Framework of Gideri Critical Ecosystem Restoration Plan

Vision: Climate resilient and sustainably managed Natural Resources and local communities in Gideri River system

Result Framework

Expected Results	Objectively verifiable Indicator	Baseline	Target	Means of verification	Assumptions
Impacts					
GCF core indicator (Mitigation) *A4.0 Improved resilience of ecosystems and ecosystem services (proxi indicator 2 to 5)*	Tonnes of carbon dioxide equivalent (tCO_2eq) reduced or avoided. **Proxy indicator**: Area of (1) Deforestation rate: (2) Sustainable forest management area: (3) ANR area (4) Plantation area (5) Area of Climate Resilient Agriculture (CRA)	**Proxy indicators:** Deforestation rate: -0.24% Sustainable forest management area: 0 ha ANR: 0 ha Plantation area: 0 ha Climate Resilient Agriculture: 0 ha	**Proxy indicator**: At least: Deforestation rate: 0 Sustainable forest management area: 5690 ha Plantation area: 139 ha ANR: 254 ha Enrichment plantation withing forest: 94 ha Climate Resilient Agriculture: 2641 ha	PPMUs/PMU report GCF/BRCRN GHG mitigation calculation tool-based calculation sheet	This river system has 7398.7 ha of forest with 394.97 ton/ha biomass and 153.5 ha of other wooded land with 53.58 ton/ha biomass (Baseline survey report 2022) The river system has 29 community forestry user groups (including 2 inactive groups) managing 5690 ha of forest. The forest include 4718 ha (82.02%) of natural forest, 138 ha (2.43%) plantation forest and 834 ha (14.66%) degraded forest (CBO profile 2022) CERP shows 343.2 ha of deforestation between 2000 and 2019 showing -0.24% deforestation rate

Expected Results	Objectively verifiable Indicator	Baseline	Target	Means of verification	Assumptions
GCF core indicator (Adaptation)	Total number of direct and indirect beneficiaries (gender disaggregated)	0	**Direct:** Male: at least 16469 Female: at least:16336	PMU and PPMUs reports Project report	6533 households associated with forestry user groups with 32805 population (16469 male and 16336 female)
Outcomes					
M9.0 Improved management of land or forest areas contributing to emissions reductions	M9.1 Hectares of land or forests under improved and effective management that contributes to CO_2 emission reductions	0	Sustainable forest management area: 5690 ha Plantation area: 139 ha ANR: 254 ha Enrichment plantation withing forest: 94 ha Climate Resilient Agriculture: 2641 ha	PMU and PPMUs reports Project report	
A8.0 Strengthened awareness of climate change threats and risk reduction processes	A8.1 Number of males and females made aware of climate threats and related appropriate responses	0 men 0 women 0 total	At least: Male: at least 16469 Female: at least:16336 Total: 32805		Beneficiaries are interested to participate in awareness program and also in adopting climate resilient land use practices
Outputs					
Output 1: Restored degraded forests area halting forest fire, illegal harvesting and grazing	Area (in ha.) of natural forest restored through ANR	0	254 ha of natural forest restored through ANR	PMU and PPMUs reports Project report	This river system has 7398.7 ha of forest with 394.97 ton/ha biomass and 153.5 ha of other wooded land with 53.58 ton/ha biomass (Baseline survey report 2022)

Expected Results	Objectively verifiable Indicator	Baseline	Target	Means of verification	Assumptions
	Area (ha) of new plantation within national forests (enrichment and barren land plantation)		Area: At-least 94 ha. Survival rate: 80%	PMU and PPMUs reports Project report	
Output 2: Improved natural Forest management and increased forest area outside the forest	xx ha of forest area of xx groups under implementation through updated forest management plan	0	5690 ha. of forest area managed by 29 groups	PMU and PPMUs reports Project report	The river system has 29 community forestry user groups (including 2 inactive groups) managing 3690 ha of forest. The forest include 4718 ha (82.02%) of natural forest, 138 ha (2.43%) plantation forest and 834 ha (14.66%) degraded forest
	Increased (in %) forest density in terms of biomass	Forest biomass: 394.97 ton/ha Other wooded land biomass: 53.58 ton/ha	2% increase in biomass	Baseline and endline survey	
	Area (ha) of new plantation outside forest area; and their survival rate (public land forestry and private forestry)	0 ha.	Area: 139 ha. Survival rate: 80%	PMU and PPMUs reports Project report	Local government supported and owned public land and private forestry initiatives under their own jurisdiction
Output 3: Minimized Impacts of climate induced disasters (erosion, landslides/ sedimentation and flooding)	Volume of sedimentation	NA	25% in comparison to before constructing structures	In-person assessments at lower gabions Project report	Other climate-resilient SNRM practices (including Activities on climate-resilient land use, sustainable management of forests and reforestation) are successfully

Expected Results	Objectively verifiable Indicator	Baseline	Target	Means of verification	Assumptions
					implemented, further reducing potential for erosion and sedimentation
Output 4: Farmers adopted Climate resilient farming practices	Ha. of agricultural land under climate resilient agriculture	0 ha	2,641.2 ha	PMU and PPMUs reports Project report	Including horticulture development in 324 ha
	Proportion of farmers trained by the project who begin to apply climate-resilient land use practices on their fields in the relevant season following their respective trainings	0	At least 80% of the farmers involved in project trainings begun to apply project- promoted climate-resilient land use practices in the season following their training	PMU and PPMUs reports Project report	The final selection of practices to be promoted at each specific training site are highly relevant to targeted farmers' cropping systems and conditions, as well as the climate change challenges with which they must contend. Trainings are delivered in a form and manner that is accessible to and relevant for, targeted farmers.
Output 5: Integrated gender and equity issues in governance practices in NRM/ CRLUP and management	% of women in leadership positions of CBO's executive committee	Out of 274 leadership positions in 29 CFUGs, 122 (44.5%) are women	At least 50% women in leadership position	PMU and PPMUs reports Project report	Proportional representation of all social groups ensured
	Access of women in Natural resources management, CRLUP, knowledge and information	0	At least 50% women participation in all events	PMU and PPMUs reports Project report	Proportional representation of all social groups ensured

Expected Results	Objectively verifiable Indicator	Baseline	Target	Means of verification	Assumptions
	Integrate gender in local planning processes in NRM/ CRLUP and management	0	29 Gender sensitive forest management operational plan of forestry user groups	PMU and PPMUs reports Project report	Gender dimensions ensured in climate resilient plan including forest management operational plan of groups This river system has 29 CFUGs

Activities

Activities	Description	Sub-activities	Remarks/Deliverables
Output 1: Restored degraded forests area halting forest fire, illegal harvesting and grazing			
1.1 Forest fire control	Support and strengthen forestry-related CBOs to combat forest fire.	1.1.1 Firefighter training and support firefighting equipment to CFUGs 1.1.2 Training and equipment support to promote compost production 1.1.3 Support firefighting equipment to security institution/DFO/Groups (from budget plan) 1.1.4 Construction and improvement of fire lines 1.1.5 Customize fire alert system in Community Based Forest Management (CBFM)	At least 10 CFUGs of most fire prone community forests supported with firefighting equipment About 5 km of fire lines established/improved
1.2 Income source of poor/marginalized forest users enhanced halting illegal harvesting	Enhance income generation opportunities for forest dependent women, IPs, Dalits and poor/marginalized people to reduce pressure on forest resources.	1.2.1 Skill development trainings and equipment support	Approximately 100 household beneficiaries
Output 2: Improved natural Forest management and increased forest area outside the forest			
2.1 Strengthening forest management	Improving the application of sustainable forest management practices in all forest land managed by forestry-related CBOs within project area, ensuring silvicultural practices are implemented and maximizing ecosystem service	2.1.1Review/upgrade/renew of forest operational plans (FOPs) of community based forest user groups (CFUGs) and provide implementation support 2.1.2 Training and capacity development for implementation of FOPs 2.1.3 Equipment support for implementation of FOPs	Approximately 29 forest operational plans developed and/or strengthened. Approximately 3 ToF events organized to capacitate government staffs and CBOs on

