Application of Restoration Opportunities Assessment Methodology (ROAM) in Asia

Summary of findings from the first Asia regional ROAM learning exchange

Editors: Li Jia, Jake Merten, George Burke, Elaine C. Mumford

NORWEGIAN MINISTRY OF
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Acronyms and abbreviations

ANR	Assisted Natural Regeneration
CFi	Community Fisheries institutions
CFA	Community forest area
CIAT	International Center for Tropical Agriculture
CPA	Community protected area
CSO	Civil society organisation
DFID	UK Department for International Development
EP	Enrichment planting
ER	Extended rotation
FAO	Food and Agriculture Organization of the United Nations
FLR	Forest Landscape Restoration
FSC	Forest Stewardship Council
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographic information system
INDC	Intended Nationally Determined Contributions
IUCN	International Union for Conservation of Nature
KNOWFOR	International Forestry Knowledge Programme
LLS	Livelihood and Landscape Strategy
MFLR	Mangrove Forest Landscape Restoration
MWI	Megacities and Watersheds Initiative
MoEFCC	Ministry of Environment, Forest and Climate Change
NGO	Non-governmental organisation
NRRP	National Rehabilitation and Restoration Plan
NRRPM	National Reforestation and Restoration Program
NSI	Native species introduction
NTFPs	Non-timber forest products
ODA	Official Development Assistance
PA	Protected area
ROAM	Restoration Opportunities Assessment Methodology
RUSLE	Revised Uniform Soil Loss Equation
SUF	Special use forest
SWC	Soil and water conservation
TNC	The Nature Conservancy
TRI	The Restoration Initiative

Executive summary

With the continuous degradation of forests, particularly tropical forests in Asia pacific region, the world needs urgent solutions to restore degraded forest landscapes. The political will of Asia regional governments for recovering forest cover is strong. More than 24 million ha of land are pledged towards the Bonn Challenge for restoring degraded land using Forest Landscape Restoration (FLR) principles. Furthermore, many more ambitious national and sub-national restoration programmes exist. If done well, restoration can not only deliver the environmental and socio-economic benefits that millions of forest-dependent communities rely on, but also transition our economies and societies to a more forward-looking model.

The Restoration Opportunities Assessment Methodology (ROAM) has encapsulated the philosophy, principles and operational guidance of FLR, an approach that is gaining recognition among restoration practitioners particularly for countries that need to address the dual challenges of nature conservation and socio-economic development. Since its release in 2014, ROAM has been piloted in many countries, supporting governments and land managers to implement FLR and address real policy objectives, including recovering forest cover, enhancing food security, addressing climate change challenge and preparing ground-level restoration models for REDD+ action, and supporting local communities to transform land management practices to meet current and future needs.

Using ROAM, six different landscapes in Asia-Pacific have developed pragmatic landscape restoration strategies that meet FLR objectives, driven by interactive stakeholder engagement processes and based on thorough baseline research of local land use legacy and available land for restoration; the types and potential of appropriate FLR interventions and socio-economic cost-benefit analysis; and a comprehensive diagnosis of key barriers and enabling factors for restoration programmes in legal, institutional, policy and financial dimensions. The six case studies all employ the ROAM process, but still show great diversity in their ecosystem types (from mountain to coastal mangrove landscapes), FLR scale (from national to local, and from focusing on halting deforestation to forwarding-looking plantation management models), and the subsequent FLR strategies.

Looking across different ROAM country case studies, a number of common lessons learnt emerge:

- There is a significant diversity in the socio-economic, environmental contexts, degradation drivers, and the scale at which the ROAM approach was applied. This showed the ability of ROAM to address different restoration challenges in a wide spectrum of landscape contexts and for different restoration needs.

- A well-structured, stakeholder-driven spatial analysis on degradation drivers and restoration potentials has proven to be a powerful way to stimulate stakeholder discussion on the threats and problems facing landscape restoration objectives and needs, as well as helping them to reach consensus on future restoration benefits and distribution.

