



Shan State REDD+ Action Plan 2018, Myanmar



Prepared by

Forest Research Institute (FRI)
Myanmar

Report preparation team

FRI

Thaung Naing Oo, Director
Inkyin Khaine, Assistant Director
Nay Aung, Range Officer

ICIMOD

Nabin Bhattarai, Forest Land Restoration and REDD+ Research Associate
Bhaskar Singh Karky, Programme Coordinator, REDD+ Initiative

GIZ

Kai Windhorst, CTA

Copyright © 2019

Forest Department, Ministry of Natural Resources and Environmental Conservation, Myanmar
This work is licensed under a Creative Commons Attribution Non-Commercial,
No Derivatives 4.0 International License
(<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

Published by

Forest Research Institute (FRI), Forest Department, Ministry of Natural Resources and
Environmental Conservation, Myanmar

Production team

Shanuj VC (Consultant editor)
Samuel Thomas (Senior editor)
Rachana Chettri (Editor)
Dharma Ratna Maharjan (Graphic designer)

Photos:

Deependra Tandukar, Bandana Shakya, Yi Shaoliang

Printed and bound in Nepal by

Quality Printers Pvt. Ltd., Kathmandu, Nepal

Citation: FRI (2019). *Shan State REDD+ Action Plan, Myanmar*. FRI: Myanmar.



Shan State REDD+ Action Plan, Myanmar 2019

Prepared by
Forest Research Institute (FRI), Myanmar

Contents

Message	iv
Acknowledgments	v
Acronyms and abbreviations	vi
Introduction	1
Myanmar's national REDD+ strategy	1
Evolution of SRAP in Myanmar	2
Linking Myanmar's NDCs and SRAP	2
Shan State	3
Contextual background	3
Geography	3
Administrative divisions	3
Land cover change assessment	4
Methodology and process	6
Workshop to develop SRAP for Shan State	6
Diagnostic analysis	7
Development of problem and solution trees	9
Reduced agricultural expansion – to address deforestation	10
Reduced exploitation of forest products from natural forests – to address forest degradation	10
Improved forest quality – to address barriers to forest carbon enhancement	10
Intervention packages and their outputs	10
Strategies and activities	14
Feasibility analysis	14
Safeguard analysis	16
Gap analysis	18
Budget and operational plan	19
References	20
Annexes	21
Annex 1: Core team of SRAP	21
Annex 2: List of multi-stakeholder consultation participants for developing Shan State REDD+ action plan	22
Annex 3: Relevant state-level stakeholders of Shan State	23
Annex 4: Ranking of D&D drivers and enhancement activities	24
Annex 5: Problem trees	25
Annex 6: Detailed IPs with monitoring plan and budget	28
Intervention package 1: Alternative livelihood options	29
Intervention package 2: Promotion of CMRS and law enforcement	31
Intervention package 3: Alternative energy sources and efficient utilization of fuelwood	33
Intervention package 4: Human resources and capacity development in plantation management	35
Intervention package 5: Afforestation/reforestation in degraded forest areas	37

List of figures

Figure 1: Land cover conversion from 2007–2017	4
Figure 2: Identified Sites of deforestation, forest degradation, and enhancement activities in Shan State	8
Figure 3: Map of hotspots	9
Figure 4: Solution tree on reduced agricultural expansion to minimize deforestation	11
Figure 5: Solution tree on reduced exploitation of forest products to minimize forest degradation	12
Figure 6: Solution tree on carbon enhancement through plantation management against barriers to forest carbon enhancement	13
Figure 7: Intervention packages and implementation sites	22

List of table

Table 1: Change in area and percentage of land cover classes from 2007–2017	4
Table 2: The main steps and activities in the SRAP process	6
Table 3: Priority D&FD drivers and barriers to enhancement in Shan State – as identified in the consultation workshop	7
Table 4: Intervention packages, strategies, and outputs	14
Table 5: Strategies and activities	14
Table 6: Overall feasibility analysis of IPs	16
Table 7: Implementation risks and obstacles analysis of IPs	16
Table 8: Social risk analysis	17
Table 9: Social benefit analysis	17
Table 10: Environmental risk analysis	18
Table 11: Environmental benefit analysis	18
Table 12: Gap analysis in Myanmar	19
Table 13: Estimated budget for five-year operational plan	20

Message

The earth's climate has changed throughout history, but today's changing climate is linked to anthropogenic activities. Reducing climate-related vulnerability is a challenge that needs to be addressed globally. Scientific studies have shown that the impacts of climate change could have serious implications in the near future if appropriate mitigation measures and adaptive management are not implemented, and that developing countries are more vulnerable to climate change.

REDD+ is a global climate change mitigation mechanism under the United Nations Framework Convention on Climate Change that works to reduce carbon dioxide emissions from deforestation and forest degradation, while fostering sustainable management and conservation of forests and enhancement of forest carbon stocks. In compliance with global agreements, Myanmar developed the National Road Map of REDD+ in 2013, and is currently revising the draft National REDD+ strategy. The regional-scale assessment has come at the right time, as Myanmar is working to develop and refine its national strategy.

The Shan State REDD+ Action Plan has been developed through multi-stakeholder consultation processes and expert meetings under the REDD+ Himalayas project jointly organized by the Forest Department's Forest Research Institute and ICIMOD. This action plan has identified major drivers of deforestation and forest degradation as well as barriers to forest carbon stock enhancement activities, and developed targeted intervention packages to address them. This sub-national and regional-scale information will be helpful in finalizing the national REDD+ strategy, and local people will benefit from the implementation of the SRAP.

I believe that the Shan State REDD+ Action Plan will be a guiding document for the implementation of REDD+ activities in Shan State, including capacity development of local people and mobilizing financial incentives. I am hopeful that it will encourage other states and regions to develop such action plans.

I would like to commend the efforts of the REDD+ Core Unit of the Forest Department, supporting organizations ICIMOD and GIZ, and all associated expert teams for developing the Shan State REDD+ Action Plan.



Nyi Nyi Kyaw, Ph.D
Director General,
Forest Department Ministry of Natural
Resources and Environmental
Conservation Myanmar

Acknowledgements

Tremendous attention is given to forest conservation and restoration because climate change has become a global threat. Forests play an important role in climate change regulation and the ecosystem services they provide support the livelihoods of local communities. REDD+ is a climate change mitigation programme that reduces carbon dioxide emissions from deforestation and forest degradation, promotes sustainable management and conservation of forests, and enhances forest carbon stocks. Myanmar, a developing country, still possesses a huge forest area, but is facing the threat of deforestation and forest degradation. To address these, Myanmar is undertaking a REDD+ programme under UNFCCC.

The Shan State REDD+ Action Plan is the technical output of a REDD+ project supported by ICIMOD and GIZ, which explored the major drivers of deforestation and forest degradation, conducted feasibility studies, and devised intervention packages in implementing REDD+ activities in Shan State through a participatory approach. It will be very useful and provide support to national REDD+ mechanisms.

I would like to take this opportunity to express my heartfelt thanks to the Director General of the Forest Department, Ministry of Natural Resources and Environmental Conservation. The project would not have been impossible without his kind support and guidance. I would like to commend staff from the Forest Department, the Forest Research Institute, ICIMOD, GIZ, the REDD+ core unit team, regional organizations, and NGOs for their efforts in assisting and developing this action plan.

I would also like to express our sincere appreciation to various individuals and organizations for their contributions to the Shan State REDD+ Action Plan. I would like to place on record my deep gratitude to our partner organizations ICIMOD and GIZ for their financial and technical support during the project “REDD+ Himalayas: Developing and using experience in implementing REDD+ in the Himalayas”.



Thaug Naing Oo, PhD
Project Manager
Director, Forest Research Institute
Ministry of Natural Resources and
Environmental Conservation
Myanmar

Acronyms and abbreviations

BMU	German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety
CF	Community Forest
CFE	Community Forestry Enterprise
CFUGs	Community Forest User Groups
CMRS	Community Monitoring and Reporting System
D&D	Deforestation and Forest Degradation
DAR	Department of Agricultural Research
ECCDI	Ecosystem Conservation and Community Development Initiative
FAO	Food and Agriculture Organization
FRI	Forest Research Institute
GAD	General Administration Department
GAP	Good Agricultural Practice
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
Ha	Hector
ICIMOD	International Centre for Integrated Mountain Development
ICS	Improved Cook Stove
INGO	International Non-Governmental Organization
IPs	Intervention Packages
JICA	Japan International Cooperation Agency
MMK	Myanmar Kyats
MONREC	Ministry of Natural Resources and Environmental Conservation
NBSAP	National Biodiversity Strategy and Action Plan
NDCs	Nationally determined contributions
NECCCC	National Environmental Conservation and Climate Change Central
NGO	Non-Governmental Organization
PAMs	Policies and measures
PAs	Protected Areas
PFE	Private Forest Enterprise
RECOFTC	Center for People and Forests
REDD+	Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
SH	Stakeholder
SLRD	Settlements and Land Records Department
SRAP	Sub-national REDD+ Action Plans
TPA	Tarro People Association
TWG	Technical Working Group
UFES	University of Forestry and Environmental Sciences
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNODC	United Nations Office on Drugs and Crime
UN-REDD	United Nations Programme on Reducing Emissions from
USD	United State Dollar
WG	Working Group
WWF	World Wide Fund for Nature
YAU	Yezin Agricultural University

Introduction

Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (REDD+) is a mechanism proposed under the United Nations Framework Convention on Climate Change (UNFCCC) to achieve significant reductions in anthropogenic emissions of greenhouse gases, basically by avoiding deforestation and forest degradation; thereby contributing to international efforts to mitigate the negative effects of climate change. The developing countries that voluntarily aim to reduce their greenhouse emissions are eligible to receive payments from international sources. Amongst the developing countries, Myanmar signed the UNFCCC on 11 June 1992 and ratified it on 25 November 1994, while it became a non-Annex 1 party to the Kyoto Protocol in 2003. Myanmar joined the mission to reduce greenhouse gas emissions after it became aware of the causes and adverse impacts of climate change while undertaking political reform and aiming at rapid economic development. It signed the Paris Climate Change Agreement in April 2016.

Myanmar has the largest remaining forest area in Southeast Asia, with 44% of its land classified as forest, but it also has the world's third highest deforestation rate. Large-scale deforestation is a major source of greenhouse gas emissions. REDD is a mechanism that gives financial incentives to developing countries to reduce deforestation and forest degradation and promote forest conservation and sustainable management.

The Government of Myanmar has recognized the potential of the REDD+ initiative to contribute to green development by protecting global environmental resources (forest carbon stocks and biodiversity), helping to reverse land degradation, helping to improve the livelihoods of the rural poor, and aiding adaptation to climate change. Thus, Myanmar has taken rapid steps to implement REDD+ readiness activities. The United Nations Programme on Reducing Emissions (UN-REDD) supports REDD+ readiness activities by working with the Government of Myanmar, specifically with the Myanmar REDD+ Taskforce, the Technical Working Groups (TWGs), and the REDD+ Office. A Readiness Road Map has been prepared by the country and it has six major components for REDD+ implementation. For example, the fourth component of this road map emphasizes assessment, selection and piloting of REDD+ strategies both inside as well as outside the sphere of forestry.

Myanmar's National REDD+ Strategy

The process of development of Myanmar's National REDD+ Strategy began in 2016. With support from the UN-REDD Programme, an analysis of the drivers of deforestation and forest degradation, and barriers to the "+" activities, was initiated in 2016 and completed in 2017. An analysis of the drivers allowed the construction of problem-solution trees that indicated possible policies and measures for inclusion in the strategy. The identification of these policies and measures in the National REDD+ Strategy was based on this analysis of the drivers. The REDD+ TWG later adopted this process.

The initial ideas on policies and measures were discussed with the relevant ministries in mid-2017, and following this, an initial draft of the strategy was prepared. A series of subnational consultations in each state/region was also organized in late 2017 and early 2018 to receive stakeholder feedback on the proposed policies and measures. The views of teams of experts on each driver were also sought. This draft of the strategy was then made available for public comment through the REDD+ Myanmar website in March and April 2017.

All the feedback from these consultation processes were used to prepare a second draft of the strategy, after which the views of the TWGs, the Taskforce and the National Environmental Conservation and Climate Change Central Committee (NECCCCC) will be sought before a final draft is

prepared for submission to the Myanmar Cabinet. It was expected that this process would be completed by the end of 2018.

Evolution of SRAP in Myanmar

In December 2013, the International Centre for Integrated Mountain Development (ICIMOD), with financial support from the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), started a regional programme on REDD+. This programme was named “REDD+ Himalayas: Developing and Using Experiences in Implementing REDD+ in the Himalayas”. It is jointly executed by ICIMOD and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in partnership with four eastern Himalayan countries – Bhutan, India, Myanmar, and Nepal – with the basic aim to improve the framework conditions for socially and ecologically appropriate REDD+ measures to mitigate climate change. In this context, the actions primarily focus on capacity building and providing technical assistance to partners and stakeholders, as well as setting up a regional learning platform to enhance South-South cooperation in the implementation of REDD+. The Ministry of Natural Resources and Environmental Conservation (MONREC) is the partner institution for this programme in Myanmar.

In 2014/15, under the UN-REDD technical assistance programme, ICIMOD developed its first subnational REDD+ Action Plan (termed as “District REDD+ Action Plan”) for Chitwan district in Nepal. The methodology used for the preparation of this plan was adapted from Vietnam’s experience in developing five subnational REDD+ action plans, again supported by the UN-REDD. Under the REDD+ Himalaya project for Myanmar, one of the activities for 2018 was to develop a subnational REDD+ Action Plan for Shan State. Thus, the Forest Research Institute (FRI), under the MONREC of Myanmar, took the initiative to develop a State Red+ Action Plan (SRAP) with technical assistance from ICIMOD.

The SRAP drafting process adopted a multi-stakeholder approach and followed the theory of the change paradigm governed by a systematic impact pathway logic. This process, involving a series of workshops, was jointly organized by FRI and ICIMOD, and resulted in a set of intervention packages (IPs), including state-level policies and measures (PAMs), risk mitigation measures, monitoring plans, and a budget for the implementation of REDD+ in Shan State.

Linking Myanmar’s NDCs and SRAP

The Paris Agreement’s Article 4, paragraph 2, states that countries should prepare, communicate and maintain successive nationally determined contributions (NDCs) that it intends to achieve. And that the parties shall follow domestic mitigation measures with the aim of achieving the objectives of such contributions.