Activities	Description	Sub-activities	Remarks/Deliverables
	provision and resilience, as well as generating significant climate change benefits.	2.1.4 Capacitate government staffs and CBOs on climate resilient forest management (Training of Facilitators) 2.1.5 Governance training to government staffs and CFUGs to enhance accountability and transparency	climate resilient forest management.
2.2 Improvement of forest cover through enrichment plantation and ANR	Support different types of forest plantation to build resilience and deliver important mitigation benefits.	2.2.1 Enrichment plantation/Assisted natural regeneration in forest area	Enrichment plantation/ANR implemented on 348 ha of community managed forest land.
2.3 Restoration, enhancement and maintenance of forests and tree cover in the river system landscape through Public and private forestry	Establish tree nurseries in the project area to support tree planting and forest restoration under this project, as well as planting and restoration by communities throughout the project area during and after the project implementation. Support expansion of forest cover and restoration of forest landscapes in critical locations of river system, thereby restoring crucial ecosystem functions and ecosystem resilience while also generating significant mitigation benefits.	2.3.1 Establish and support multi-purpose tree nurseries 2.3.2 Demonstration plantation 2.3.3 Technical guidance and support to establish woodlots and incentivize tree plantation	2 multi-purpose nurseries established 119 ha of demonstration plantation established 20 ha of woodlots established in private land
Output 3: Minimized impacts of climate induced disasters (erosion, landslides/sedimentation and flooding)			
3.1 Controlling erosion/landslide and management of sedimentation	Construct local structures, as well as bioengineering that will reduce community vulnerability to erosion and landslides.	3.1.1 Landslide treatment 3.1.2 Construction of check dams and bioengineering for gully/Debris torrent protection 3.1.3 Training/capacity building on soil and watershed conservation using bio-engineering	Establish relevant structures and practices to stabilize 2 landslides and 7 gully/debris torrents mostly in Churia hills

Activities	Description	Sub-activities	Remarks/Deliverables
3.2 Minimization of negative impact of Flood	Construct local structures, as well as bioengineering that will reduce community vulnerability to flooding	3.2.1 Construction of embankments with bioengineering	Establish relevant structures and practices for riverbank stabilization
3.3 Conservation and management of water sources	Construction and management of conservation ponds that will enhance water availability and the at the same time supports groundwater recharge	3.3.1 Construction of water conservation pond and management	3 conservation ponds
3.4 Strengthening disaster risk management and awareness creation on climate resilient NRM	Improving disaster risk management in collaboration with local government and capacity strengthening for disaster risk reduction, as well as awareness creation for climate resilient natural resource management	3.4.1 Strengthening climate and disaster risk reduction mechanism in collaboration with local government 3.4.2 Training/capacity building on soil and watershed conservation using bio-engineering 3.4.3 Climate resilient awareness campaign through Eco-clubs	5 days training for Government staffs/CBFMG/Farmer groups on soil and watershed conservation using bio-engineering Student-run eco-clubs established
Output 4: Farmers adopted Climate resilient farming practices			
4.1 Establish and operationalize Farmers field schools (FFS)	Establish training sites on which farmers can be trained on climate resilient farming practices during and after the project.	4.1.1 Operationalize Farmer's Field Schools on adopting climate resilient land use practices 4.1.2 Capacity-building in the use of weather information and its application in agricultural practices	4 FFS established and operational
4.2 Implementation of climate-resilient land use practices (pest and disease minimized, soil quality improved, irrigation facility enhanced)	Support and strengthen farmers' capacities to adopt/apply climate-resilient farming practices in their own fields.	4.2.1 Implement climate resilient agriculture practices (including pest and disease control, soil quality improvement, irrigation facility enhancement) 4.2.2 Train and support farmers to adopt and apply climate-resilient land use practices	Climate-resilient land use practices adopted/applied in 2,641.2 ha of farmlands
4.3 Agroforestry Promotion	Support and strengthen farmers' capacity to adopt/apply suitable agroforestry and livestock management practices on their own land.	4.3.1 Promote agroforestry with multiyear cropping/horticulture promotion/on-farm conservation 4.3.2 Establish on-farm tree nursery and support livestock rearing 4.3.3 Production/Purchase of saplings	1 on-farm tree nursery established Agroforestry established in 324 ha marginal land
Output 5: Integrated gender and equity issues in governance practices in NRM/ CRLUP and management			

Activities	Description	Sub-activities	Remarks/Deliverables
5.1 Increase access of women to SNRM and knowledge and information	Establish platforms for women's involvement and access to knowledge and information, as well as build capacity in natural resource management and climate resilient land use practices	5.1.1 Create informal learning and sharing platforms for grassroots-level women 5.1.2 Conduct local level policy discourses to ensure gender responsiveness and women's participation, access, control and leadership 5.1.3 Produce and publish best practices and learning in gendered governance	With enhanced access to knowledge and information, more women involved in in natural resource management and climate resilient land use practices
5.2 Integrate gender in local planning processes in SNRM	Sensitize CBOs, women groups, local government and other concerned stakeholders on gender responsive information, available provisions and resources to ensure GESI integration in local planning processes for natural resource management and climate resilient land use practices	5.2.1 Conduct rapid assessment on women's contribution and involvement in SNRM 5.2.2 Provide gender mainstreaming trainings/ workshops to local government and CBOs and concerned stakeholders 5.2.3 Conduct GESI focused social audits and public hearing 5.2.4 Conduct advocacy campaign and promote awareness on gender responsive information, available provisions and resources among CBOs/ women groups 5.2.5 Engage male involvement to advocate gender and women's issues and concern in campaign	GESI integration ensured in in local planning processes for natural resource management and climate resilient land use practices

Annex-2: List of Participants

A. Problem and Solution Analysis Workshop

S. N.	Name of Participants	Address	Institution	Designation	Contact No.
1	Upendra Bahadur Thapa	Belaka Municipality	Belaka Municipality	Assistant Sub-Engineer	9852835410
2	Gayatra Rai	Belaka-5	Belaka Municipality-5	Ward Secretary	9842856578
3	Pratima Neupane	Belaka-4		Local	9823555821
4	Sabitra Chaudhary	Belaka-3	Sunkhani CFUG	Secretary	9815714808
5	Janak Rai	Belaka-3	Sunkhani CFUG	Chairman	9805912997
6	Lekh Bahadur Pariyar	Belaka-6	Jalpa Wabungla CFUG	Chairman	9847949350
7	Umesh Rana Magar	Belaka Municipality	Thakrebas CFUG	Chairman	9805924515
8	Jitman Rai	Belaka-6	Gaurikharka CFUG		9817793435
9	Bam Bahadur Bishta	Belaka-5	Thulo Damar Bakjor CFUG		9869174785
10	Tej Bahadur Magar	Belaka-3	Jogini Pakha CFUG		9829765291
11	Birendra Kumar Rai	Belaka-9	Machhapuchhre CFUG	Chairman	9746206088
12	Goma Devi B.K.	Belaka-4	Belaka Municipality-4	Ward Member	9814740624
13	Tikaram Sharma	Belaka-9	Machhapuchhre CFUG		9825795544
14	Karna Bahadur Rai	Belaka-6	Gaurikharka CFUG	Chairman	9807380710
15	Khadga Bahadur Rai	Belaka-6	Shahashik Farmers Group		9804793315
16	Tanka Bahadur Katuwal	Belaka-5	Jaldevi CFUG		9807737770
17	Parbati Thapa (Khadka)	Belaka-5	Jaldevi CFUG		9824742738
18	Pratap Singh Rai	Belaka-6	Namuna Farmers Group	Chairman	9814367633
19	Sitaram Rai	Belaka Municipality	Salghari Tol Development Committee	Chairman	
20	Rajkumar Pandey	Belaka Municipality	Belaka Municipality	Municipal Committee Member	
21	Dilip Kumar Magar	Belaka-5	Barpani CFUG	Vice Chairman	9862339705
22	Lal Bahadur Rai	Belaka-6	Patal Farmers Group	Chairman	9742490353
23	Binita Khadka	Belaka Municipality	Belaka Municipality	Forest Ranger	9865514878

B. Disaggregated Participants Data

S. N.	Name of Participants	Gender		Ethnicity						
		Male	Female	Janajati	Dalit	Brahmin	Chhettri	Dasnami	Madhesi	Muslim
1	Upendra Bahadur Thapa	1					1			
2	Gayatra Rai		1	1						
3	Pratima Neupane		1			1				
4	Sabitra Chaudhary		1	1						
5	Janak Rai	1		1						
6	Lekh Bahadur Pariyar	1			1					
7	Umesh Rana Magar	1		1						
8	Jitman Rai	1		1						
9	Bam Bahadur Bishta	1					1			
10	Tej Bahadur Magar	1		1						
11	Birendra Kumar Rai	1		1						
12	Goma Devi B.K.		1		1					
13	Tikaram Sharma	1				1				
14	Karna Bahadur Rai	1		1						
15	Khadga Bahadur Rai	1		1						
16	Tanka Bahadur Katuwal	1					1			
17	Parbati Thapa (Khadka)		1				1			
18	Pratap Singh Rai	1		1						
19	Sitaram Rai	1		1						
20	Rajkumar Pandey	1				1				
21	Dilip Kumar Magar	1		1						
22	Lal Bahadur Rai	1		1						
23	Binita Khadka		1				1			
Total		**17**	**6**	**13**	**2**	**3**	**5**	**0**	**0**	**0**