- The key barriers to restoration success continue to be insufficient restoration funding and the lack of well-established fundable restoration models. Across different landscapes, there seems to be a need to continually look for innovative and locally appropriate restoration models, as well as all the technical and financial information for such models, underlining the importance of identifying locally appropriate restoration interventions and the associated cost-benefit analysis.

- Insufficient technical capacity continues to hinder the uptake of FLR. In some countries there is already a strong technical capacity in plantation establishment, but the transition to landscape-level restoration implementation that adheres to FLR principles remains lacking. Enhanced extension support is an effective measure that land managers could take to enhance their performance, particularly relating to landscape-level planning, stakeholder engagement, sustainable use of farming additives, longer rotation of plantation management and certification.

- In landscapes that are more advanced in FLR implementation, local heads of the government, especially line agencies and government representation outside of the traditional forest sector, play a crucial role. However, this is continuously overlooked in many restoration programmes, due to the different disciplinary backgrounds practitioners have and dominant institutional barriers. A potential strategy to overcome these difficulties is to identify common goals and shared interests through multi-stakeholder platforms, which again highlight the role of stakeholder engagement and consensus-building.

In summary, ROAM has been applied in diverse landscape contexts in Asia in the past few years, helping to reverse the trend of deforestation and forest degradation. Through the implementation of FLR, ROAM provides scalable pragmatic solutions to addressing different policy goals, be it the enhancement of local livelihoods, the conservation of critical habitats, or combatting climate change.

The ROAM approach has gained recognition and has the potential to provide lessons learnt what would be valuable for restoration practitioners and policymakers across different countries and landscapes.

1 Background

Over the last several centuries, vast forest areas have been cleared as agricultural land has spread and human populations have grown. About 30% of global forest cover has now been completely cleared and a further 20% has been degraded. Land degradation and loss of supporting ecosystem functions now impact 24% of the global land area, equivalent to foregoing the production of 20 million tonnes of grain per year. The costs of lost agricultural productivity, deforestation and the wider impacts of land degradation are EUR 1.5 to 3.4 trillion, or approximately 3.3% to 7.5% of global GDP. Water security for billions of people is also under pressure, with the water crisis a top-ranked global risk. One-third of the world's population live in water-stressed regions, but this is likely to grow to 50% by 2050. Restoration of degraded land not only helps people cope with these trends but also leverages nature's intuitive solutions for pressing environmental concerns and climate change[1].

Degradation accounts for 5% of GDP based on commonly cited figures. In effect, this means that countries are fighting poverty and advancing economic development with one hand tied behind their back. Land degradation increases recurrent government expenditure by requiring frequent reinvestment in damaged infrastructure or making the provision of government more expensive. Budgetary appropriations run high to fund emergency programmes, and can shorten the lifetime and lower the rate of return on capital investment projects. For example, in a series of fire and haze events in 2015, Indonesia experienced forest degradation of 2.6 million hectares, some 1750 million metric tons of carbon dioxide-equivalent emissions ($MtCO_2$ eq), and 100,000 premature deaths across Indonesia, Malaysia, and Singapore[2] [3]. The World Bank estimated the economic loss from the Indonesian Fires was over US $16 billion[4].

Breaking the spiral of loss and degradation and restoring these lands would bring many benefits. Restored land supports ecosystem services and biodiversity through the supply of clean water, reduced erosion and wildlife habitat, as well as of biofuel and other forest products. Forests and trees mitigate climate change by sequestering carbon. Beyond environmental benefits, the multiple benefits of landscape restoration can reach and make a positive impact on millions of citizens and communities by enhancing soil fertility, boosting agricultural productivity, increasing and diversifying rural income, and strengthening resilience to pests and natural disasters.