With the largest standing forests on mainland Southeast Asia, Myanmar currently absorbs more greenhouse gases than it emits, thereby already making a significant contribution to global efforts to tackle climate change. In NDCs, Myanmar has identified mitigation actions and policies in the primary areas of forestry and energy, complemented by supporting policies in other sectors. Myanmar is actively engaged in designing and implementing the required policies, as well as the governance, financial and programming instruments that are needed to address climate change. In terms of policy development, the government, for example, has made environment one of the seven strategic pillars of its National Comprehensive Development Plan (for the period 2011–30); it has promulgated the Environmental Conservation Law (2012); and it is resolute in mainstreaming environment into the national policy and development agenda. This is taking place under the guidance of the National Environmental Conservation Committee and the Myanmar Climate Change Alliance established by the Union government’s Cabinet in 2013. In addition to fulfilling its reporting responsibility to the UNFCCC, wherein both the Initial National Communication and the National Adaptation Programme of Action

were submitted in 2012, Myanmar is now developing its National Climate Change Strategy and associated action plans. Operationalizing the national policy and plans in the climate change sector might be challenging for the country due to its large area, varying landscapes, different types of forest ecosystems, multiple local-level drivers, and others. In this regard, SRAP, formulated in consultation with local stakeholders, will play a bridging role for the implementation of national climate change policies and action plans. Moreover, SRAP's focus is not only on the forestry sector, it also offers IPs in sectors like energy, agriculture, biodiversity conservation, livelihood, tree outside forest (ToF), and agroforestry. All these IPs are site-specific and supported by an operational plan with a detailed budget that can assist the NDC directly or indirectly. Additionally, such activities are concentrated at the local level, which ensures feasibility and effective implementation.

Shan State

Contextual background

Shan State borders China to the north, Laos to the east, Thailand to the south, and five Burmese administrative divisions to the west. It is the largest of the fourteen administrative divisions by land area, covering 155,800 km², almost a quarter of the total area of Myanmar. The state gets its name from the Shan people, one of the several ethnic groups that inhabit the area. Shan State is largely rural, with only three cities of significant size: Lashio, Kengtung, and the capital, Taunggyi. Taunggyi is 150.7 km north-east of the national capital, Naypyitaw.

Shan State, with its many ethnic groups, is home to several armed ethnic groups. While the military government has signed ceasefire agreements with most of these groups, vast areas of the state, especially those east of the Salween River, remain outside the central government's control, and in recent years, they have come under heavy Han Chinese economic and political influence. The other areas are under the control of insurgent groups such as the Shan State Army.

Geography

Most of Shan State is a hilly plateau, the Shan Plateau, which together with the high mountains in the north and south, forms the Shan Hills system. The gorge of the Salween (Thanlwin/Nam Khong) River cuts across the state. The famous Inle Lake where the Intha people – known for their unique style of rowing boats with their legs – live in floating villages in the great Nyaung Shwe plains, is the second largest natural expanse of water in Myanmar; it is shallow, but 14 miles (23 km) long and 7 miles (11 km) wide. Shan State also houses the Pindaya Caves, which are vast limestone caves that contain 6,226 images of the Buddha .

The road to Taunggyi via Kalaw and Aungban branches off at Thazi from the main Yangon–Mandalay road; another road via Ywangan and Pindaya branches off at Kyaukse, south of Mandalay. The railhead stops short of Taunggyi at Shwe Nyaung, while the nearby Heho has an airport.

Administrative divisions

Traditionally, Shan State stands divided into three substates: North Shan State, East Shan State, and South Shan State. It also comprises 11 districts: Taunggyi, Loilen (Loilem), Kyaukme, Muse, Laukkaing (Laogai), Kunlong, Lashio, Keng Tung, Mong Hsat, Mong Hpayak, and Tachileik.

However, in September 2011, the district of Hopang was added to this list by combining Mongmao, Pangwaun (Panwai), Namphan (Ngaphan) and Pangsang (Pangkham) townships of Lashio district,

Matman township of Kengtung district, Hopang township, and Panlong and Namtit sub-townships of Kunlong district.

Land cover change assessment

The land cover map for the period 2007–17 shows a declining trend in the forest cover in Shan State. In 2007, the forest cover was 132,640 km², whereas in 2017, the cover decreased to 102,425.6 km². Thus, the annual rate of change in the forest cover of the region was 1.9% from 2007 to 2017, while it was 0.93% from 2001 to 2010 (Wang and Myint 2016).

The changes in the area and percentage of land cover are represented in Table 1 and Figure 1. The highest change occurred in the period 2007–17, wherein 261,52.48 km² of forest was lost, thereby accounting for 50% of the overall change in land cover. Meanwhile, during the same period, there was an increase in the area covered by cropland (by 26%) and “other Wooded land” (by 22%). As for waterbodies, they showed a slight increase in area (by 0.44%), whereas floating vegetation accounted for a marginal loss (by 0.16%) in the state.

Table 1: Change in area and percentage of land cover classes from 2007–2017

Land cover class	Loss/Gain	Change in area (km ²)	Percentage of change
Forest	Loss	261,52.48	50
Cropland	Gain	140,96.5	26
Other wooded land	Gain	119,09.3	22
Waterbody	Gain	234.4	0.44
Floating vegetation	Loss	88.7	0.16

Figure 1: Land cover conversion from 2007–2017

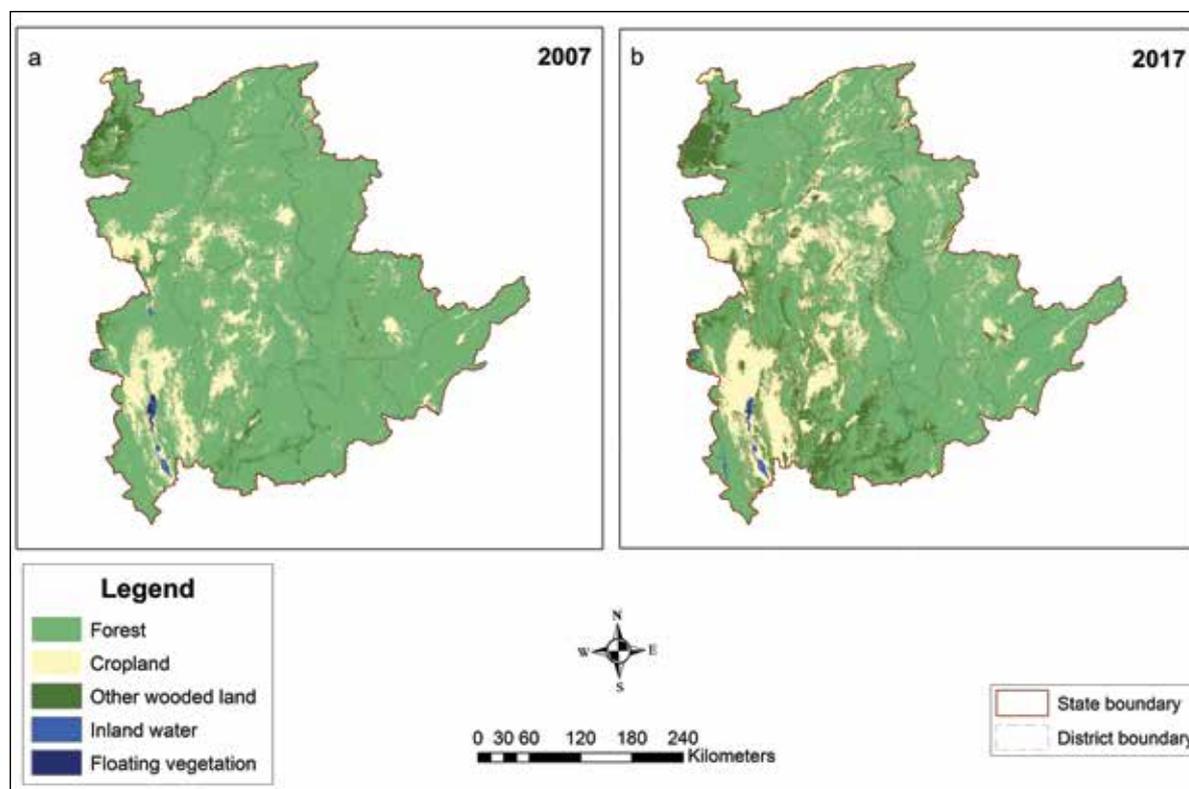
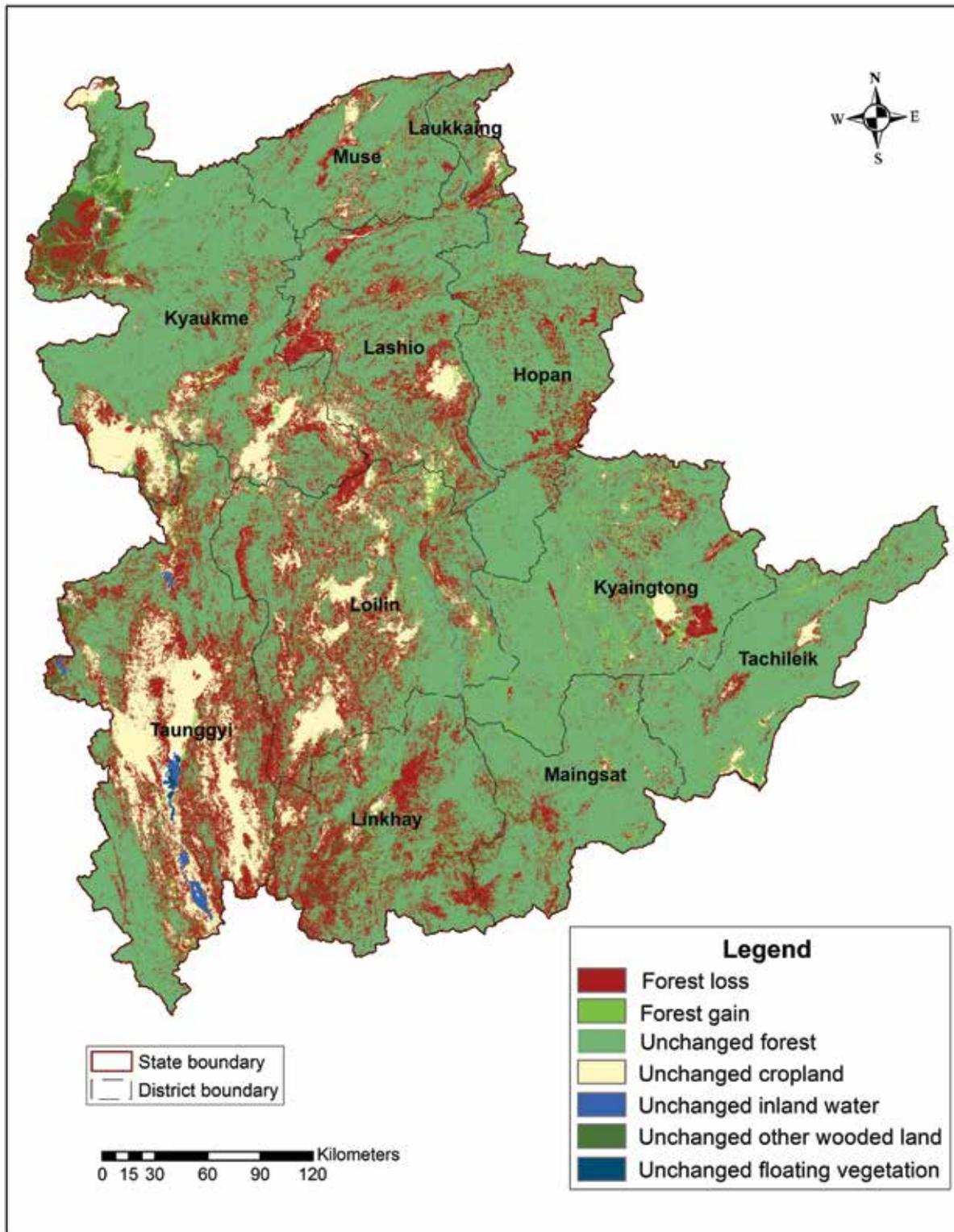


Fig. 1 cont....



Methodology and process

The first manual on SRAP was based on the experiences of developing five SRAPs in Vietnam and, subsequently, two SRAPs in Nepal under the umbrella of the UN-REDD Programme of these countries, and with full participation of the national REDD+ planning authorities. This manual is called “Developing Subnational REDD+ Action Plans: A Manual for Facilitators” (Richards et al. 2017a). The methodology and process for preparing the SRAPs of Mizoram and Uttarakhand of India were based on this manual. A summary of the SRAP approach is also available in an ICIMOD briefing paper (Richards et al. 2017b). As indicated in Table 2, there are five main steps in the development of SRAPs.

Table 2: The main steps and activities in the SRAP process

Main steps	Process/Activities
Step A: Prepare <i>initial consultation and inception workshop</i>	Train facilitators, select workshop participants, and commission preparatory studies
Step B: Analyse <i>Expert analysis reviewed and endorsed by stakeholders (SHs)</i>	Analyse satellite imagery maps, discuss and prioritize drivers of deforestation and forest degradation (D&FD) and constraints to forest (biomass) enhancement; carry out stakeholder and institutional analysis; identify and prioritize D&FD hotspots
Step C: Plan <i>Develop REDD+ activity package; identify risk and mitigation measures</i>	Identify SRAP IPs, analyse implementation, social and environmental risks (complying with REDD+ safeguards), as well as risk mitigation measures
Step D: Monitor <i>Develop monitoring protocol and indicators</i>	Develop monitoring plans for SRAP activities and IPs for risk reduction and enhancement measures
Step E: Budget and approval <i>SRAP approval from district REDD working groups (WGs)</i>	Prepare a detailed activity plan and budget for each IPs for a five-year operational plan; formulate a document for approval and endorsement of SRAP

Workshop to develop SRAP for Shan State

From 4–8 June 2018, Myanmar FRI, in collaboration with ICIMOD, organized a five-day workshop for the formulation of Shan State’s REDD+ Action Plan. This workshop, held at the premises of ICIMOD, was attended by 10 participants from FRI, ICIMOD, and GIZ (Annex 1). In these five days, all the participants worked together to identify the drivers of D&D and the barriers to enhancement activities; they developed problem and solution trees, and finally came up with the IPs. Subsequently, review and revision meetings were conducted in the presence of experts and multiple stakeholders (see Annex 2). In addition, another consultation workshop was organized in Shan State to validate the identified drivers and IPs (see Annex 2); this was attended by 30 participants who provided their inputs in order to modify the identification process of the D&D drivers, improve upon the problem and solution trees, and also to develop the IPs.

Diagnostic analysis

At the introductory session of the June 2018 workshop, a contextual presentation was made, followed by the identification of the D&D drivers and an outlining of the enhancement activities.