C. Expert Planning Workshop

River Systems	Tawa South, Adheri-Baruwa-Dwar, Gideri and Sunkoshi
Date of Workshop	August 21 - 22, 2022

Venue	Hotel Kohbar
Location	Gaighat, Udayapur

S. N.	Name of Participants	Institution	Designation	Contact No.	Email
1	Ambika Pd. Poudel	DFO Gaighat, Udayapur	DFO	9852835134	ambikapoudel12@gmail.com
2	Raj Kumar Gupta	PCTMCD, Salakpur, Morang	Unit Head	9852077936	rajgupta2003@gmail.com
3	Umesh Budhathoki	PPMU, BRCRN	Assistant Soil Conservation Officer	9857085564	umesh.budhathoki@gmail.com
4	Dilip Prasad Gupta	Province Forest Directorate	Assistant Forest Officer	9842552666	pradeshforest@gmail.com
5	Kashi Narayan Chaudhari	DFO, Triveni	AFO	9864226567	kashichaudhari@gmail.com
6	Ram Singh Chaudhari	SDFO, Sunpur	Forest Guard	9842450556	
7	Binod Kumar Shah	SDFO, Tapeswari	AFO	9842050118	binodshah566@gmail.com
8	Bindeswar Shah	SDFO, Katari	Forest officer	9848117063	sahbindeswar21@gmail.com
9	Raj Kishor Mandal	MoFESC, Biratnagar	ASCO	9842635267	rkm2022@gmail.com
10	Ram Bhagat Yadav	SDFO, Swanku	AFO	9842825218	ramvagaty7@gmail.com
11	Dev Chandra Girte	SDFO, Nepaltar	AFO	9846055012	dev3760@gmail.com
12	Dharm Dev Thakur	SDFO, Rampur	AFO	9844671151	dharmadev35@gmail.com
13	Sanni Kumar Jha	SDFO, Mainamaini	AFO	9841249173	jha.sunnykumar1@gmail.com
14	Arvind Pandey	DFO, Udaypur, Triveni	AFO	9842096201	arvindpanday56568@gmail.com
15	Kamala Lpo	BMC, Koshi	ASCO	9846717055	kamala401@gmail.com
16	Kamala Shrestha	DFO, Gaighat	Forest Ranger	9842837606	
17	Ajay Chandra Subedi	SWMO, Okhaladhunga	ASCO	9855063076	ajay.subedi02@gmail.com
18	Ram Krishna Rajthala	BMC, Koshi	Senior Watershed Management Officer	9852835204	rkrajthala3a@gmail.com
19	Sushil Bhandari	PPMU, BRCRN-Itahari	Project Coordinator	9852074085	sbhandari7@gmail.com
20	Anu BC	ADC, Gaighat, Udaypur	Agriculture Officer	9842065006	sanub2004@gmail.com

S. N.	Name of Participants	Institution	Designation	Contact No.	Email
21	Bijay Kumar Yadav	SDFO, Beltar	AFO	9849391436	bijay00yadav00@gmail.com
22	Raj Kumar Shrestha	DFO, Udaypur	AFO	9849148020	rajshrestha10@gmail.com
23	Narayan Shrestha	FAO-TA KTM	NIPS	9851040880	narayan.shrestha@fao.org
24	Dron Kumari Rai	Triyuga-4 Udaypur	Hemwanti Nepal	9842869064	rai.drona123@gmail.com
25	Punya Prasad Paudel	DFO, Udaypur	Ranger	9852837222	punyapaudel28@gmail.com

Annex-3: Field Verification of Hotspots

1. PANITANKITOL, BELAKA-9

Community Forest: Machhapuchhre Community Forest & Dhakre Kharkhola Community Forest

General Features of the Site:

- Sparse forests that has remained sparse since years ago
- Problems of forest fire, open grazing and uncontrolled harvesting/collection of firewood & fodder
- Impact on regeneration of Sal due to cutting/destroying of seedlings during fodder and leaf litter collection
- **Invasive species:** Kanchhi Phul or Maobadi Jhar (*Mikania micrantha*), *Lantana camara*, Aule Banmara (*Chromolaena odorata*)
- Dry area, lack of irrigation

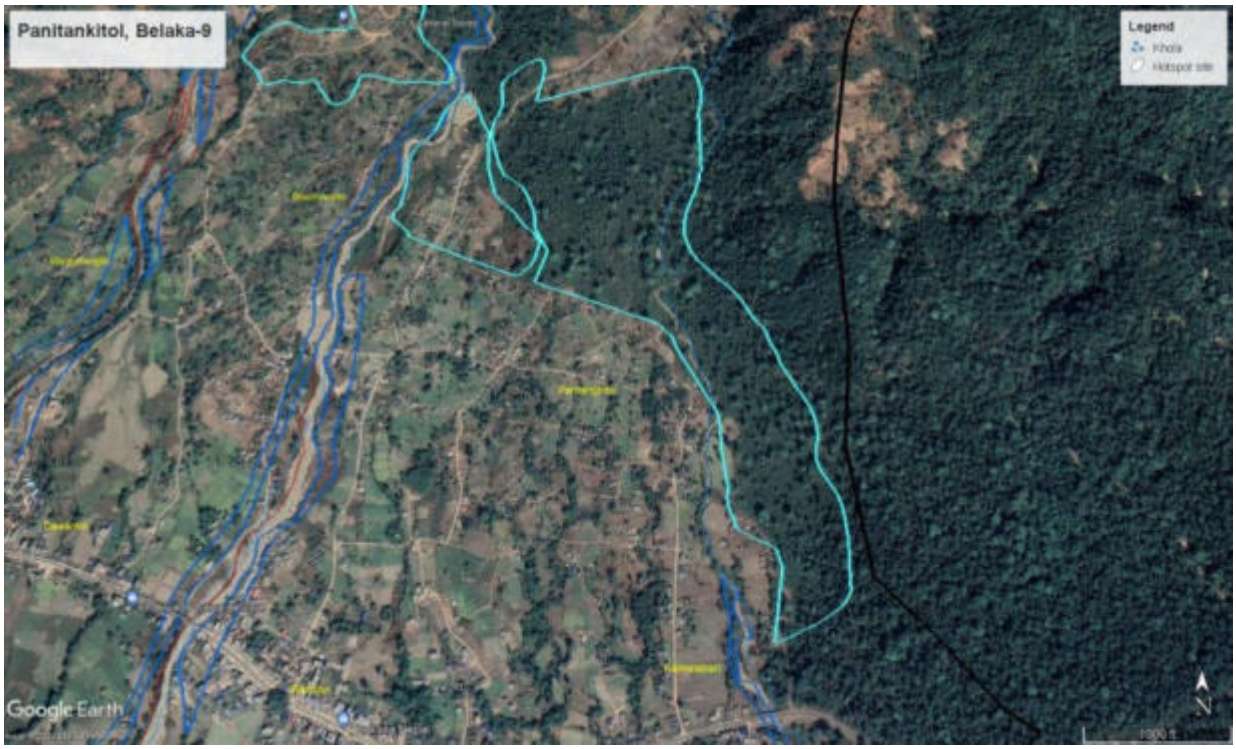


Image: Sparse forest-potential site for enrichment plantation

Current Interventions:

- Few efforts for plantation by some individuals (Chandra Kubir Rai- 9800962621)
- Plantation of Khamari (*Gmelina arborea*), Syalphusre (*Lindera pulcherrima*), Katmero (*Litsea monopetala*)
- Better survival & growth of Khamari (*Gmelina arborea*): 13 out of 20 seedlings; used for fodder and wood for crafting *halo* & *juwa*
- Tik (*Tectona grandis*) and Masala (*Eucalyptus sps*) could not grow well

Photo: Plantation by local people using locally prepared bamboo basket for protection

- Plantation done in Dhakre Kharkhola Community Forest, area to the right of Khar Khola, but poor conservation status due to open grazing and uncontrolled collection of fodder & leaf litters