More than two billion hectares worldwide are suitable for restoration. Most of these lands are in tropical and temperate areas, as identified by a global assessment of forest landscape restoration opportunities[5]. One and a half billion hectares would be best-suited for mosaic restoration, in which forests and trees are combined with other land uses, including agroforestry, smallholder agriculture, and settlements. Up to about half a billion hectares would be suitable for wide-scale restoration of closed forests. Croplands and densely populated rural areas on former forest lands amount to a further one billion hectares. They do not offer extensive restoration opportunities in terms of area, but some of this land would benefit from having trees planted in strategic places to protect and enhance agricultural productivity and other ecosystem functions.

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[1] IUCN, September 2016. IUCN programme 2017-2020. Page16, 26, 36-37. https://www.iucn.org/sites/dev/files/iucn_programme_2017-2020-final_approved.pdf
[2] https://www.seas.harvard.edu/news/2016/09/smoke-from-2015-indonesian-fires-may-have-caused-100000-premature-deaths
[3] World Bank, December 2015, Reforming Amid Uncertainty, Indonesia Economic Quarterly, p22.
[4] Ibid.
[5] http://www.bonnchallenge.org/content/global-opportunity-map

In Asia, the areas suitable for restoration are over 400 million hectares. More than 150 million hectares are suitable for wide scale restoration; while around 300 million hectares are suitable for mosaic landscape restoration[6].

While a global assessment of FLR could potentially provide some indication of the extent and location of areas suitable for restoration within a given country, the constraints inherent in a global assessment (including the low resolution and the inability to use country-specific data) make it of limited use for supporting restoration strategies within countries. The global assessment therefore needs to be refined and improved through national and sub-national assessments, the results of which may be quite different from those seen in the global assessment map.

A landscape FLR assessment can:

1. Provide missing landscape-level land-use and economic analysis data that can improve and inform more effective reforms (e.g. of land tenure or of agricultural and forestry sectors);

2. Provide an overview of the priority areas for restoration, the different restoration options available and their relative costs and benefits;

3. Identify key stakeholder groups who will need to be involved in any follow-up work on FLR in the country;

4. Build high-level support for FLR by engaging key policy and decision-makers from different sectors as well as other stakeholders with interests in, or influence on, how landscapes are managed;

5. Enhance a shared understanding of FLR opportunities and the value of a multi-sectoral, landscape-level approach to restoration, by bringing government agency staff, civil society actors and researchers together to work on the assessment.

[6] Minnemeyer, S., Laestadius, L., Sizer, N., Saint-Laurent, C. & Potapov, P. 2011. A world of opportunity. Washington, DC, World Resources Institute. http://www.wri.org/restoringforests

2 The Restoration Opportunities Assessment Methodology (ROAM)

Developed by IUCN and the World Resources Institute, ROAM provides a flexible and affordable framework for countries to rapidly identify and analyse specific priority areas for FLR. A ROAM application can deliver six main products:

1. A shortlist of the most relevant and feasible restoration intervention types across the assessment area

2. Identified priority areas for restoration

3. Quantified costs and benefits of each intervention type

4. Estimated values of additional carbon sequestered by these intervention types

5. A diagnostic of the presence of key success factors and identification of strategies to address major policy, legal and institutional bottlenecks

6. Analysis of the finance and resourcing options for restoration in the assessment area.

An increasing number of countries are proactively conducting country-specific assessments of FLR opportunities, including Malawi and Uganda in Africa; Costa Rica, Brazil and Mexico in South America; and others.

In Asia, there has been a sharp increase in both interest in applying FLR as well as in conducting national or sub-national FLR opportunities assessments using ROAM. As of March 2018, IUCN has been involved in ROAM processes in six landscapes in the Asia-Pacific region, including:

1. The provinces of Kampong Thom, Preah Vihear, and Siem Reap, Cambodia

2. A national network of state forest farms, China

3. The state of Uttarakhand, India

4. Tanjung Panjang Landscape, Sulawesi, Indonesia

5. Myanmar

6. Quang Tri Province, Viet Nam

Chapter 3 of this report documents the implementation of ROAM processes in the six landscapes. Additional discussion on FLR opportunities in Lao PDR, Thailand and Sri Lanka is captured in chapter 4. Chapter 5 provides a comparison of different ROAM processes and attempts to draw common lessons learnt.