Following the introductory session, the participants were divided into three WGs in order to analyse and prioritize the most important D&D drivers as well as the main barriers to the scaling up of forest carbon enhancement activities (reforestation, afforestation, landscape restoration, agroforestry, etc.) in the state. This prioritization of the drivers and barriers provides the basis for SRAP in the sense that it defines the “key challenges” that the REDD+ programme needs to overcome in order to generate positive carbon, social and biodiversity outcomes. It should be noted that the validity of this identification and prioritization process depended partly on how well the participants were informed through the spatial study undertaken in preparation for the diagnostic analysis workshop.

The participants were divided into the three WGs based on their expertise and interest, and also to maintain a reasonable balance in institutional distribution among the three groups:

- WG A: Deforestation drivers and underlying causes
- WG B: Forest degradation drivers and underlying causes
- WG C: Barriers to forest carbon enhancement

The entire WG process involved three steps: firstly, prioritization (e.g., of deforestation drivers) within each WG; secondly, a plenary presentation of the topmost priorities by each WG; and thirdly, an overall scoring by the participants of all the prioritized D&D drivers and barriers to enhancement (see Table 3) for Shan State.

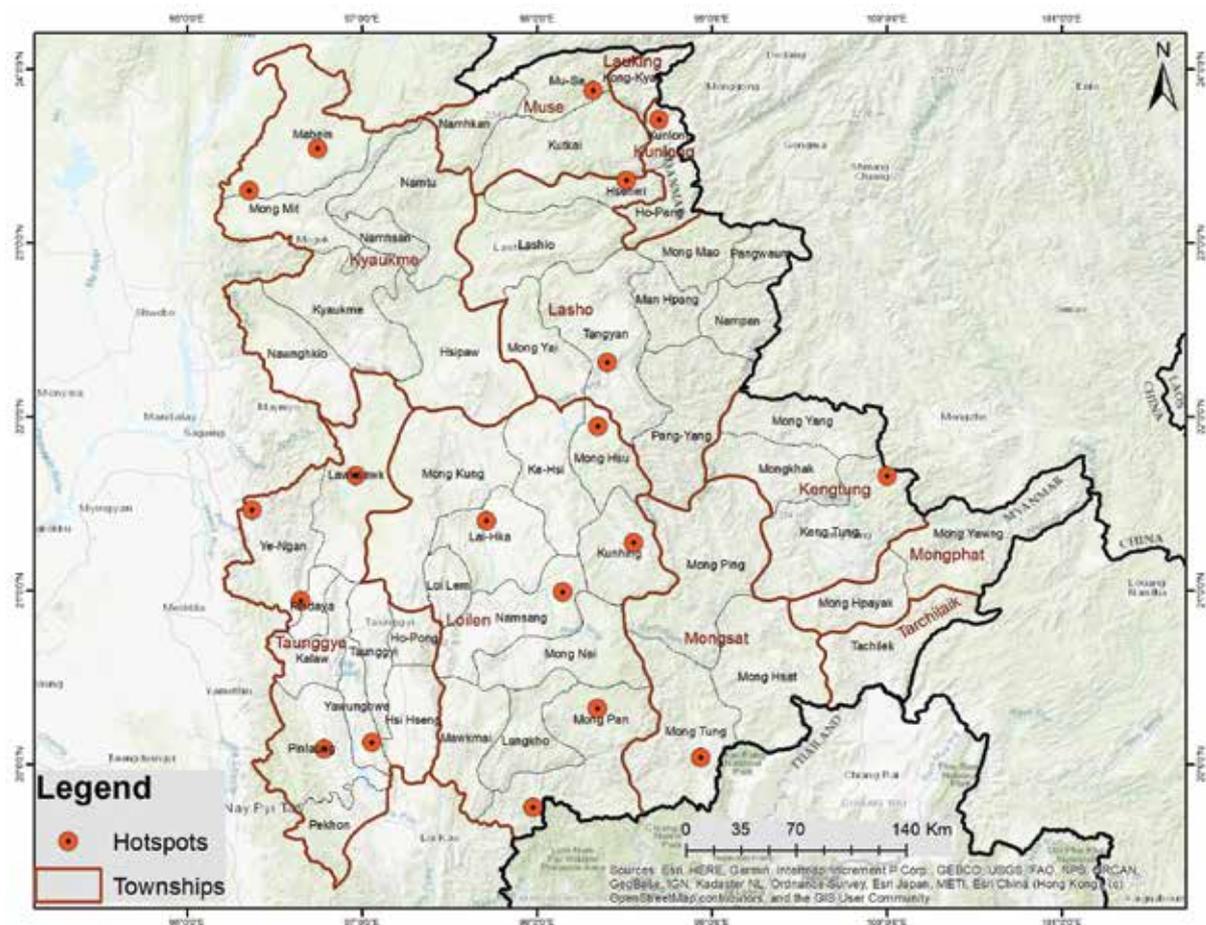
Table 3: Priority D&D drivers and barriers to enhancement in Shan State – As identified during the consultation workshop

	Direct drivers	Indirect drivers
<i>Deforestation</i>	<ul style="list-style-type: none"> • Agricultural expansion • Shifting cultivation • Infrastructure development • Mining • Dam construction • Encroachment 	<ul style="list-style-type: none"> • Population growth • Poverty • Policy and land conflict • Weak law enforcement • Market demand (domestic/foreign)
<i>Forest degradation</i>	<ul style="list-style-type: none"> • Over-exploitation of forest products • Fuelwood collection • Forest fire • Grazing • Pests and diseases 	<ul style="list-style-type: none"> • Climate change • Illegal trade • Limited livelihood options • Population growth • Corruption
<i>Barriers to enhancement activities</i>	<ul style="list-style-type: none"> • Limited human resources and capacity • Weak sectoral cooperation • Traditional agricultural practices (shifting cultivation) • Weak law enforcement • Weak understanding & low interest and poor coordination of local communities • Weak understanding on plantation and its management • Limited knowledge about non-timber forest products 	<ul style="list-style-type: none"> • Limited job options • Lack of peace • Lack of awareness • Low income • Limited finance

The participants accorded priority to the following D&D drivers and barriers (to carbon enhancement):

These prioritized D&D drivers and barriers to enhancement constitute the “key challenges” that provide the basis for the rest of the analysis, which involves the development of a problem tree for each key challenge, and a solution tree from which the REDD+ IPs can be identified, and which will form the basis of the Shan State REDD+ Action Plan.

Figure 3: Map of hotspots



Development of problem and solution trees

The problem and solution tree analysis (also called “participatory theory of change” analysis) is a participatory tool for mapping out the main problems, along with their causes and effects, to come up with a set of clear and manageable goals and a strategy on how to achieve them (for a more detailed explanation, see Richards et al. 2017). There are two main stages to this process:

1. identification of both direct and underlying causes of each key challenge in the form of a problem tree; and
2. the inversion of the problems into objectives and solutions, leading to a solution tree, or “results chain”, showing potential solutions or strategies to respond to the drivers or barriers, and which can then lead to the identification of the IPs.

Using three sets of problem and solution trees, the following three desired outcomes were identified as needed to successfully address the main D&D drivers and barriers to forest carbon enhancement in Shan State:

Reduced agricultural expansion – to address deforestation

Reducing agricultural expansion is one way to address one of the important drivers of deforestation (Figure 4). Two key results were identified while formulating the solution tree for this driver: reducing encroachment of forest land; and converting forest lands into agricultural lands.

Reduced exploitation of forest products from natural forests – to address forest degradation

One of the vital drivers of forest degradation in Shan State is over-exploitation of forest products (illegal timber trade). The desired outcome for this problem is to reduce the exploitation of products from the natural forest. Three key results were identified for this driver (Figure 5): reducing illegal trade in forest products; decreasing dependency on forest products; and enhancing the utilization of energy.

Improved forest quality – to address barriers to forest carbon enhancement

In Shan State, the major barrier to forest enhancement is limited human resources and capacity in plantation management. To address this issue and to enhance the forest carbon stock, the capacity to manage plantations should be improved; simultaneously, there should be a revision of incentives for the staff and the local people (Figure 6).

Intervention packages and their outputs

The most important results in the solution trees were used as the basis for the strategies to be adopted in the intervention packages. Each IP requires a set of activities and a strategy, as shown in Table 4. It is important to note that each IP should be implemented and monitored independently, especially if different sources of funds are available from different ministries or agencies.

Table 4: Intervention packages, strategies, and outputs

Drivers or barriers addressed	Name of IP	Outputs from the IPs
Deforestation and forest degradation	1. Alternative livelihood options	<ul style="list-style-type: none"> • Forest encroachment reduced through ecotourism, value addition of forest products, and promotion of agroforestry • Reduced dependency on forest products (timber, bamboo, etc.)
Forest degradation	2. Promotion of CMRS (Community Monitoring and Reporting System) and law enforcement 3. Alternative energy sources and efficient utilization of fuelwood	<ul style="list-style-type: none"> • Illegal trade in forest products reduced • Reduced exploitation of fuelwood
Barriers to enhancement of activities	4. Human resource and capacity development in plantation management 5. Afforestation/ Reforestation in degraded forest areas	<ul style="list-style-type: none"> • Developed human resource and capacity • Revised the incentives for staff and local people • Established plantations in degraded areas (fuelwood plantation, watershed/soil conservation plantations, etc.); and assisted natural regeneration

Figure 4: Solution tree on reduced agricultural expansion to minimize deforestation

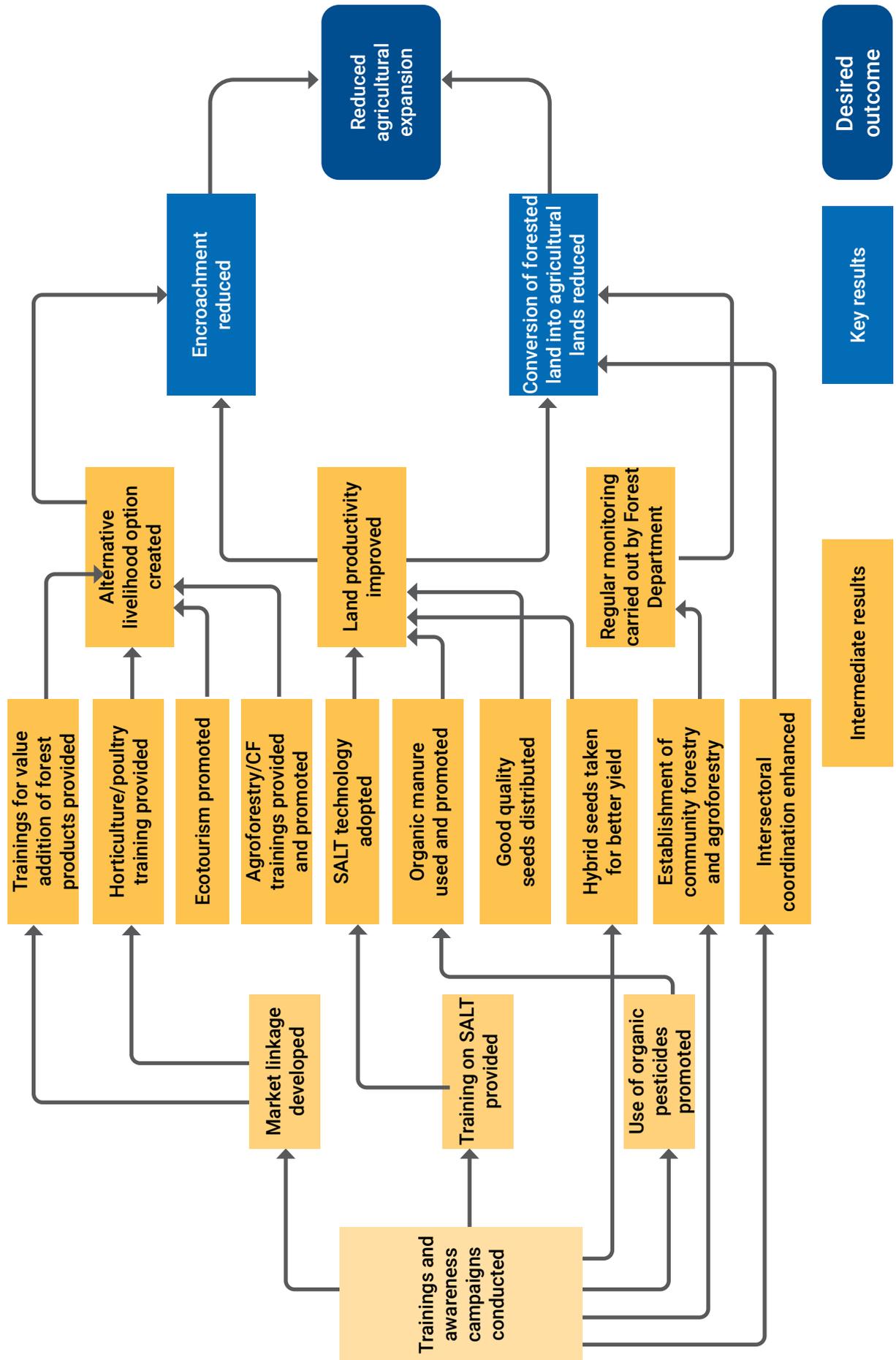


Figure 5: Solution tree on reduced exploitation of forest products to minimize forest degradation