Photos: Potential sites for enrichment plantation in Machhapuchhre CF (left) and Dhakre Kharkhola CF (right)

Proposed Interventions:

- Plantation along with fencing

Local concern:

- Fodder tree species and other useful plants like *Sajiwan* (*Moringa oleifera*) along the forest edge: Sajiwan used as vegetable, fodder that even the pigs feed on
- Plantation of Khamari, Syalphusre, Saaj (*Terminalia alata*), Harro (*Terminalia chebula*), Barro (*Terminalia bellirica*) preferred

Tree Nursery: Forest office at Lal Bazar

Beneficiaries: Mixed community with majority of Janajatis-Rai

Safeguard issues:

- Challenges for conservation of plantation sites by controlling/reducing forest dependency for fodder and grazing: traditional livelihood practices
- Challenges to control invasive species

2. BHASI-DANDAGAUN-RATAPANI-GODBADE AREA, BELAKA-3

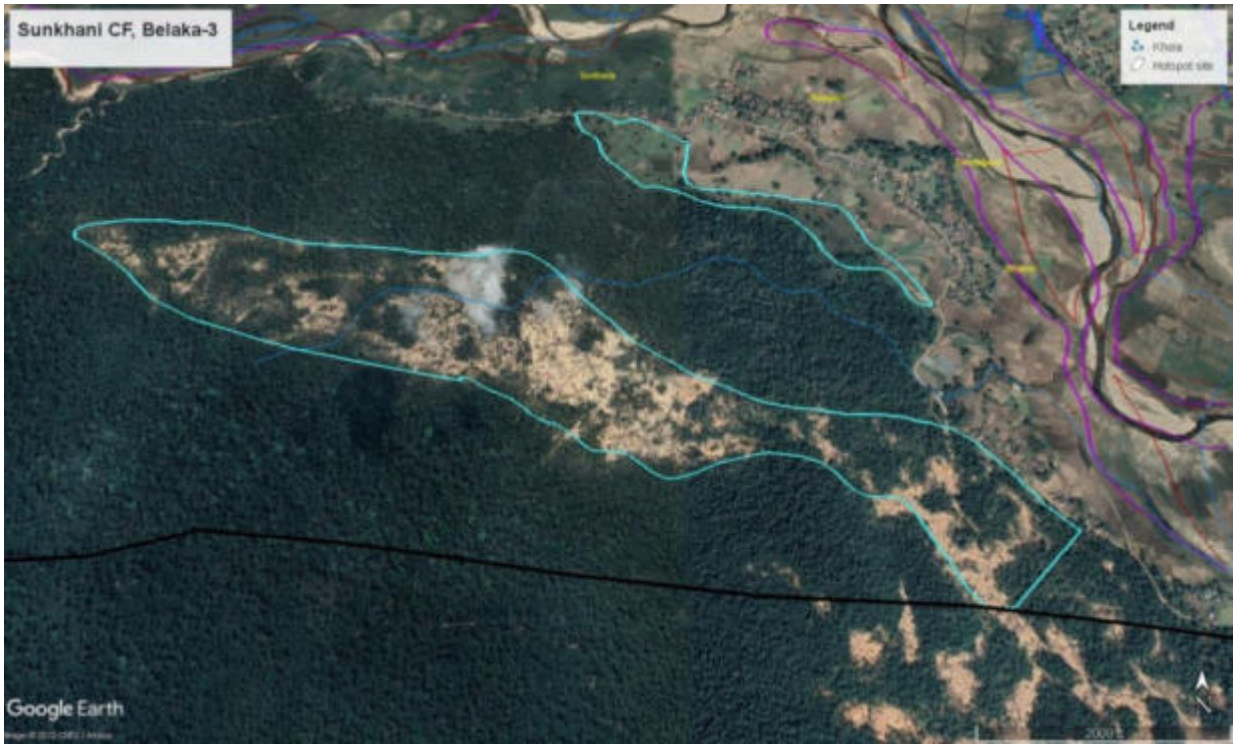


Image: Potential intervention site at Sunkhani CF

Community Forest: Sunkhani Community Forest

General Features of the Site:

- Large area of dry, barren land within the community forest

Photo: Dry, barren land at Sunkhani CF

- Evidences of weathering and soil erosion
- Impact on regeneration due to dryness

Photos: Evidences of erosion (left) and impact on regeneration (right)

- Historical Significance: Myths to have inhabited by historical king; gold utensils were dugout from the area some decades ago

Proposed Interventions:

- Plantation and conservation works for planation area
- **Selection of tree species:** resilient species to dry area or species that support in enhancing soil moisture
- Water Conservation ponds in already depressed areas

Photo: Naturally depressed area-potential site for construction of water conservation pond

Safeguard issues:

- Challenges to control open grazing and collection of fodder and firewood: traditional livelihood practices

Photos: Grazing of goats within forest (up); buffaloes being taken for grazing in forest (down)

Photo: Collection of logs and poles from forest area

3. KIRAT CHOWK; KATARI-JOGINITOL AREA, BELAKA-6

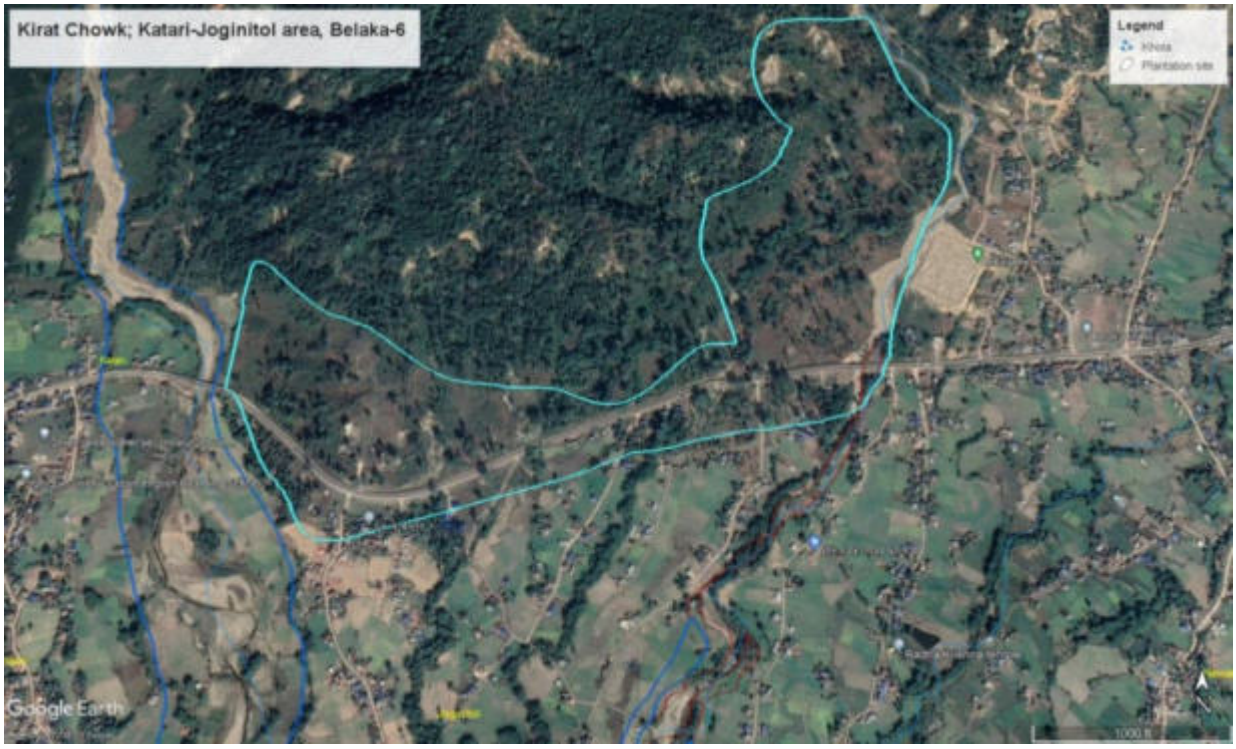


Image: Potential site for intervention (plantation) with sparse vegetation

Current Features of the Site:

- Areas available for plantation

Photos: Potential sites for plantation

- Overhead Water Supply tank within the area
- **Religious, cultural site:** Some area used as Graveyard
- 10-bed Basic Hospital proposed at eastern side of the site area

Photo: Proposed site for establishment of hospital

4. MAINI AREA, BELAKA-5

Current Feature of the Site:

- Settlement area almost surrounded by forest
- Majority Janajati

Image: Potential site for interventions at Maini

Photo: Niger seeds (Filunge) and banana farming

Proposed Interventions:

- **Climate resilient agriculture:** Infrastructure support for enhanced water availability, commercial agriculture, agriculture processing
- **Livelihood Improvement**: Agroforestry

5. RIVERS AND STREAMS

River Training Works

- Gabion embankment
- River-forest corridor: Bamboo and others

Photo: Gideri Khola

Photo: Sisuwa Khola

Photo: Murti Khola

Flood Sensitive Areas

Ward-3 (Ratapani, Dandagaun, Bhansi & Satpatre); Ward-4 (Dandabari & Lalsisuwa); Ward-5 (Tilbari, Ekleanptol, Kanchira, Salghari, Dandabari, Tilbari, Ghumane)

6. LANDSLIDE SENSITIVE AREA

Ward-6 (Lamidanda Gaun)

7. NURSERY ESTABLISHMENT

Local Concern:

- **Fodder species and other Useful tree species:** Bakaino (*Melia azedarach*), Epil Epil (*Leucaena leucocephala)*, Tanki (*Bauhinia purpurea)*, Kimbu (*Morus nigra)*, Badahar (*Artocarpus lakoocha)*, Chiuri (*Diploknema butyracea*), Amala (*Phyllanthus emblica*), Gidari, Kutmero (*Litsea monopetala*), Nebharo (*Ficus carica*) and others
- **Fruits and Multiyear crops:** Aanp (*Mangifera indica*), Litchi (*Litchi chinensis*), Katahar (*Artocarpus heterophyllus)*, Bans, Amriso (*Thysanolaena maxima)*, Kurilo (*Asparagus racemosas)*, Kagati (*Citrus aurantifolia)*, Nibuwa (*Citrus limon)*, Bhogate (*Citrus maxima)*, Kola (*Musa paradisiaca)* and others

For Plantation along River banks: Bans (*Bambusa arundinacea)*, Khayar (*Acacia catechu)*, Sissoo (*Dalbergia sissoo*), Phaledo (*Erythrina arborescens*) and others

Annex-4: Activities, Location and Budget Plan

Note: The location coordinates of planned activity sites listed in table below are the result of participatory mapping exercise conducted with local stakeholders who demarcated the intervention location in the map with google image in background. Some of the locations (approximately 30% of the sites) are verified in the field for their accuracy and validity. However, due to time and resource constraint for field verification, all identified location coordinates are not verified in field. Hence, location coordinates mentioned in CERP activity sites need further field verification before the implementation. Locations are subjected to change as per the field findings and verification result. Intervention site coordinate mentioned in this CERP Annexes should be taken only as initial guidance to start the field process and, if they are found inappropriate during the field verification, the technical team from PPMU can conduct location changes with proper documentation of field condition

Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)	Location	Lat.	Long.	Activity Code	Local government
Identification and operationalization of FFS								A1.1	
FFS at Patal Krishi Samuha	No	1	700,000	700,000	Lamidandagaun	87.02905	26.8529	A1.1.1	Belaka M-6
FFS at Namuna Krishi Samuha	No	1	700,000	700,000	Lekalitol (Buddhachwok)	87.0538	26.8195	A1.1.2	Belaka M-6
FFS for Sukhani CF	No	1	700,000	700,000	Dandandagaun-Ratapani	87.03398	26.7992	A1.1.3	Belaka M-5
FFS at Sunaulo Bihani Samuha	No	1	700,000	700,000	Hurdunge-Kanchirakhop	86.97366	26.8576	A1.1.4	Belaka M-3
Capacity-building in the use of weather information and its application in agricultural practices	No	2	100,000	200,000				A1.1.5	
Implement climate resilient agriculture practices	ha	558.1	2,000	1,116,180.77	Belaka M-4	87.02367	26.8181	A1.2.1	Belaka M-4
	ha	889.7	2,000	1,779,463.32	Belaka M-5	86.98394	26.8302	A1.2.2	Belaka M-5
	ha	832.6	2,000	1,665,224.22	Belaka M-6	87.04986	26.849	A1.2.3	Belaka M-6
	ha	360.8	2,000	721,615.58	Belaka M-9	87.06873	26.8143	A1.2.4	Belaka M-9

Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)	Location	Lat.	Long.	Activity Code	Local government
Train and support farmers to adopt and apply climate-resilient land use practices	Event	1	450,000	450,000	Dakham	87.075	87.075	A1.3.1	Belaka M-6
	Event	1	450,000	450,000	Panitangkitol	87.07497	87.075	A1.3.2	Belaka M-9
	Event	1	450,000	450,000	Ramite (Batase CF)	87.00578	87.0058	A1.3.3	Belaka M-5
	Event	1	450,000	450,000	Khorsanijhora (Sikhar CF)	87.02457	87.0246	A1.3.4	Belaka M-4
	Event	1	450,000	450,000	Kharbani (Shikhar Pakha CF)	86.96979	86.9698	A1.3.5	Belaka M-5
	Event	1	450,000	450,000	Ghumaune	86.9874	86.9874	A1.3.6	Belaka M-5
	Event	1	450,000	450,000	Maini	86.98892	86.9889	A1.3.7	Belaka M-5
	Event	1	450,000	450,000	Barbaote	87.08162	87.0816	A1.3.8	Belaka M-6
	Event	1	450,000	450,000	Jahada	87.00616	87.0062	A1.3.9	Belaka M-5
	Event	1	450,000	450,000	Dandabari	86.97591	86.9759	A1.3.10	Belaka M-5
Promote agroforestry with multiyear cropping/ horticulture/ on-farm conservation								A2.1	
	ha	20	6,000	120,000	Rupatar-Palpali Phurkegadhi	86.94776	26.8759	A2.1.1	Chaudandigadhi M-1
	ha	15	6,000	90,000	Ajambari CF	86.96388	26.8578	A2.1.2	Chaudandigadhi M-1
	ha	30	6,000	180,000	Hurdunge	86.97643	26.859	A2.1.3	Belaka M-5
	ha	25	6,000	150,000	Kanchirakhop	86.98581	26.8617	A2.1.4	Belaka M-5
	ha	35	6,000	210,000	Nigure-Ramite	87.00223	26.8535	A2.1.5	Belaka M-5
	ha	20	6,000	120,000	Uchalnedhunga	87.02347	26.8445	A2.1.6	Belaka M-6
	ha	60	6,000	360,000	Pawakholagaun	87.03596	26.8583	A2.1.7	Belaka M-6

Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)	Location	Lat.	Long.	Activity Code	Local government
	ha	15	6,000	90,000	Dakham	87.07427	26.8717	A2.1.8	Belaka M-6
	ha	12	6,000	72,000	Huksa	87.08987	26.8682	A2.1.9	Belaka M-6
	ha	12	6,000	72,000	Ambote	87.08752	26.8603	A2.1.10	Belaka M-6
	ha	45	6,000	270,000	Deurali	87.06795	26.8588	A2.1.11	Belaka M-6
	ha	35	6,000	210,000	Bharle-Sondole	87.07019	26.8508	A2.1.12	Belaka M-6
Landslide treatment								A2.2	
	No	1	3,000,000	3,000,000	Hallune Bhanjyang	88.04642	26.7857	A2.2.1	Belaka M-6
	No	1	2,000,000	2,000,000	Bagaicha	87.98786	26.7602	A2.2.2	Belaka M-6
Construction of check dams and bio-fencing for gully/Debris torrent protection	No	1	LS	2,000,000	Kahare (Kalikhola CF)	86.98632	26.806	A2.3.1	Belaka M-5
	No	1	LS	2,000,000	Kahare (Kalikhola CF)	86.98798	26.8059	A2.3.2	Belaka M-5
	No	3	LS	2,000,000	Kahare (Galeni deurali CF)	86.97969	26.8064	A2.3.3	Belaka M-5
	No	2	LS	2,000,000	Kahare (Singadevi CF)	86.95704	26.8285	A2.3.4	Belaka M-5
	No	2	LS	2,000,000	Kahare (Singadevi CF)	86.95698	26.828	A2.3.5	Belaka M-5
	No	2	LS	2,000,000	Kahare (Ajambari CF)	86.97429	26.8605	A2.3.6	Belaka M-5
	No	2	LS	2,000,000	Kahare (Barpani CF)	86.97505	26.8381	A2.3.7	Belaka M-5
Construction of water conservation pond and management	No	1	2,000,000	2,000,000	Jalpa Wabunla CF	87.06989	26.8397	A2.4.1	Belaka M-6
	No	1	1,000,000	1,000,000	Jalpa Wabunla CF	87.06843	26.8296	A2.4.2	Belaka M-6
	No	1	2,000,000	2,000,000	Jaldevi RT	87.00124	26.8049	A2.4.3	Belaka M-5

Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)	Location	Lat.	Long.	Activity Code	Local government
Construction of embankments with bioengineering	m	95	30,000	2,850,000	Newaritol-Kalikholagaun	87.05497	26.8084	A2.5.1	Belaka M-3
	m	70	30,000	2,100,000	Kalikholagaun (Murti khola)	87.05393	26.8056	A2.5.2	Belaka M-3
	m	225	30,000	6,750,000	Siswa Khola	87.02528	26.8088	A2.5.3	Belaka M-4
	m	130	30,000	3,900,000	Maini Khola (Ekleanptol)	87.02046	26.8047	A2.5.4	Belaka M-4
Strengthening climate and disaster risk reduction mechanism in collaboration with local government	Municipality	1	300,000	300,000				A2.6.1	Belaka
Training/capacity building on soil and watershed conservation using bio-engineering	Event	1	500,000	500,000				A2.6.2	
Climate resilient awareness campaign through Eco-clubs	School	4	50,000	200,000				A2.6.3	
Support review/upgrade/renew of forest operational plans (FOPs) of community based forest user groups (CFUGs)	No	29	200,000	5,800,000	Starting from Community Based Forest Management Groups (CBFMGs) with higher willingness to participate and not having any technical and financial dispute			M3.1	
Training and capacity development for implementation of FOPs	No	29	250,000	7,250,000				M3.2	
Equipment support for implementation of FOPs	No	29	200,000	5,800,000				M3.3	
Capacitate government staffs and CBOs on climate resilient forest management (Training of Facilitators-TOF)	Event	3	300,000	900,000				M3.4	
Governance training to government staffs and CFUGs to	Event	10	240,000	2,400,000				M3.5	

Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)	Location	Lat.	Long.	Activity Code	Local government
enhance accountability and transparency									
Enrichment plantation	ha	10	50,000	500,000	Machhapuchhre CF	87.07718	26.8189	M4.1.1	Belaka M-9
	ha	30	50,000	1,500,000	Dhakre Kharkhola CF	87.07298	26.8253	M4.1.2	Belaka M-9
	ha	40	50,000	2,000,000	Jogini pakha CF	87.04665	26.8182	M4.1.3	Belaka M-6
	ha	14	50,000	700,000	Badeli CF	87.03664	26.8183	M4.1.4	Belaka M-6
Implement Assisted Natural Regeneration	ha	15	20,000	300,000	Shikar Pakha CF	86.96691	26.8406	M4.2.1	Belaka M-5
	ha	10	20,000	200,000	Sikhar CF	87.02495	26.8284	M4.2.2	Belaka M-4 & 6
	ha	42	20,000	840,000	Gaurikharka CF	87.05652	26.8338	M4.2.3	Belaka M-6
	ha	21	20,000	420,000	Thulo Damare CF	86.98274	26.8201	M4.2.4	Belaka M-5
	ha	9	20,000	170,000	Sikhar Kosdhunge CF	86.94592	26.8619	M4.2.5	Chaudandigadhi M-1 & 3
	ha	17	20,000	340,000	Mahavarat RT CF	87.00779	26.8301	M4.2.6	Belaka M-4& 5
	ha	45	20,000	900,000	Kalikhola Pahare CF	86.99044	26.802	M4.2.7	Belaka M-5
	ha	5	20,000	100,000	Jalpa Wabunla CF	87.07038	26.8399	M4.2.8	Belaka M-6
	ha	16	20,000	320,000	Barpani CF	86.98528	26.8354	M4.2.9	Belaka M-5
	ha	14	20,000	280,000	Jaldevi RT CF	87.00357	26.805	M4.2.10	Belaka M-6
	ha	60	20,000	1,200,000	Sunkhani cf	87.04151	26.7818	M5.3.11	
Firefighter training and support fire fighting equipment to CFUGs	CFUG	10	300,000	3,000,000				M4.3.1	
Support firefighting equipment to security institutions (APF, Nepal Police, Nepal Army)	Sets	10	150,000	1,500,000				M4.3.2	

Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)	Location	Lat.	Long.	Activity Code	Local government
Training and equipment support to compost production	CFUG	3	150,000	450,000				M4.3.3	
Construction and improvement of firelines	Km	5	300,000	1,500,000				M4.3.4	
Customize fire alert system in Community Based Forest Management (CBFM)	No	1	LS	300,000				M4.3.5	
Skill development trainings and equipment support	Hh	100	25,000	2,500,000				M4.4	
Establish and support multi-purpose tree nurseries (150,000 capacity)	No	1	1,000,000	1,000,000				M5.1.1	
Establish and support multi-purpose tree nurseries (50,000 capacity)	No	1	500,000	500,000				M5.1.2	
Production of saplings	No	150,000	40	6,000,000				M5.1.3	
	No	50,000	40	2,000,000				M5.1.4	
Establish On-farm tree nursery	No	1	600,000	600,000	Dandabari	86.97685	26.8209	M5.1.5	Belaka M-5
Demonstration plantations	ha	3	500,000	1,500,000	Jaidevi RT	87.0081	26.8008	M5.2.1	Belaka M-5
	ha	24	500,000	12,000,000	Sukhani CF	87.0303	26.7912	M5.2.2	Belaka M-3
	ha	25	500,000	12,500,000	Dhakrebas CF & Sriganesh Sadesh CF	87.02066	26.7936	M5.2.3	Belaka M-3
	ha	4	500,000	2,000,000	Gaurikharka CF	87.05508	26.8232	M5.2.4	Belaka M-6
	ha	11	500,000	5,500,000	Maini-Gidari confluence	87.02411	26.8039	M5.2.5	Belaka M-4
	ha	5	500,000	2,500,000	Katari	87.02238	26.8219	M5.2.6	Belaka M-4