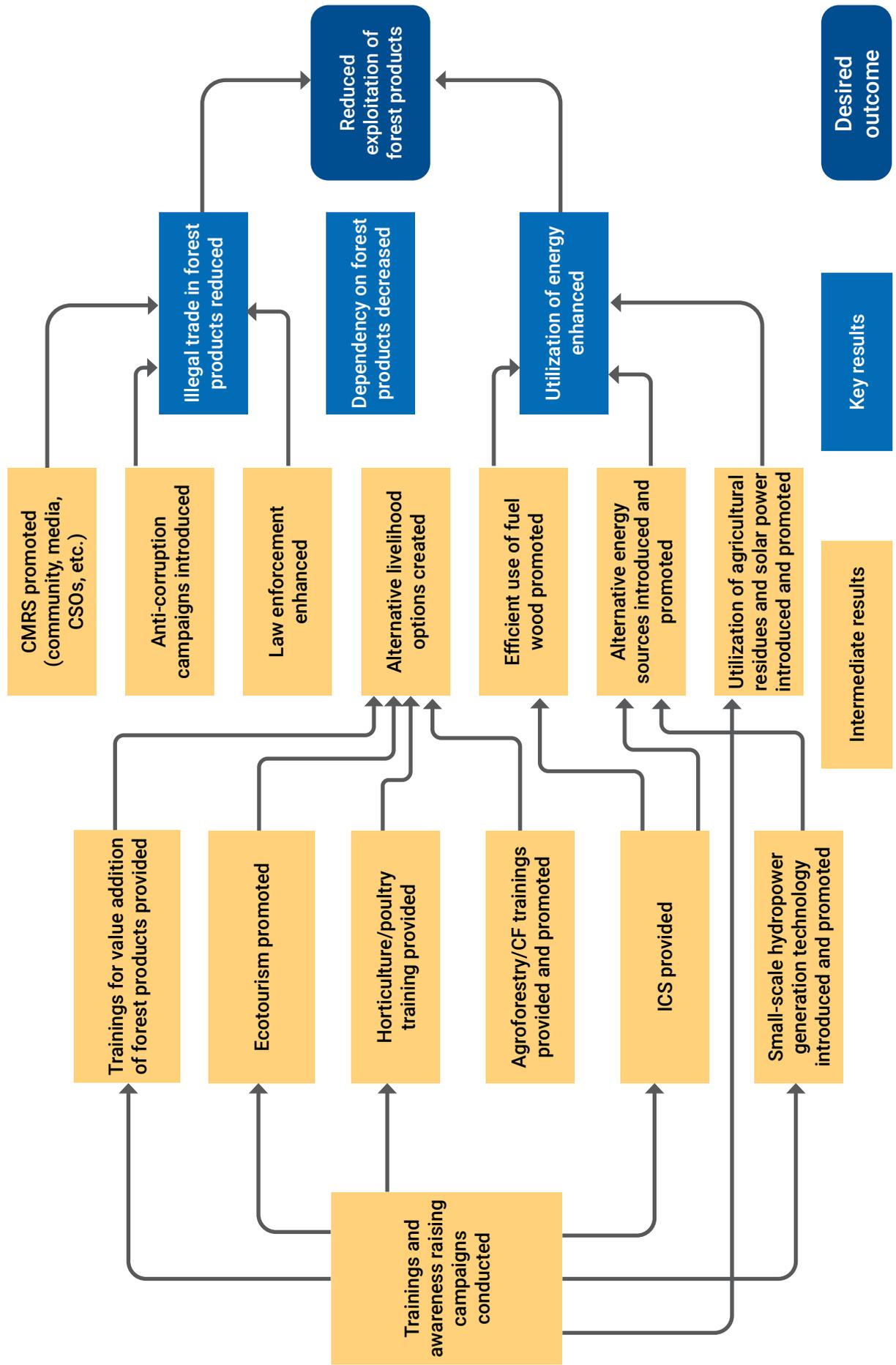
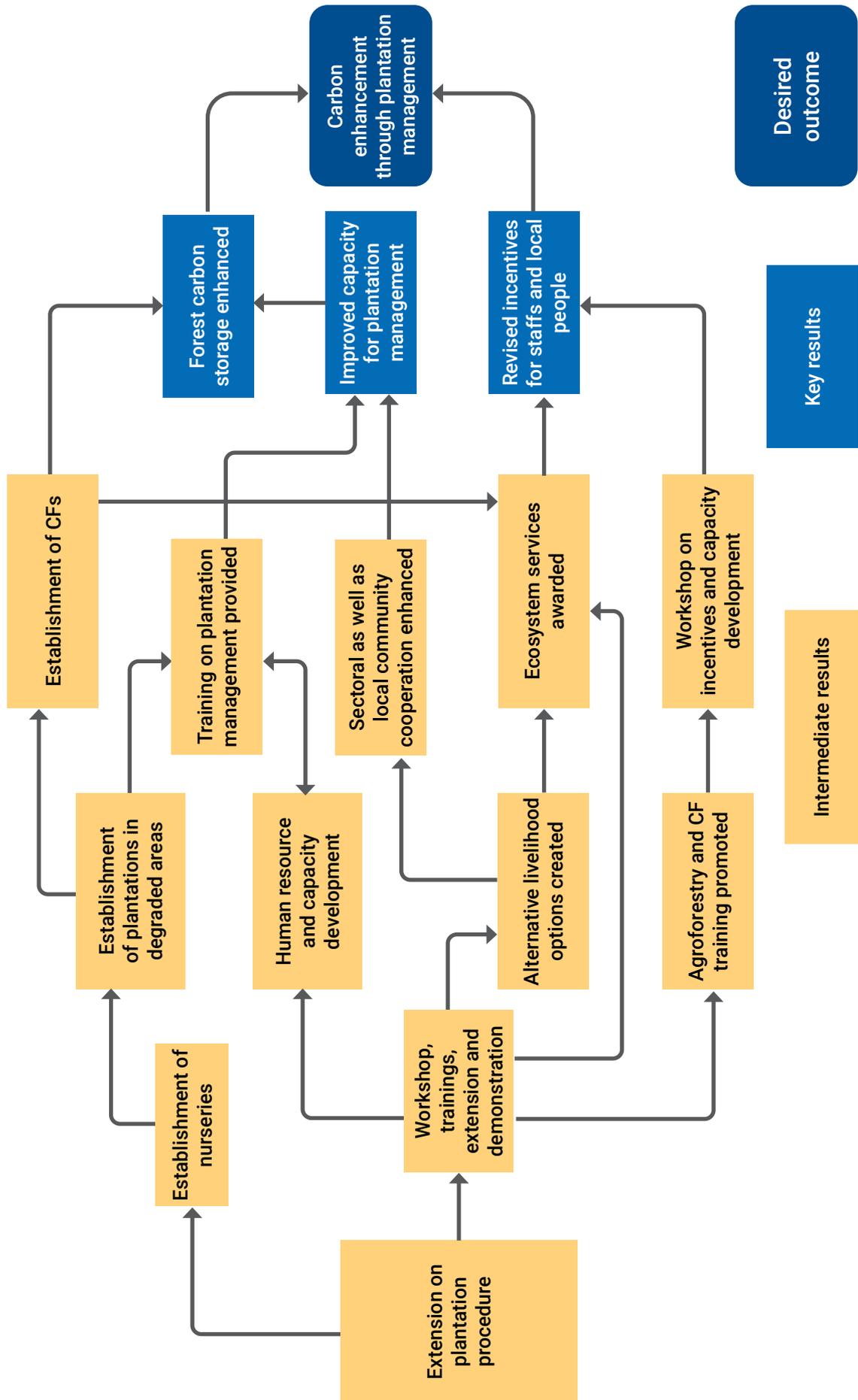


Figure 6: Solution tree on carbon enhancement through plantation management against barriers to forest carbon enhancement



Strategies and activities

Each IP requires a set of activities for chalking out the strategies and achieving the outputs. These are shown in Table 5.

Table 5: Strategies and activities		
Intervention package	Key results/strategies	Activities
1. Alternative livelihood options	<ul style="list-style-type: none"> • Forest encroachment reduced through ecotourism and value addition of forest products • Community forestry (CF) and agroforestry promoted • Controlled/Stabilized shifting cultivation • Reduced dependency on forest products (timber, bamboo, etc.) 	<ul style="list-style-type: none"> • Capacity building for value addition of forest products (production and marketing) • Trainings on community-based ecotourism practices • Giving incentives for horticulture, tree planting on farmland, and poultry • Extension of CF • Establishment of CF and agroforestry • Enhancement of Community Forestry Enterprise (CFE) • Linking with development aid organizations (INGOs, NGOs, development agencies, etc.) • Holding vocational income trainings for youth • Conducting study tours to production sites of value-added forest products • Applying good agricultural practice (GAP) • Carrying out climate-smart agriculture
2. Promotion of CMRS and law enforcement	<ul style="list-style-type: none"> • Illegal trade in forest products reduced 	<ul style="list-style-type: none"> • Conducting awareness campaigns for local community, media, CSOs, NGOs, etc. • Equipping and rewarding local community • Initiating a forest watch/ monitoring/protection network
3. Alternative energy sources and efficient utilization of fuelwood	<ul style="list-style-type: none"> • Reduced exploitation of fuelwood 	<ul style="list-style-type: none"> • Holding training/awareness activities on highly efficient cook stove production and utilization • Supporting the solar panel system • Providing small-scale hydropower generation technology • Encouraging utilization of agricultural residues
4. Human resource and capacity development in plantation management	<ul style="list-style-type: none"> • Human resource developed • Capacity developed • Incentives for staff and local people revised 	<ul style="list-style-type: none"> • Conducting workshops on plantation management at different levels, including line departments and local communities • Conducting trainings and workshops on procedure • Encouraging agroforestry, CF, intercropping practices, planting of N-fixing species, and good agriculture practices • Conducting workshops on incentives and capacity development • Demonstration plots and extension of plantations • Visiting successful plantation /CF areas (both domestic and abroad)
5. Afforestation/ Reforestation in degraded forest areas	<ul style="list-style-type: none"> • Forest coverage extended • Forest carbon storage enhanced 	<ul style="list-style-type: none"> • Establishment of plantations in degraded areas (fuelwood plantations, watershed/soil conservation plantations, etc.) • Establishment of CFs and agroforestry • Assisting natural regeneration, enrichment planting, and GAP

Feasibility analysis

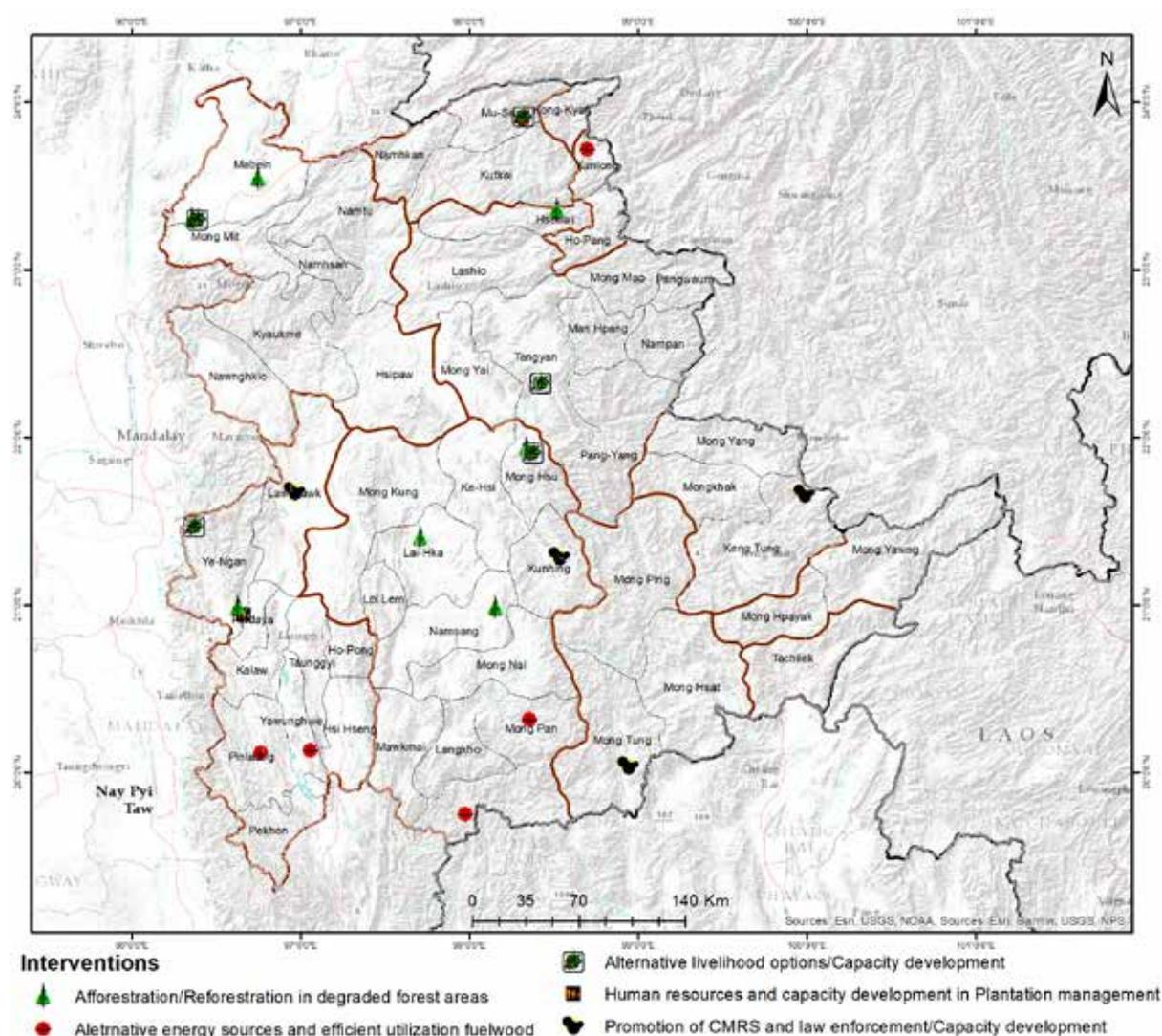
An analysis and evaluation of an IP was carried out to determine if it was technically feasible; was feasible within the estimated cost; and whether it would be profitable. Feasibility analysis provides a basis for deciding which IPs are more practical and cost-effective, and which ones may be better to leave out of SRAP since they are less feasible and cost-effective.

In the SRAP planning process, feasibility analysis can be conducted in small expert groups who assess the strengths and weaknesses of each IP. During such meetings, experts analyse the risks and obstacles of implementing the IP, which ultimately provides an overall feasibility picture of the IP. It has to be noted that the risks or obstacles should not include lack of finances or resources since it is assumed that the costs and resources required for implementation will be covered by REDD+ finance. At the same time, cost-effectiveness is a vital criterion in feasibility analysis.

Table 6 shows the overall feasibility scenario of the IPs. The scores indicate that all the IPs are reasonably feasible.

Overall feasibility analysis of IPs						
Intervention packages	Implementation risks/obstacles (Low=3, Medium=2, High=1)	Cost-effectiveness of risk reduction measures (Low=1, Medium=2, High=3)	Implementation cost (Low=3, Medium=2, High=1)	Opportunity cost (Low=3, Medium=2, High=1)	Incentive measures (Low=1, Medium=2, High=3)	Total score
Alternative livelihood options	3	3	2	3	3	14
Promotion of CMRS and law enforcement	1	2	2	2	2	9
Alternative energy sources and efficient utilization of fuelwood	2	2	2	2	3	11
Human resource and capacity development in plantation management	2	3	2	3	3	13
Afforestation/reforestation in degraded forest areas	3	3	2	3	3	14

Figure 7: Maps showing the implementing sites for all the intervention packages



Safeguard analysis

Safeguard analysis mainly refers to the identification of risks or threats along the lines of the “Cancun Safeguards” and other social and environmental or biodiversity-related risks. The analysis also refers to the contribution made by the IPs to the enhancement of social and environmental benefits. One of the crucial criteria for a social risk is whether the IPs negatively impact a targeted vulnerable group; and for an environmental risk, it is whether the IPs negatively impact biodiversity and ecosystem services.