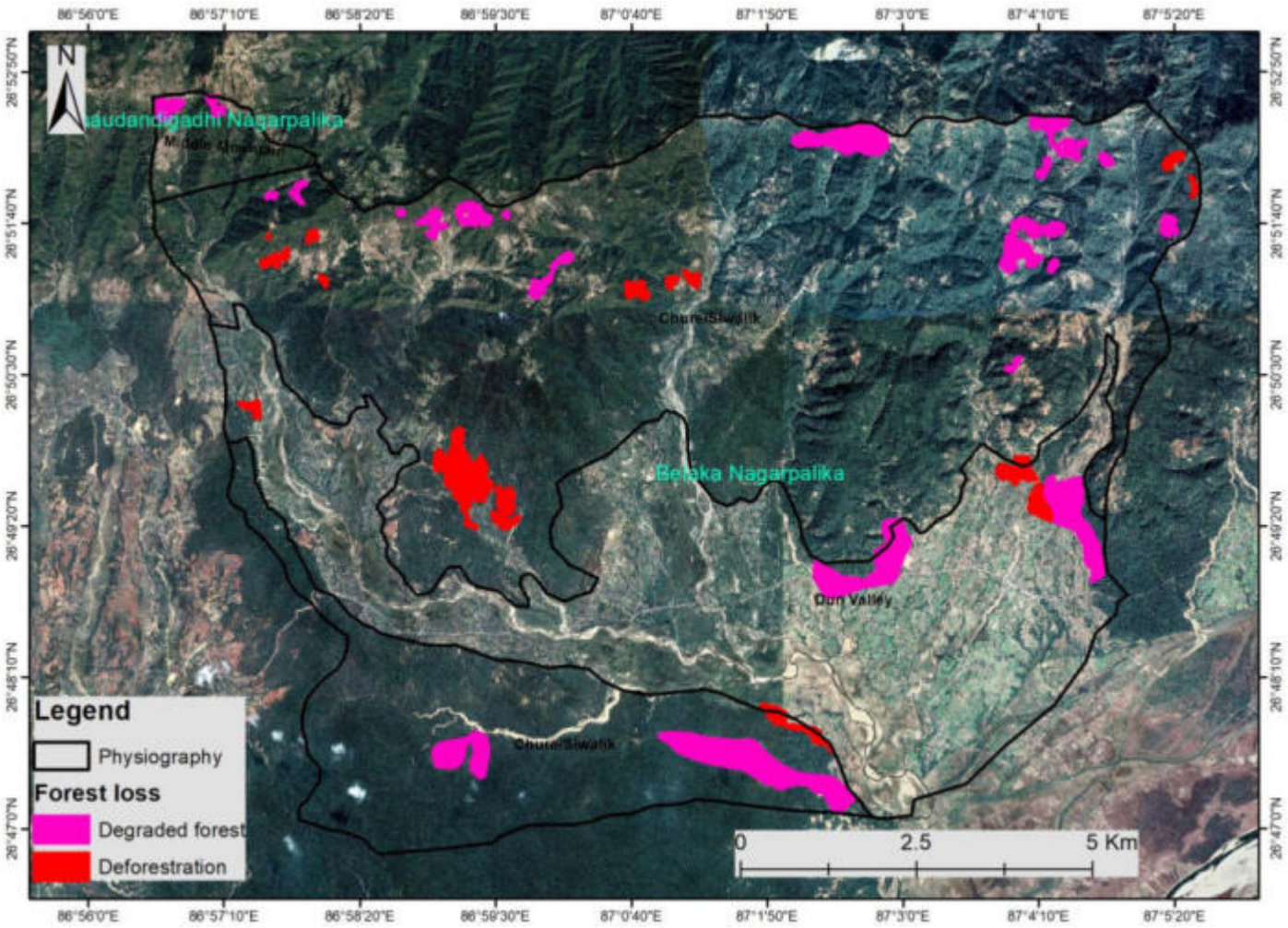
Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)	Location	Lat.	Long.	Activity Code	Local government
	ha	2	500,000	1,000,000	Newartol-Kalikholagaun (Murti Khola)	87.05421	26.8067	M5.2.7	Belaka M-3
	ha	25	500,000	12,500,000	Siswa Khola (Dandabari downstream)	87.01924	26.8251	M5.2.8	Belaka M-4
	ha	20	500,000	10,000,000	Siswa khola	87.02685	26.807	M5.2.9	Belaka M-4
Technical guidance and support to establish woodlots	ha	20	250,000	5,000,000	Others			M5.3	
Create informal learning and sharing platforms for grassroots-level women	Event	5	50,000	250,000					
Conduct local level policy discourses to ensure gender responsiveness and women's participation, access, control and leadership	Event	1	50,000	50,000					
Produce and publish best practices and learning in gendered governance	Event	1	50,000	50,000					
Conduct rapid assessment on women's contribution and involvement in SNRM	Event	1	100,000	100,000					
Provide gender mainstreaming trainings/ workshops to local government and CBOs	Event	1	100,000	100,000					
Conduct GESI focused social audits and public hearing	Event	2	150,000	300,000					
Conduct advocacy campaign and promote awareness on gender responsive information, available	Meeting	3	50,000	150,000					

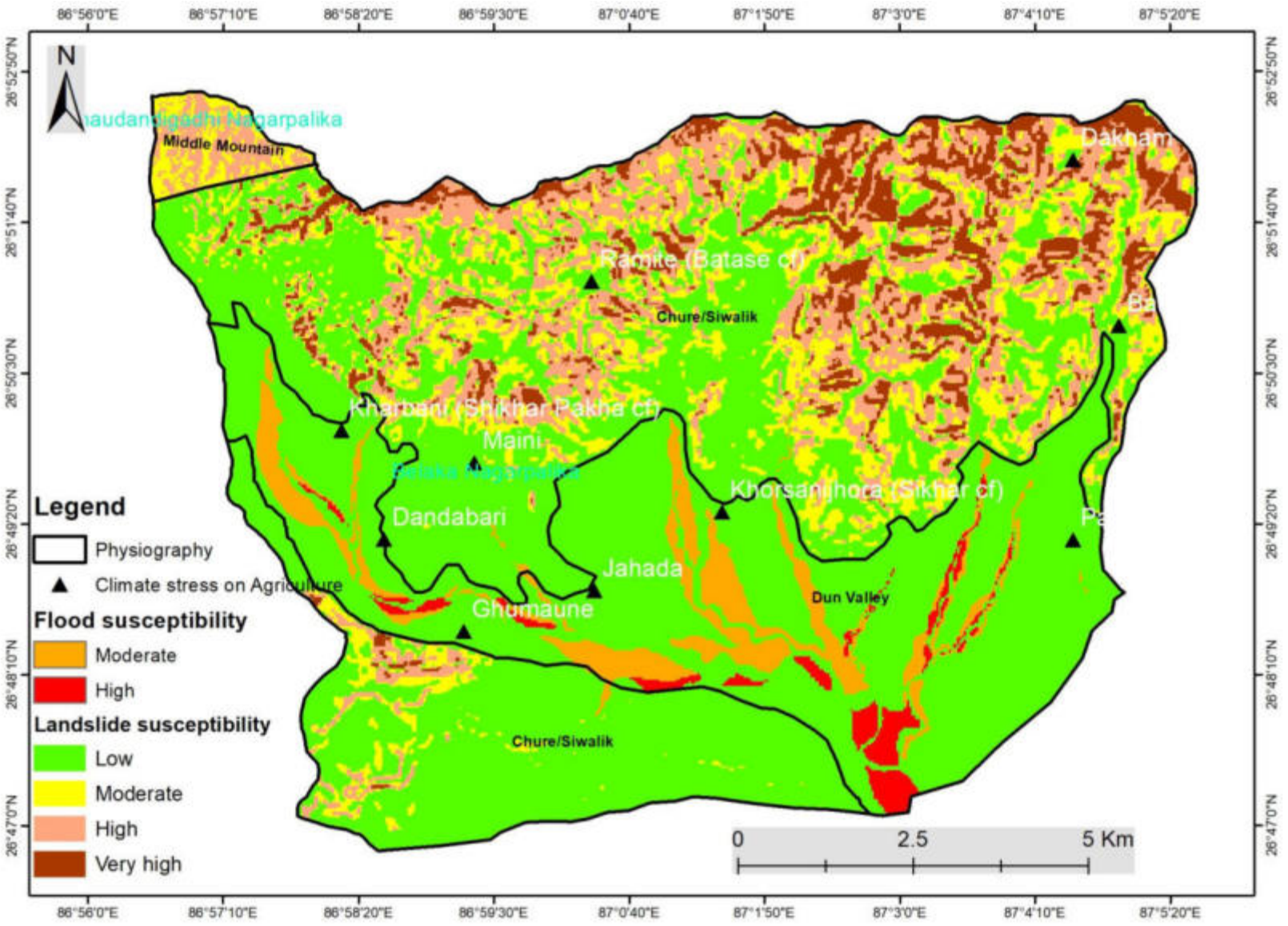
Sub-activities	Unit	Quantity	Unit Cost	Budget (NPR)	Location	Lat.	Long.	Activity Code	Local government
provisions and resources among CBOs/ women groups									
Engage male involvement to advocate gender and women's issues and concern in campaign	Event	2	50,000	100,000					
Total				**172,196,483.88**					

Note: Activity location and coordinates are subjected to change based on field condition before the implementation. BRCRN PPMU offices can make the necessary changes with proper documentation of field condition