For the Shan SRAP, the safeguard analysis was conducted through a workshop where the core team members were invited and consultation meetings were held with experts and local officials. This exercise was conducted in order to refine and improve the analysis made by the first working group.

Table 7 presents the implementation risks or threats identified for each IP; it also outlines the risk reduction measures. Similarly, tables 8 and 10 show the social and environmental risks of the individual IPs, while also listing out the risk reduction measures. Finally, tables 9 and 11 depict the social and environmental benefits of the IPs, as also the benefit enhancement measures. In this way, both the risks and benefits of the IPs were assessed and addressed.

Table 7: Implementation risks and obstacles analysis of IPs

Key results/IPs	Implementation risks or obstacles	Likelihood of risk (high/medium/low)	Impact of risk (high/medium/low)	Risk reduction measures
Alternative livelihood options	Availability of skilled personnel	Low	Low	Improved communication
	Limited information on value addition of forest products	Low	Low	Surveys
	Difficult to motivate staff and local community	Medium	Medium	Awareness campaigns, consultations, and study tours
	Conflict of interest between line departments and CSOs	Low	Low	Information sharing and consultation
Promotion of CMRS	Conflicts with powerful stakeholders could put individuals at risk	High	High	Legal protection
	Misuse of CMRS (wrong information and corruption)	Medium	Medium	Recording, assessment and evaluation of information Legal action against those who misuse CMRS
Law enforcement	Threats and danger to officers	Medium	Medium	Collaboration with community and army
Alternative energy sources and efficient utilization of fuelwood	Poor households (HHs) may be less able or confident to access financing or to afford alternative fuels, thereby increasing inequality as they are left behind in the development process	Medium	Medium	Supporting solar panels and loans to the locals, especially the poor
Human resource and capacity development in plantation management	Lack of interest and limited awareness about conservation and plantation management among the local people; poverty in the local community	Low	Low	Awareness-raising programmes, and demonstration plots and provision of incentives Creating alternative livelihood options through livelihood development and market networking trainings
Afforestation/ reforestation in degraded forest areas	Some difficulties in gathering qualified labour	Low	Low	Short-term trainings on plantation procedure and nursery practices Selecting local villagers experienced in tree plantation and nursery operations

Table 8: Social risk analysis

Key results/IPs	Risks	Likelihood of risk (high/medium/low)	Impact of risk (high/medium/low)	Risk reduction measures
Alternative livelihood options	Elite capture	Medium	Medium	Transparency in selecting the HHs
Promotion of CMRS	Conflicts with powerful stakeholders could put individuals at risk	Medium	Medium	Legal protection
Law enforcement	Job losses and deficit in income generation	Low	Low	Awareness campaigns and capacity building
Alternative energy sources and efficient utilization of fuel wood	Elite capture; and unwillingness of the local community	Low	Low	Transparency, awareness campaigns, and setting up a provision of incentives
Human resource and capacity development in plantation management	NA			
Afforestation/ reforestation in degraded forest areas	Poor people could be excluded	Low	Low	Inclusion of the unemployed and the poor

Table 9: Social benefit analysis

Key results/IPs	Benefits	Likelihood of benefit (High/medium/low)	Impact of benefit (High/medium/low)	Benefit enhancement measures
Alternative livelihood options	Social capital	High	High	Formation of cooperatives
Promotion of CMRS	Rewards to the local people for monitoring and reporting	High	Medium	Awareness raising
Law enforcement	NA			
Alternative energy sources and efficient utilization of fuelwood	Reducing the time for fuelwood collection can free the villagers to carry out other activities	High	High	Training programmes on handling of alternative energy sources
Human resource and capacity development in plantation management	Labour opportunity for local people	High	High	Training local people and giving awards
Afforestation/ Reforestation in degraded forest areas	Income opportunities for local people	High	High	Selecting local people living near plantation areas

Table 10: Environmental risk analysis

Key results/IPs	Environmental risks	Likelihood of risk (high/medium/low)	Impact of risk (high/medium/low)	Risk reduction measures
Alternative livelihood options	NA			
Promotion of CMRS	NA			
Law enforcement	NA			
Alternative energy sources and efficient utilization of fuelwood	Impacts on water ecosystems from hydropower development	Low	Low	Careful site selection
Human resource and capacity development in plantation management	NA			
Afforestation/ reforestation in degraded forest areas	NA			

Table 11: Environmental benefit analysis

Key results/IPs	Environmental benefits	Likelihood of benefit (high/medium/low)	Impact of benefit (high/medium/low)	Benefit enhancement measures
Alternative livelihood options	Less encroachment in forested area and also increase in forest cover and biodiversity	High	High	Environment-friendly livelihood options
Promotion of CMRS	Reduced illegal extraction of forest products	Medium	Medium	Promotion of people's participation in forest conservation and management
Law enforcement	NA			
Alternative energy sources and efficient utilization of fuelwood	Less carbon emission Prevention of further loss of biodiversity and ecosystem services since fuelwood is not logged	High	Medium	Production of highly efficient cook stoves, and supporting the use of solar panels Setting up fuelwood plantation Awareness and hands-on trainings
Human resource and capacity development in PAs and plantation management	Enhanced carbon stock Sustainable forest and ecosystem conservation and management	High	High	
Afforestation/ reforestation in degraded forest areas	Increase in forest area Enhanced carbon storage Climate change mitigation Ecosystem services	High	High	Forest monitoring and management in a sustainable way

Gap analysis

There are numerous gaps and constraints that hamper the undertaking of research activities in climate change with respect to forests. Myanmar being one of the least developed countries has numerous gaps that need to be addressed for the successful implementation of REDD+ and to pave way for result-based payments. Table 12 shows the gaps in the different categories.

Table 12: Gap analysis in Myanmar

No.	Category	Gaps
1	Policy	<ul style="list-style-type: none"> Weak policy support to address the drivers of deforestation, particularly the substitution of fuelwood and charcoal The Land Use Policy (2016) is still inactive and has many land-related issues Lack of supporting policy and mechanisms in the sphere of forest conservation
2	Legislations	<ul style="list-style-type: none"> Legal support for REDD+ implementation activities, land tenure and benefits are lacking because of the absence of the REDD+ concept in the laws No legal support for REDD+ implementation in the unclassified areas (outside private forest enterprises – PFEs) Rules/Responsibilities for staff to implement REDD+ activities have not been formulated for any of the line departments
3	Strategies and plans	<ul style="list-style-type: none"> As regards REDD+ strategies, the financial investment required for implementing policies and measures – except for the funding of the 10-year Reforestation and Rehabilitation Programme – has not yet been secured The implementation of NDC has been hampered due to limited staff and recruitment process Weak coordination and cooperation among some state and regional governments, as well as among local communities in the case of reservation and establishment of PAs As for the National Biodiversity Strategy and Action Plan (NBSAP), there has been no integrated plan to address issues of climate change impacts and biodiversity loss Weak or limited coordination among sectors related to climate change and biodiversity conservation
4	Institutional capacity	<ul style="list-style-type: none"> There is no direct linkage between the REDD+ Task Force and the NECCCCC There is no capacity building and awareness-raising programmes for the Task Force members as well as for the decision makers; in terms of REDD+, the Task Force members have limited capacity and awareness There is no subnational-level TWG
5	Institutional arrangement	<ul style="list-style-type: none"> There is no direct linkage between the REDD+ Task Force and the NECCCCC for overall supervision There is no subnational-level REDD+ TWG
6	Technology	<ul style="list-style-type: none"> Limited availability of up-to-date satellite images on a regular basis Limited availability of high-resolution satellite images
7	Information sharing, awareness raising, and stakeholder engagement	<ul style="list-style-type: none"> Limited articles and information about the progress of REDD+ activities Limited awareness about REDD+, so the participation is still not inclusive
8	Financing	<ul style="list-style-type: none"> In the national budgeting system, there is no specific budget allocation for REDD+ readiness

Budget and operational plan

A detailed and transparent budgeting for SRAP resulted in the development of a five-year operational plan (Table 13) to be presented to the national government and potential donors. The quantitative implementation targets defined at the planning stage (and which are also required for the monitoring plan) are the starting points for the budgeting process, followed by a detailed analysis of the required activities, tasks (within each activity) and resources. The budgeting stage also involved a gap analysis to identify the activities in the IPs that have already been planned and budgeted, as the SRAP budget and the operational plan are meant only for additional resource requirements.

Table 13: Estimated budget for five-year operational plan (2019–2024)

Intervention package	Year 1	Year 2	Year 3	Year 4	Year 5	Total in MMK
Alternative livelihood options	30,373,400	53,153,450	45,560,100	45,560,100	37,966,750	212,613,800
Promotion of CMRS and law enforcement	22,780,050	37,966,750	37,966,750	37,966,750	22,780,050	159,460,350
Alternative energy sources and efficient utilization of fuelwood	30,373,400	53,153,450	37,966,750	45,560,100	30,373,400	197,427,100
Human resources and capacity development in plantation management	37,966,750	45,560,100	37,966,750	37,966,750	37,966,750	197,427,100
Afforestation/Reforestation in degraded forest areas	45,560,100	60,746,800	60,746,800	37,966,750	30,373,400	235,393,850
Total in MMK	167,053,700	250,580,550	220,207,150	205,020,450	159,460,350	1,002,322,200
Total in USD Exchange rate 1 USD=1,518.67 MMK	110,000	165,000	145,000	135,000	105,000	660,000

References

- Richards, M., Bhattarai, N., Karky, B., Hicks, C., Ravilious, C., Timalisina, N. ... and Roy, R. (2017a). Developing Sub-national REDD+ Action Plans: A Manual for Facilitators. ICIMOD Manual 2017/13. Retrieved from <http://lib.icimod.org/record/33672>
- Richards, M., Bhattarai, N., Karky, B., Roy, R., Paudel, N.S., Swan, S.... and Thapa, S. (2017b). Moving from Readiness to Implementation: Developing Sub-National REDD+ Action Plans in Nepal and Vietnam. ICIMOD Manual 2017/16. Retrieved from <http://lib.icimod.org/record/33710>
- Wang, C., & Myint, S. W. (2016). Environmental concerns of deforestation in myanmar 2001-2010. Remote Sensing, 8(9), 1–15. <https://doi.org/10.3390/rs8090728>

Annexes

Annex 1: Core team of SRAP

SN	Name	Designation
1	Dr Thaug Naing Oo	Director, Forest Research Institute, Myanmar
2	Dr Inkyin Khaine	Assistant Director, Forest Research Institute, Myanmar
3	Dr Zarchi Hlaing	Staff Officer, Forest Research Institute, Myanmar
4	Mr Zaw Min Aye	Staff Officer, Forest Research Institute, Myanmar
5	Mr Zaw Hlaing Swe	Staff Officer, Nyaung Shwe Township, Shan State Forest Department, Myanmar
6	Mr Nay Aung	Range Officer, Forest Research Institute , Myanmar
7	Ms Yu Lae Win	Range Officer, Taunggyi District, Shan State Forest Department , Myanmar
8	Dr Bhaskar Singh Karky	Programme Coordinator, REDD+ Initiative, ICIMOD
9	Mr Nabin Bhattarai	Research Associate – SSA, ICIMOD
10	Ms Trishna Singh Bhandari	Research Assistant – SSA, ICIMOD
11	Mr Kai Windhorst	Chief Technical Advisor, GIZ
12	Ms Jagriti Chand	Research Assistant, GIZ

Annex 2: List of multi-stakeholder consultation participants for developing Shan state REDD+ action plan

S. No.	Name	Position	Organization
1	Dr Thaug Naing Oo	Director	Forest Research Institute, Myanmar
2	Mr Win Myint	Deputy Director	Forest Research Institute, Myanmar
3	Mr Mya Win	Deputy Director	Forest Research Institute, Myanmar
4	Mr Soe Tint	Deputy Director	Forest Research Institute, Myanmar
5	Mr Ngwe Thee	Assistant Director	Planning & Statistics Division, Myanmar
6	Mr Ngwe Soe Oo	Assistant Director	Forest Research Institute, Myanmar
7	Mr Hnin Aung San	Assistant Director	Planning & Statistics Division, Myanmar
8	Mr Htun Latt	Assistant Director	Forest Research Institute, Myanmar
9	Mr Hla Myo Aung	Assistant Director	Forest Research Institute, Myanmar
10	Dr Ei Ei Swe Hlaing	Assistant Director	Forest Research Institute, Myanmar
11	Dr Yuya Aye	Assistant Director	Forest Research Institute, Myanmar
12	Mr Aung Zaw Moe	Research Officer	Forest Research Institute, Myanmar
13	Ms Deliver Htwe	Research Officer	Forest Research Institute, Myanmar
14	Dr Inkyin Khaine	Staff Officer	Forest Research Institute, Myanmar
15	Dr Zarchi Hlaing	Staff Officer	Forest Research Institute, Myanmar
16	Dr Phyu Phyu Lwin	Staff Officer	Forest Research Institute, Myanmar
17	Ms Thant Zin Maw	Staff Officer	Forest Research Institute, Myanmar
18	Mr Zaw Min Aye	Staff Officer	Forest Research Institute, Myanmar
19	Mr Aye Chan Maung	Staff Officer	Forest Research Institute, Myanmar
20	Ms Khine Wutt Mone	Staff Officer	Forest Research Institute, Myanmar
21	Mr Kyaw Win Maung	Assistant Research Officer	Forest Research Institute, Myanmar
22	Ms Swe Swe Tun	Assistant Research Officer	Forest Research Institute, Myanmar
23	Ms Tin Tin Mu	Assistant Research Officer	Forest Research Institute, Myanmar
24	Ms Phyu Phyu Swe	Assistant Research Officer	Forest Research Institute, Myanmar
25	Ms Cho Cho Win	Assistant Research Officer	Forest Research Institute, Myanmar
26	Ms Khin Mar Myint	Assistant Research Officer	Forest Research Institute, Myanmar
27	Mr Pyae Phyo Maung	Range Officer	Forest Research Institute, Myanmar
28	Ms Htike San Soe	Range Officer	Forest Research Institute, Myanmar
29	Mr Nay Aung	Range Officer	Forest Research Institute, Myanmar
30	Mr La Min Thu	Range Officer	Natural Forest & Plantation Division, Myanmar

Annex 3: Relevant state-level stakeholders of Shan state

<ul style="list-style-type: none"> • Government institutions • MONREC • All ministries • Forest Department • Agriculture Department • Irrigation Department • Livestock Department • Settlements and Land Records Department (SLRD) • General Administration Department (GAD) • Rural Livelihood Department • Hotel and Tourism Department • Mining Department • Members of Parliament • Traditional institutions
<ul style="list-style-type: none"> • Non-governmental organizations • Civil society organizations • Japan International Cooperation Agency (JICA) • United Nations Development Programme (UNDP) • Food and Agriculture Organization (FAO) • Center for People and Forests (RECOFTC) • World Wide Fund for Nature (WWF) • United Nations Office on Drugs and Crime (UNODC) • Tarro People Association (TPA) • Ecosystem Conservation and Community Development Initiative (ECCDI)
<ul style="list-style-type: none"> • Research institutions and academia • Forest Research Institute (FRI) • Department of Agricultural Research (DAR) • University of Forestry and Environmental Sciences (UFES) • ICIMOD • Yezin Agricultural University (YAU) • University of Taunggyi
<ul style="list-style-type: none"> • Private sector • Coffee and green tea growers • Hotel association • Community Forest User Groups (CFUGs) • Shifting cultivators • Mining companies • Travel and tourism companies • Women's organizations

Annex 4: Ranking of D&D drivers and enhancement activities

Ranking of deforestation drivers

Direct drivers	Location	Future threat (1-5)	Future biomass impact (1-5)	Future forested area impacted (1-5)	Total score
Agriculture expansion (horticulture, tea, etc.)	All districts especially Taunggyi, Loilen, and Kyaukme	4	4	3	11
Shifting cultivation	All districts, especially Taunggyi, Loilen, Mongsat, and Lasho	3	3	3.5	9.5
Infrastructure development	Taunggyi district	3	3	3	9
Mining	Taunggyi and Loilen, districts	2	4	1.5	7.5
Dam construction	Taunggyi district	1	2	2	5
Encroachment	All districts	3	4	2	9

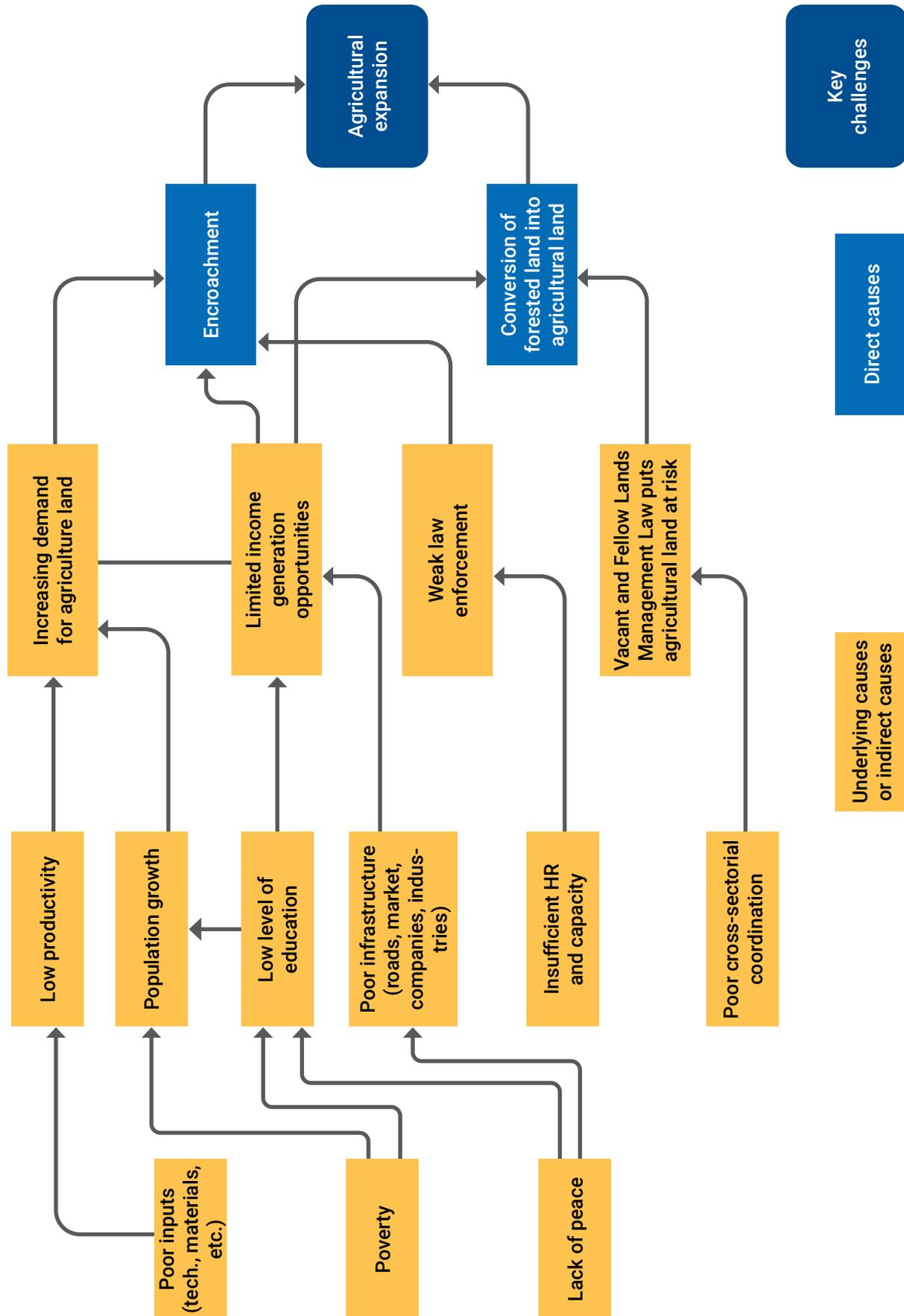
Ranking of forest degradation drivers

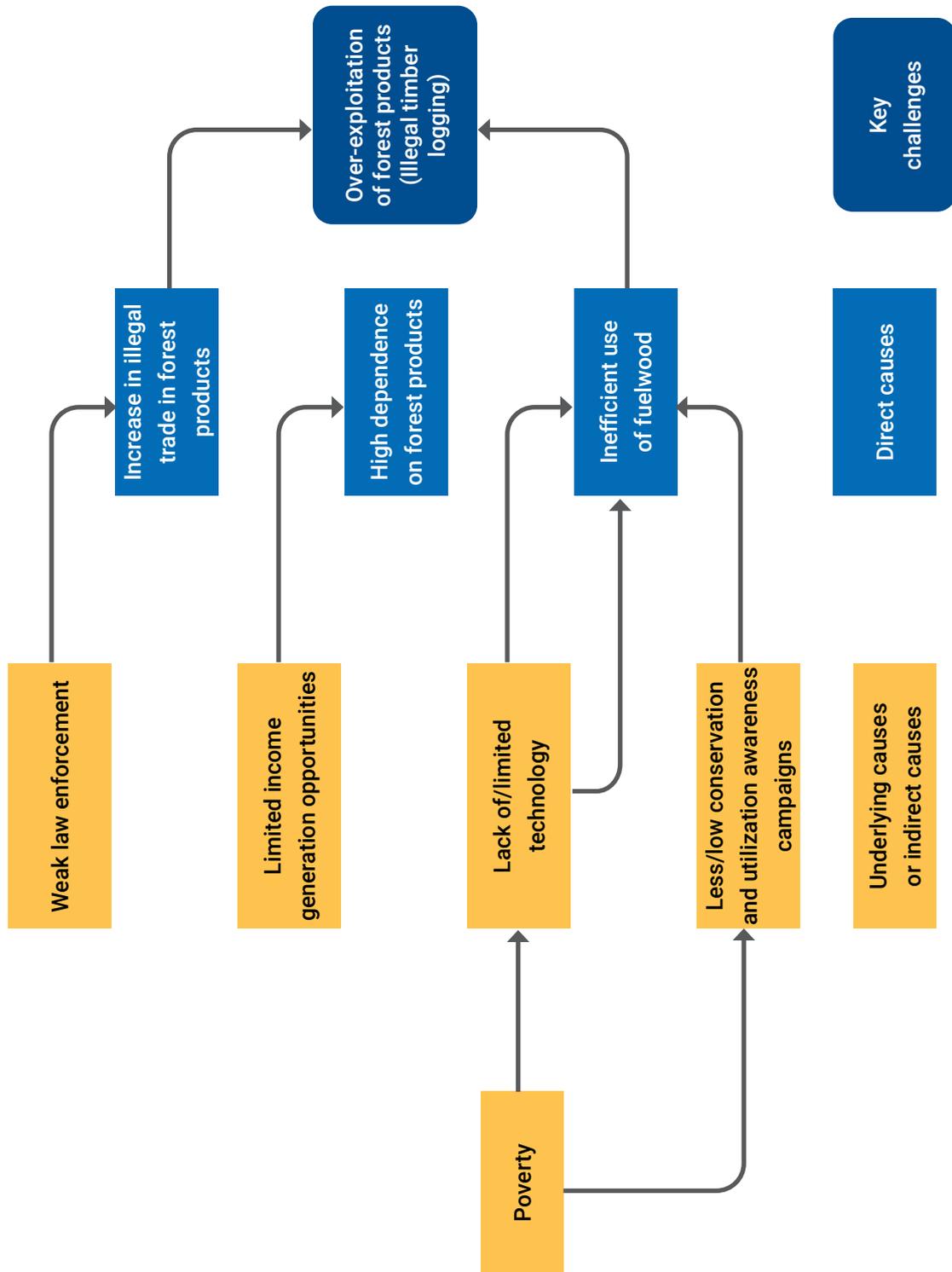
Direct drivers	Location	Future threat (1-5)	Future biomass impact (1-5)	Future forested area impacted (1-5)	Total score
Over-exploitation of forest products	All districts, especially Loilen, Taunggyi, and Kyaukme	4	3	4	11
Forest fire	Taunggyi, Loilen, Mongsat and Lasho districts	2	4	2.5	8.5
Grazing	Taunggyi and Kyaukme districts	2	4	2	8
Pests and diseases	Taunggyi and Lasho districts	2	3	1	6

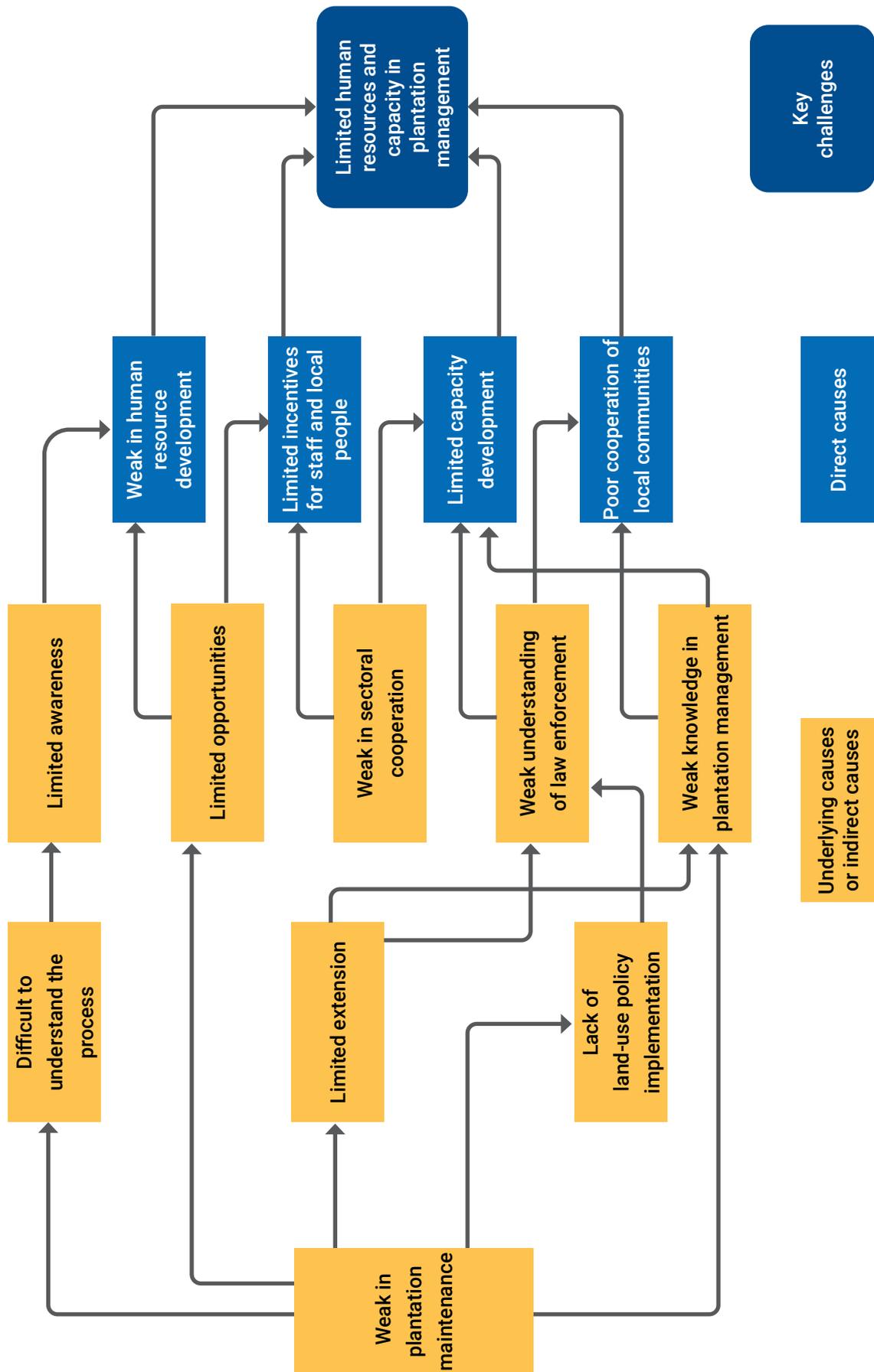
Ranking of barriers to enhancement activities

Direct drivers	Location	Future Potential Area (1-5)	Future biomass impact (1-5)	Total Score
Weak law enforcement	All districts	2.5	4	6.5
Limited human resources and capacity in plantation management	All districts	3.5	4	7.5
Weak sectoral cooperation	All districts	2	4	6
Traditional practices	All districts	3	4	7
Weak understanding, low interest, and poor cooperation of local communities		3	4	7
Weak in maintenance of plantations		2	3	5
Weak knowledge about non-timber forest products		2.5	3	5.5