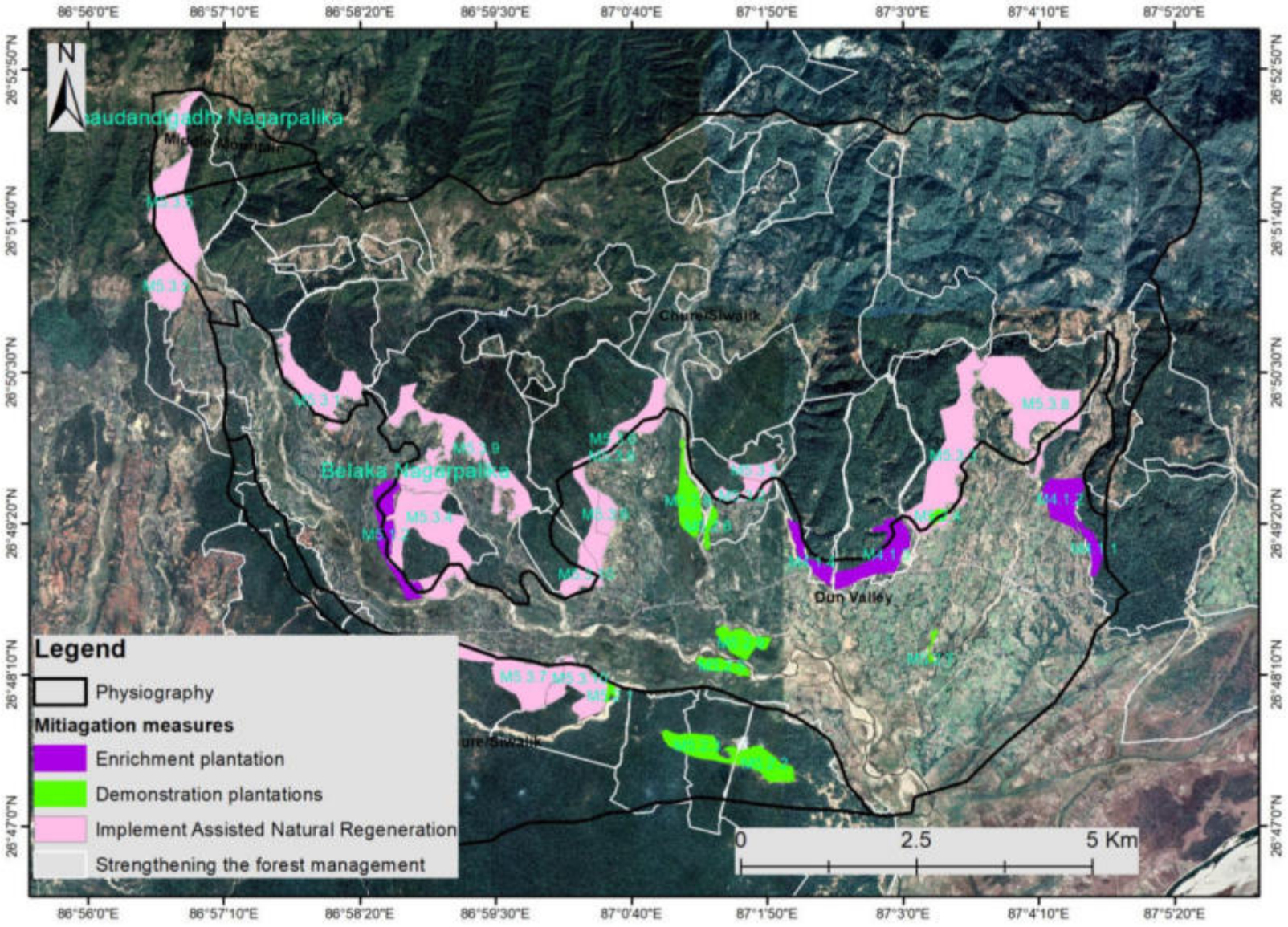
Annex-5: Maps

Hotspots for Forest Loss (D&FD)

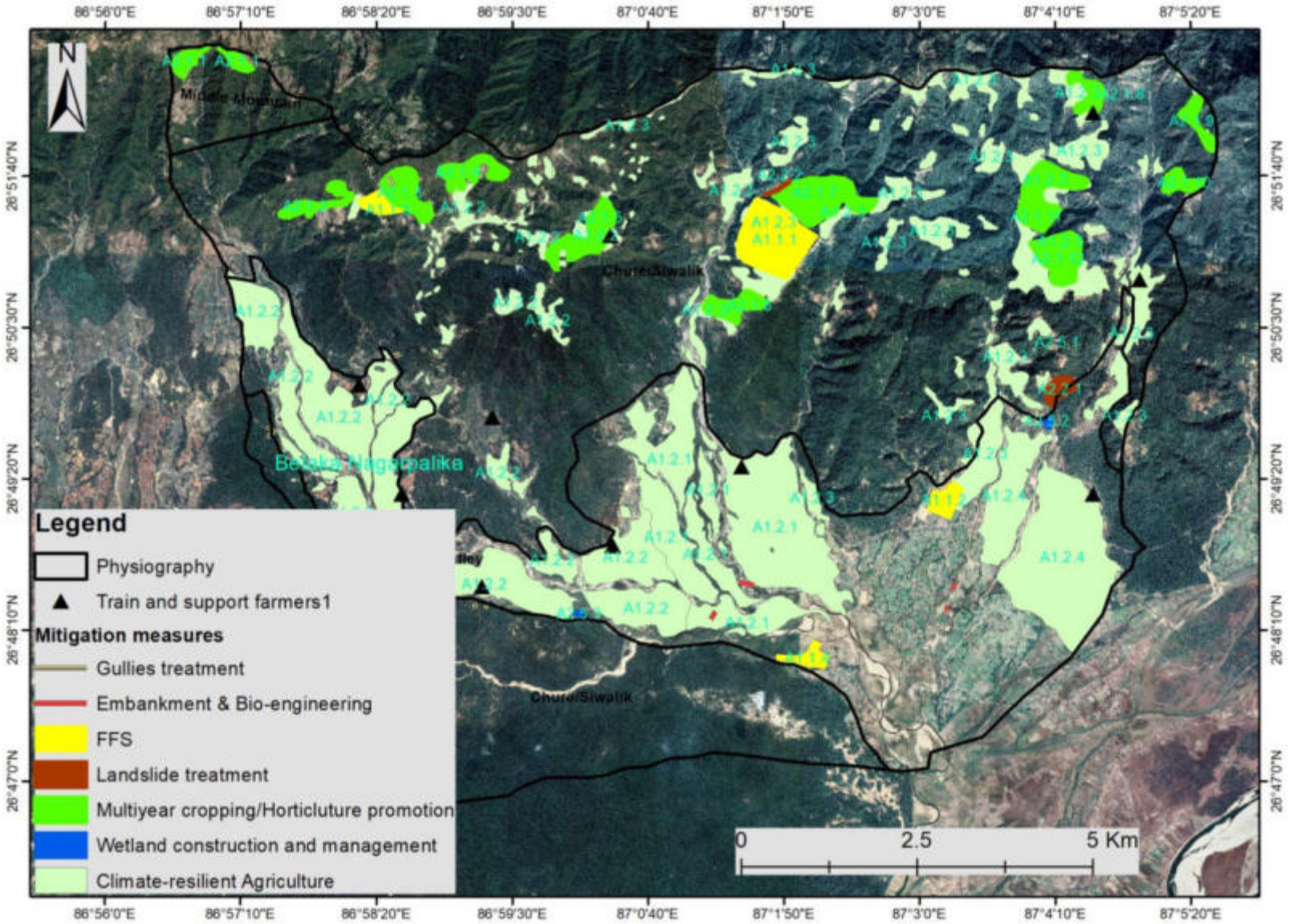



N
Middle Mountain
Ramite (Batase cf)
Chure/Siwalik
Dakham
Kharbari (Shikhar Pakha cf)
Maini
Dandabari
Jahada
Ghumaune
Khorsanijhora (Sikhar cf)
Dun Valley
Chure/Siwalik
Legend
Physiography
Climate stress on Agriculture
Flood susceptibility
Moderate
High
Landslide susceptibility
Low
Moderate
High
Very high
0
2.5
5 Km
86°56'0"E
86°57'10"E
86°58'20"E
86°59'30"E
87°0'40"E
87°1'50"E
87°3'0"E
87°4'10"E
87°5'20"E
26°52'50"N
26°51'40"N
26°50'30"N
26°49'20"N
26°48'10"N
26°47'0"N

Final Activity Map for Mitigation


86°56'0"E
86°57'10"E
86°58'20"E
86°59'30"E
87°0'40"E
87°1'50"E
87°3'0"E
87°4'10"E
87°5'20"E
26°52'50"N
26°51'40"N
26°50'30"N
26°49'20"N
26°48'10"N
26°47'0"N
N
Belaka Nagarpalika
Churia/Siwalik
Dun Valley
Legend
Physiography
Mitiagation measures
Enrichment plantation
Demonstration plantations
Implement Assisted Natural Regeneration
Strengthening the forest management
0
2.5
5 Km

Final Activity Map for Adaptation


86°56'0"E
86°57'10"E
86°58'20"E
86°59'30"E
87°0'40"E
87°1'50"E
87°3'0"E
87°4'10"E
87°5'20"E
26°51'40"N
26°50'30"N
26°49'20"N
26°48'10"N
26°47'0"N
N
Middle Mountain
Churia/Siwalik
Bela Nagarpalika
Legend
Physiography
Train and support farmers1
Mitigation measures
Gullies treatment
Embankment & Bio-engineering
FFS
Landslide treatment
Multiyear cropping/Horticluture promotion
Wetland construction and management
Climate-resilient Agriculture
0
2.5
5 Km

Annex-6: Photographs

A. Problem and Solution Analysis Workshop

B. Expert Planning Workshop

C. Hotspot Verification