Annex 5: Problem trees







Annex 6: Detailed IPs with monitoring plan and budget

Intervention package 1: Alternative livelihood options

A. General information	
IP name	Alternative livelihood options
Drivers or barriers addressed	<ul style="list-style-type: none"> Deforestation and forest degradation due to encroachment and shifting cultivation by the forest-dependent communities
IP description	<ul style="list-style-type: none"> Providing alternative livelihood options for the forest-dependent communities will help in minimizing the rate of deforestation and forest degradation due to encroachment and shifting cultivation. Promotion of ecotourism and adoption of agroforestry and horticulture will diversify the livelihood options.
Objectives	<ul style="list-style-type: none"> Reduce forest encroachment for farming and settlement by providing alternative options and more sustainable income-generating sources to the forest-dependent communities.
Strategies	<ul style="list-style-type: none"> Reducing forest encroachment through ecotourism, value addition of forest products, and promotion of agroforestry Controlling of unsustainable shifting cultivation Reducing dependency on forest products (timber, bamboo, etc.)
Incentives for participation and for changing stakeholder practices	<ul style="list-style-type: none"> The implementation of this IP in an effective way will help the forest-dependent community to generate sustainable income from forest products, agroforestry, and horticulture, which will eventually work towards the welfare of the entire community
Outputs and activities/tasks	<p>Output 1: Forest encroachment and shifting cultivation reduced through ecotourism</p> <ul style="list-style-type: none"> Reconnaissance survey for establishing community-based ecotourism Studying the socio-economic status of the community Identifying the assets of the local community for ecotourism Preparing an exploratory assessment report to identify the avenues of ecotourism Mapping of probable sites for ecotourism Trainings on community-based ecotourism practices Site visits to ecotourism areas developed by the community, and experience-sharing programmes <p>Output 2: Value addition of forest products and agroforestry promoted</p> <ul style="list-style-type: none"> Capacity building for value addition of forest products (production and marketing) Financial and technical support Study tours to production sites of value-added forest products Giving incentives to horticulture (agroforestry, home gardening, etc.) and tree planting on farmland Selection of appropriate varieties of cash crops, tree species, etc. Capacity building in agroforestry and home gardening Training programme on agroforestry and home-gardening practices Training on value-added products (such as bamboo handicraft) <p>Output 3: Reduced dependency on forest products (timber, bamboo, and others)</p> <ul style="list-style-type: none"> Extension of community forestry Establishment of small-scale agroforestry and CFs Enhancing and supporting CFEs Linking with development aid organizations (INGO, NGOs, CSOs, and others) Vocational income-generation trainings for youth

B. Feasibility analysis (risks and obstacles) (Implementation risks and obstacles)				
Outputs/activities	Risks or obstacles	Risk reduction measures	Risk reduction targets	Indicators
Forest encroachment and shifting cultivation reduced through ecotourism	Availability of skilled personnel	Improving communication	At least four meetings with the local communities	No. of meetings with the local communities
Value addition of forest products and promotion of agroforestry	Limited information about value addition of forest produce	Research and surveys	At least one research/survey per year to collect information on value addition of forest produce	No. of research/survey conducted per year
Reduced dependency on forest products	Difficult to motivate staff and local people	Awareness campaigns and study tours	One study tour for the local community per year	No. of awareness campaigns per year No. of study tours for the local community per year

Overall feasibility of IP				
Implementation risks/ obstacles Low=3/Medium=2/High=1	Cost-effectiveness of risk reduction measures High=3/ Medium=2/Low=1	Implementation cost Low=3/ Medium=2/High=1	Opportunity cost Low=3/Medium=2/ High=1	Incentive measures High=3/Medium=2/ Low=1
3	3	2	3	3
C. Safeguard analysis (risks and benefits) (Social, environmental risks and benefits)				
Serious risks	Risk reduction measures	Risk reduction targets	Indicators	
Elite capture	Transparency in selecting the HHs	At least 30% HHs are selected from poor and marginalized community	No. of HHs selected from poor and marginalized community	
Benefits	Benefit enhancement measures	Benefit enhancement targets	Indicators	
Effective implementation of IP will improve the overall well- being of the local community	Formation of cooperatives	One cooperative established in each hotspots	No. of cooperatives in each hotspot	
D. Monitoring protocol				
The ways in which the IP can ensure effective monitoring	<ul style="list-style-type: none"> Regular monitoring by the forest and tourism departments, and by the local communities Allocation of adequate budget for monitoring 			
Implementing partners	State government, forest department, and local communities			
Proxy indicators of impact on forest area or its condition	Proxy impact indicators		Target	
	No. of non-forest livelihood options for HHs pursuing alternative livelihood options		At least two non-forestry related livelihood options per HH implemented with alternative livelihood options	
IP implementation targets	<ul style="list-style-type: none"> 5,000 HHs to pursue alternative livelihood options Reducing the expansion of shifting cultivation areas 			
Monitoring protocol		Indicators	Source of data or data collection methods	
	Proxy indicators	<ul style="list-style-type: none"> No. of non-forest livelihood options for HHs pursuing alternative livelihood options 	<ul style="list-style-type: none"> Progress report on alternative livelihood options 	
	Intervention indicators	<ul style="list-style-type: none"> No. of alternative livelihood options pursued. Introduction of agroforestry in the shifting cultivation areas Reduction in the expansion of shifting cultivated areas 	<ul style="list-style-type: none"> Progress report on alternative livelihood options Progress report on alternative livelihood options Progress report on alternative livelihood options 	
	Risk reduction indicators	No. of HHs selected from poor and marginalized community	Site visit, HH survey and completion report	
E. Budget plan (five Years)				
Introduction	<ul style="list-style-type: none"> Standard government price norms are used Annual increase in costs by 10% factored in to allow for inflation 			
Implementation cost, including of monitoring	Activity	Budget (USD)	Remarks	
	Reconnaissance survey for establishing community-based ecotourism	20,000		
	Trainings on community-based ecotourism practices, and site visits	30,000		
	Value addition of forest products and promotion of agroforestry	30,000		
	Enhancing and supporting CFEs	30,000		
	Establishment of small-scale agroforestry and CFs Vocational income-generation trainings	30,000		
Total Budget: USD 140,000				

Intervention package 2: Promotion of CMRS and law enforcement

A. General information				
IP name	Promotion of CMRS and law enforcement			
Drivers or barriers addressed	<ul style="list-style-type: none"> All drivers and barriers 			
IP description	<ul style="list-style-type: none"> The forests of Shan state are facing deforestation and degradation due to illegal harvesting of forest products; this is worsening the impact of climate change and proving to be an impediment in achieving sustainable development. This illegal harvesting of forest products is also exacerbating the problem of corruption and depriving the government of collecting the due amount of revenue. This is wreaking havoc on the country's natural resources. So, promoting CMRS and effective law enforcement will help in tackling the pernicious practice of illegal harvesting of forest products. 			
Objectives	To control and minimize illegal trade in forest products			
Strategies	<ul style="list-style-type: none"> Increasing the forest quality for better production of forest products Providing ownership to the forest-dependent communities in the conservation, management and monitoring of forests 			
Incentives for participation and for changing stakeholder practices	<ul style="list-style-type: none"> With the help of the CMRS and effective law enforcement, the state government can generate income through revenue and tax from the forest products; some part of this revenue can go to the local communities for development and livelihood activities 			
Outputs and activities/tasks	<p>Output: Illegal trade in forest products reduced</p> <ul style="list-style-type: none"> Creating log tracking systems Tracing the supply chain and reporting on the sustainability of forest products Estimation of the quantity of the illegally traded forest products and understanding the context of such trade Enforcement of forest laws and regulations to reduce the illegal trade in forest products Regular monitoring of the forest and its products by the local community Proper coordination among the community, forest offices, and other line agencies Awareness campaigns for the local community, media, CSOs, etc. Providing forest monitoring equipment to the communities Initiating the provision of incentives/rewards to the local community for good work Initiating a forest watch/monitoring/protection network Creating a monitoring unit consisting of members from the community Regular patrolling of the forests Providing good incentives to the forest watchers 			
B. Feasibility analysis (risks and obstacles) (Implementation risks and obstacles)				
Outputs/activities	Risks or obstacles	Risk reduction measures	Risk reduction targets	Indicators
Illegal trade in forest products reduced	Local communities might not coordinate	Formation of a monitoring unit consisting of community members	<ul style="list-style-type: none"> One committee for each hotspot Community monitoring units should be fully trained 	<ul style="list-style-type: none"> No. of active committees for forest monitoring No. of people trained in the monitoring system
Overall feasibility of IP				
Implementation risks/obstacles Low=3/Medium=2/ High=1	Cost-effectiveness of risk reduction measures High=3/Medium=2/ Low=1	Implementation cost Low=3/Medium=2/ High=1	Opportunity cost Low=3/Medium=2/High=	Incentive measures High=3/Medium=2/ Low=1
1	2	2	2	2

C. Safeguard analysis (risks and benefits) (Social, environmental risks and benefits)			
Serious risks	Risk reduction measures	Risk reduction targets	Indicators
Possible social and economic implications for forest-dependent households	Priority needs to be given to the affected HHs while implementing the activities	At least 15% of the affected HHs involved in CMRS	No. of affected HHs involved in CMRS
Benefits	Benefit enhancement measures	Benefit enhancement targets	Indicators
Improved environmental quality and potential to boost ecotourism due to forest and biodiversity conservation	<ul style="list-style-type: none"> Identification of the range of local tourism activities and promoting them through different sectors Trainings and awareness activities on forest and biodiversity conservation 	<ul style="list-style-type: none"> To identify the potential range of local tourism activities in order to create awareness about ecotourism among the community Participation of the community members in forest and biodiversity conservation through training 	<ul style="list-style-type: none"> Field observation and reports No. of trainings and awareness activities
D. Monitoring protocol			
The ways in which the IP can ensure effective monitoring	<ul style="list-style-type: none"> Regular monitoring by the state government and forest department officers, as also by community members Allocation of adequate budget for monitoring 		
Implementing partners	State government, forest department, and communities		
Proxy indicators of impact on forest area or its condition	Proxy impact indicators	Target	
	<ul style="list-style-type: none"> No. of cases of illegal trade in forest products. No. of functional monitoring and reporting units of the community Amount of revenue generated by the forest department from the forest products 	<ul style="list-style-type: none"> 60% decrement in illegal trade in forest products Two monitoring and reporting units of the community in operation 	
IP implementation targets	<ul style="list-style-type: none"> At least two meetings with community members and the government agencies concerned on forest management At least four awareness programmes per year on CMRS Regular monitoring of the forest by the monitoring units of the community At least two rewards to the community for forest monitoring At least 10 forest watchers appointed at each hotspot 		
Monitoring protocol		Indicators	Source of data or data collection methods
	Proxy indicators	<ul style="list-style-type: none"> No. of cases of illegal trade in forest products. No. of functional monitoring and reporting units of the community Amount of revenue generated by the forest department from the forest products 	<ul style="list-style-type: none"> Baseline survey, field observation, and reports Activities conducted by the monitoring and reporting units of the community Vouchers and report
	Intervention indicators	<ul style="list-style-type: none"> No. of meetings with the community members and the relevant government agencies on forest management No. of awareness programmes per year on CMRS Regular monitoring of the forest by monitoring units of the community No. of rewards provided to the community for forest monitoring No. of forest watchers appointed at each hotspot 	<ul style="list-style-type: none"> Meeting minutes Field observation and awareness programme completion report Field observation Receipts
	Risk reduction indicators	<ul style="list-style-type: none"> No. of affected HHs involved in CMRS 	<ul style="list-style-type: none"> HH survey and list of CMRS units

E. Budget Plan (Five Years)			
Introduction	<ul style="list-style-type: none"> Standard government price norms are used Annual increase in costs by 10% factored in to allow for inflation 		
Implementation cost, including monitoring	Activity	Budget (USD)	Remarks
	Create log tracking system for law enforcement and monitoring	25,000	
	Awareness-raising campaigns and regular patrolling of forests	30,000	
	Providing forest monitoring equipment and incentives/rewards	30,000	
	Initiating a forest watch, monitoring and protection network	20,000	
Total Budget: USD 105,000			

Intervention package 3: Alternative energy sources and efficient utilization of fuelwood

A. General Information	
IP Name	Alternative energy sources and efficient utilization of fuelwood
Drivers or barriers addressed	<ul style="list-style-type: none"> Forest degradation due to over-exploitation/unsustainable harvesting of forest products
IP description	<ul style="list-style-type: none"> Alternative sources of energy for heating and cooking can reduce the demand for fuelwood. Promotion of biogas plants, improved cook stoves (ICS), solar panels and energy gardens can be efficient mediums to minimize the extent of forest degradation.
Objectives	<ul style="list-style-type: none"> Reduce unsustainable use of fuelwood by replacing it with alternative renewable energy sources
Strategies	<ul style="list-style-type: none"> Promotion of highly efficient cook stoves and solar panels as substitutes for unsustainable fuelwood consumption
Incentives for participation and for changing stakeholder practices	<ul style="list-style-type: none"> Installation of ICS and raising awareness about the benefits of alternative renewable energy sources and ICS to beneficiary households. This will improve the health of the family members, reduce the time and labour in collecting fuelwood, and also cut down on the expenditure of fuelwood consumption.
Outputs and activities/tasks	<p>Output 1: ICS installed</p> <ul style="list-style-type: none"> Selecting partners to create awareness about the benefits of ICS through posters, public meetings, etc. Partners creating awareness about ICS benefits Selecting households for installation of ICS in the hotspot areas Training at least two local technicians at each hotspot Installing ICS in hotspot areas, with households providing the local materials, and the programme paying the technicians Follow-up visits by technicians to check the operation and maintenance of ICS Training/awareness activities on the production and utilization of highly efficient ICS <p>Output 2: Solar panels installed in forest-dependent communities</p> <ul style="list-style-type: none"> Supporting the use of solar panels Selecting and orienting households in the hotspot areas Providing financial and technical support for installing solar panels Installing panels by using the energy department guidelines Providing continuous technical assistance/monitoring for effective operation and maintenance of the panels <p>Output 3: Capacity of local communities developed in alternative energy sources</p> <ul style="list-style-type: none"> Identifying households that use fuelwood and charcoal, and learning about their monthly usage Identifying appropriate resource persons to promote alternative energy sources among the community Collaborating with relevant departments/technicians for providing small-scale hydropower technology Training and awareness programmes on using agricultural residue as an energy source Conducting public awareness activities for the local people

B. Feasibility Analysis (Risks and Obstacles) (Implementation Risks and Obstacles)				
Outputs/activities	Risks or obstacles	Risk reduction measures	Risk reduction targets	Indicators
ICS installed	Unwillingness of the local communities	Awareness campaigns on benefits of ICS	At least 20% of the community members participating in awareness campaigns	No. of awareness campaigns per year on ICS
Overall feasibility of IP				
Implementation risks/obstacles Low=3/Medium=2/High=1	Cost-effectiveness of risk reduction measures High=3/Medium=2/Low=1	Implementation cost Low=3/Medium=2/High=1	Opportunity cost Low=3/Medium=2/High=1	Incentive measures High=3/Medium=2/Low=1
2	2	2	2	3
C. Safeguard Analysis (Risks and Benefits) (Social, Environmental Risks and Benefits)				
Serious risks	Risk reduction measures	Risk reduction targets	Indicators	
Elite capture of the selection process in receiving ICS and solar panels	Transparent selection process that accords priority to forest-dependent HHs	At least one alternative energy option for 60% of the forest-dependent HHs at each hotspot	No. of forest-dependent HHs receiving ICS and solar panels	
Benefits	Benefit enhancement measures	Benefit enhancement targets	Indicators	
Improvement in the overall health of the local community, as well as better environmental quality, by using solar energy and ICS instead of fuelwood	Trainings on effective operation of ICS, and awareness-raising programmes on the technicalities of ICS and solar energy	50% of the HHs to receive trainings on handling solar panels and ICS	No. of HHs receiving trainings and being part of awareness-raising programmes on solar panels and ICS	
D. Monitoring Protocol				
The ways in which the IP can ensure effective monitoring	<ul style="list-style-type: none"> Regular monitoring by the state government, forest department, associated departments/organizations, alternative energy agencies, and communities Allocation of adequate budget for monitoring 			
Implementing partners	State government, forest department, associated departments/organizations, alternative energy agencies, and communities			
Proxy indicators of impact on forest area or its condition	Proxy impact indicators		Target	
	Average amount of fuelwood consumption by the forest-dependent communities after receiving alternative sources of energy		50% reduction in the consumption of fuelwood per HH	
IP implementation targets	<ul style="list-style-type: none"> Installation of 3,000 HHs 1,000 HHs to receive financial and technical support for alternative energy sources Installation of solar panel systems in 50 HHs 50% reduction in consumption of fuelwood per HH 			
Monitoring protocol		Indicators		Source of data or data collection methods
	Proxy indicators	Average amount of fuelwood consumption by the forest-dependent communities after receiving alternative sources of energy		Baseline information and monitoring from HHs records using alternative energy
	Intervention indicators	<ul style="list-style-type: none"> No. of ICS installed No. of HHs receiving financial and technical support for alternative energy sources No. of solar panels installed. 50% consumption of fuelwood reduced per HH 		<ul style="list-style-type: none"> Field observation, and completion reports Field observation, receipts, and completion reports Field observation, receipts, and completion reports HH survey and completion report
	Risk reduction indicators	No. of forest-dependent HHs receiving ICS and solar panels		HH survey and completion reports

E. Budget Plan (Five Years)			
Introduction	<ul style="list-style-type: none"> Standard government price norms are used Annual increase in costs by 10% factored in to allow for inflation 		
Implementation cost, including of monitoring	Activity	Budget (USD)	Remarks
	Installation of ICS and reduction in consumption of fuelwood	40,000	At least four hotspot areas
	Installation of solar panels	20,000	At least two hotspot areas
	Technical assistance and financial support to install ICS	30,000	At least four hotspot areas
	Awareness-raising programmes and financial support for alternative energy sources	40,000	All hotspot areas
Total Budget: USD 130,000			

Intervention Package 4: Human resources and capacity development in plantation management

A. General information	
IP name	Human resources and capacity development in plantation management
Drivers or barriers addressed	<ul style="list-style-type: none"> All drivers and barriers
IP description	<ul style="list-style-type: none"> Human resources is central to planning, managing and delivering outputs. Putting in place a proper mechanism and framework for human resources in plantation management creates an enabling environment that not only increases forest cover, but also improves the overall forest quality.
Objectives	<ul style="list-style-type: none"> Develop the capacity of the available human resources and increase their number in plantation management in order to increase or maintain the forest cover. In addition, to restore the degraded and deforested areas, appropriate technical resource personnel should be recruited for providing guidance in plantation management.
Strategies	<ul style="list-style-type: none"> Development of human resource Development of capacity Revision of incentives for staff and local people
Incentives for participation and for changing stakeholder practices	<ul style="list-style-type: none"> Capacity building and awareness campaigns on the importance of agroforestry, community forests, intercropping practices and planting the appropriate tree species will help in livelihood sustenance and income generation Providing incentives for plantation activities will motivate the local people and officials
Outputs and activities/tasks	<p>Output 1: Human resource and capacity developed</p> <ul style="list-style-type: none"> Workshops at different levels, including line departments and local communities, on revising plantation management practices Trainings and workshops on plantation management, planting techniques and procedures, and nursery operations Encouragement of agroforestry, CF, intercropping practices, and planting N-fixing species Consultation meetings with local villagers and technicians <p>Output 2: Incentives for staff and local people revised</p> <ul style="list-style-type: none"> Workshops on incentives and capacity development Establishment of demonstration plots and extension of plantations Review of plantation management

B. Feasibility Analysis (Risks and Obstacles) (Implementation Risks and Obstacles)				
Outputs/activities	Risks or obstacles	Risk reduction measures	Risk reduction targets	Indicators
Human resources and capacity developed	<ul style="list-style-type: none"> Lack of interest and limited awareness about plantation management Poverty among the local community 	<ul style="list-style-type: none"> Awareness-raising programmes, and establishment of demonstration plots and provision of incentives Providing job opportunity for local people by hiring labour in plantation and nursery works 	<ul style="list-style-type: none"> At least 12 awareness-raising programmes 	<ul style="list-style-type: none"> No. of awareness-raising programmes
Overall feasibility of IP				
Implementation risks/obstacles Low=3/Medium=2/High=1	Cost-effectiveness of risk reduction measures High=3/Medium=2/Low=1	Implementation cost Low=3/Medium=2/High=1	Opportunity cost Low=3/Medium=2/High=1	Incentive measures High=3/Medium=2/Low=1
2	3	2	3	3
C. Safeguard Analysis (Risks and Benefits) (Social, Environmental Risks and Benefits)				
Serious risks	Risk reduction measures	Risk reduction targets	Indicators	
Marginal groups might be excluded	A transparent selection process and priority given to the marginal groups	35% of the marginal groups to be included in capacity-building activities.	% of marginal groups in capacity-building activities	
Benefits	Benefit enhancement measures	Benefit enhancement targets	Indicators	
Increased incentives for local communities in plantation management	Provision of rewards for HHS demonstrating good plantation management practices Following the appropriate forestry management techniques	At least 15 HHS to receive rewards for better management of the plantation areas	No. of HHS receiving rewards for better management of the plantation areas	
D. Monitoring Protocol				
The ways in which the IP can ensure effective monitoring	<ul style="list-style-type: none"> Regular monitoring by the provincial government, the forest department headquarters, state and district and township forest departments, and the local communities. Allocation of adequate budget for monitoring 			
Implementing partners	Provincial government, forest department headquarters, state and district and township forest departments, and the local communities			
Proxy indicators of impact on forest area or its condition	Proxy impact indicators	Target		
	Active participation of the local people in plantation establishment has increased	At least 10% of local people living in villages around plantation areas are actively participated in plantation establishment and maintenance, and be qualified staff/workers		
IP implementation targets	<ul style="list-style-type: none"> Two workshops on revising plantation management and maintenance in the state Three training programmes per year on plantation management One demonstration plot at each hotspot on agroforestry and plantation management 			
Monitoring Protocol		Indicators	Source of data or data collection methods	
	Proxy indicators	Active participation of the local people in plantation establishment has increased		
	Intervention indicators	<ul style="list-style-type: none"> No. of workshops on reviewing PAs and the gazetting process, including on modifying the incentives No. of training programmes per year on plantation management No. of demonstration plots at each hotspot on agroforestry and plantation management 	<ul style="list-style-type: none"> Workshop reports Training completion reports Field observation and field reports 	
	Risk reduction indicators	% of marginal groups in capacity-building activities	Registration sheet and completion reports	

E. Budget Plan (Five Years)			
Introduction	<ul style="list-style-type: none"> Standard government price norms are used Annual increase in costs by 10% factored in to allow for inflation 		
Implementation cost, including of monitoring	Activity	Budget (USD)	Remarks
	Workshops at different levels and sites on revising plantation management practices	30,000	
	Trainings on management, planting techniques and procedures, and nursery operations	35,000	
	Demonstration plots and extension of plantations	40,000	
	Consultation meetings with local villagers and technicians; workshops on incentives and capacity development	25,000	
Total Budget: USD 130,000			

Intervention package 5: Afforestation/reforestation in degraded forest areas

A. General information	
IP name	Afforestation/reforestation in degraded forest areas
Drivers or barriers addressed	<ul style="list-style-type: none"> All drivers and barriers addressed
IP description	<ul style="list-style-type: none"> Establishment of plantations (CFs and agroforestry) can help in addressing the problems of deforestation and degradation. It can also enhance the carbon stock by increasing the forest cover.
Objectives	<ul style="list-style-type: none"> To enhance carbon stock, reduce deforestation, improve carbon enhancement activities, create job opportunities, and support sustainable forest management practices
Strategies	<ul style="list-style-type: none"> Using the forest landscape restoration approach Establishment of plantations in degraded land and bare land for watershed conservation, as well as in prioritized hotspots Establishment of CF, agroforestry plantations Creating job opportunities Monitoring and assessment of plantations
Incentives for participation and for changing stakeholder practices	<ul style="list-style-type: none"> The local people will avail of employment opportunities as a short-term benefit, while they will obtain both tangible and intangible benefits; tangible benefits in terms of economic gains and fulfilment of subsistence needs by the systematic application of non-timber forest products; and intangible benefits by way of water supply, protection against soil erosion, regulation of temperature, etc.
Outputs and activities/tasks	<p>Output 1: Established plantations on a wide scale in the degraded forest areas</p> <ul style="list-style-type: none"> Landscape restoration approach and land use planning Establishment of nurseries Establishment of plantations Tree planting campaigns in bare land and appropriate areas Financial and technical support to local government and communities Monitoring and assessment of plantations <p>Output 2: Established CFs and agroforestry plantations</p> <ul style="list-style-type: none"> Baseline assessment and planning Formation of CF committee and user groups Development of CF plan for each CF Applied techniques of CF and agroforestry Established different types of CFs and agroforestry plantations Financial and technical support to local government and communities Monitoring and assessment

B. Feasibility analysis (risks and obstacles) (Implementation risks and obstacles)				
Outputs/activities	Risks or obstacles	Risk reduction measures	Risk reduction targets	Indicators
Established plantations on a wide scale in degraded forest areas Established CFs and agroforestry plantations	<ul style="list-style-type: none"> Some difficulties in getting qualified labour Difficult to understand the application process for CF registration and planning Lack of willingness among the local people 	<ul style="list-style-type: none"> Short-term trainings on plantation procedures and nursery practices Selecting villagers experienced in tree plantation and nursery operations Trainings and group meetings on the CF process and planning Technical assistance for formulating CF plan Incentives for establishing nurseries 	<ul style="list-style-type: none"> At least four short-term trainings at each site At least two training programmes and four group meetings Developing CF plan At least four nurseries to be developed 	<ul style="list-style-type: none"> No. of trainings No. of trainings and group meetings CF report No. of nurseries
Overall feasibility of IP				
Implementation risks/obstacles Low=3/Medium=2/High=1	Cost-effectiveness of risk reduction measures High=3/Medium=2/Low=1	Implementation cost Low=3/Medium=2/High=1	Opportunity cost Low=3/Medium=2/High=1	Incentive measures High=3/Medium=2/Low=1
3	3	2	3	3
C. Safeguard analysis (risks and benefits) (Social, environmental risks and benefits)				
Serious risks	Risk reduction measures	Risk reduction targets	Indicators	
Poor people could be excluded	Unemployed or poor people included	At least 15% of the poor to be part of plantation work	% of poor people engaged in plantation work	
Benefits	Benefit enhancement measures	Benefit enhancement targets	Indicators	
Income opportunities for local people	Selection of plantation workers from the villages near plantation areas	At least 20% of the people living near plantation areas should get work	% of the people living near plantation areas getting work	
D. Monitoring protocol				
The ways in which the IP can ensure effective monitoring	<ul style="list-style-type: none"> Regular monitoring by provincial government, forest department headquarters, state and district and township forest departments, and the local communities Allocation of adequate budget for monitoring 			
Implementing partners	<ul style="list-style-type: none"> State government, forest department headquarters, state and district and township forest departments, and the local communities 			
Proxy indicators of impact on forest area or its condition	Proxy impact indicators		Target	
	<ul style="list-style-type: none"> Large areas of plantations established, resulting in an increase in the forest carbon stock Development of nurseries 		<ul style="list-style-type: none"> 100 hectares (ha) of plantation established and maintained At least four nurseries developed 	
IP implementation targets	<ul style="list-style-type: none"> In total, 100 ha of plantation established Four nurseries developed CF plans drafted Trainings and group meetings conducted Landscape restoration plan for each site developed 			

Monitoring protocol		Indicators	Source of data or data collection methods	
	Proxy indicators	<ul style="list-style-type: none"> • Areas of plantation establishment • No. of nurseries developed 	<ul style="list-style-type: none"> • Field surveys and completion reports • Field surveys and completion reports 	
	Intervention indicators	<ul style="list-style-type: none"> • Trainings and group meetings for CF and plantation establishment • Areas of plantations • No. of nurseries 	<ul style="list-style-type: none"> • Training completion reports • Field observation and completion reports 	
	Risk reduction indicators	<ul style="list-style-type: none"> • At least 15% of the poor engaged in plantation work 	<ul style="list-style-type: none"> • Field observation and completion reports 	
E. Budget plan (five years)				
Introduction	<ul style="list-style-type: none"> • Standard government price norms are used • Annual increase in costs by 10% factored in to allow for inflation 			
Implementation cost, including of monitoring	Activity	Budget (USD)	Remarks	
	Landscape restoration approach and land use planning	15,000		
	Establishment of nurseries	30,000		
	Establishment of plantations in degraded forest areas	40,000		
	Application of techniques for CF and agroforestry; formation of CF user groups	20,000		
	Establishment of CFs and agroforestry plantations	30,000		
	Planting campaigns, financial and technical support, monitoring and assessment of plantations	20,000		
Total Budget: USD 155,000				



ICIMOD

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

On behalf of:



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

of the Federal Republic of Germany