With understanding the importance of FLR and building on the experience of ROAM in Asia region, Chapter 6 discusses the international and national opportunities for scaling up FLR initiatives and provides a list of action points for the IUCN regional network in Asia.

3 Country experiences

3.1 Cambodia (Kampong Thom, Preah Vihear, and Siem Reap)

According to FAO reports, as of 2015 Cambodia had approximately 53% forest cover, which – despite being in decline – is a relatively high percentage when compared with other countries in Indo-Burma. In light of this, Cambodia is still in a good position to secure its wealth of valuable natural resources through landscape-level approaches to forest landscape restoration and improved land management.

Cambodia's Intended Nationally Determined Contribution (INDC) to maintain 60% forest cover in 2030 is ambitious but also achievable if the underlying drivers of forest degradation can be addressed. This report utilises ROAM to determine an appropriate suite of restoration interventions that can restore forests and improve the ecological function of multi-use landscapes.

The target provinces of this study – Kampong Thom, Preah Vihear, and Siem Reap – make up a large part of the Northern Tonle Sap catchment area. This region includes evergreen, semi-evergreen, deciduous dipterocarp, and seasonally inundated flooded forests, as well as areas of settlements, rice cultivation and upland agriculture.

The landscape restoration interventions proposed in this report are intended to address the specific objectives set forth by local stakeholders: primarily to increase forest cover, reduce soil erosion, increase the availability of non-timber forest products (NTFPs) to local communities, and improve local livelihoods.

This assessment has identified the major underlying drivers of landscape degradation in the region to include: forest encroachment, illegal logging, land conversion for economic land concessions, and forest fires. Considering that many of the forest fires are the result of anthropogenic activities, principally land clearance, it becomes evident that these main drivers are largely the result of people needing new land and more natural resources to support their livelihoods. Forest encroachment and land grabbing are symptoms, not causes, of land degradation.

In order to address these drivers of degradation this assessment provides recommendations for land use changes that will improve the livelihoods of communities managing community forests (CFs), community protected areas (CPAs), and community fisheries institutions (CFis), as well as improve the sustainability and profitability of lands already in cultivation.

Through the analysis of geospatial data and local consultations, degraded areas within the landscape have been identified as well as areas that present viable opportunities for restoration interventions. Degradation within the landscape has been defined as areas having been deforested during three different time spans of 2007-2011, 2012-2014, and 2015-2016; areas of high slope (greater than 15 degrees); and frequently burned areas.

One of the major hurdles to successful landscape restoration in Cambodia is unclear land tenure. For this reason, the opportunity areas for restoration focus mainly on areas with clear land tenure rights and areas under community management. These include protected areas (PAs), conservation corridors, CFs, CPAs, and CFis. Additionally, riparian areas and flooded forests were considered opportunity areas given their importance for improving water quality and fisheries, and reducing erosion.

Guided by stakeholder input and credible spatial analysis, the multi-criteria analysis combined locations of degradation and FLR opportunity in the target landscape. Paired with key stakeholder discussion and field surveys of restoration options, the results of the multi-criteria analysis (MCA) was further developed to a spatial explicit of FLR opportunity maps. The ROAM process also provided a draft list of packages of FLR options, including their CBA results and technical guidance.

Table 3.1: Potential restoration areas for each FLR option within each land use category (hectares). Green highlighted cells indicate opportunity areas where that intervention option is permitted. Note that intervention option 8 was not included in the restoration opportunities map and is excluded here.

Option	Species	PA	CPA	Conservation Corridors	CF	CFi	Flooded Forest	Riparian Buffers	Total Area (no overlap)
1	Native trees	190,440	8,070	34,430	15,650	5,080	3,430	14,490	235,840
2	Native trees with Acacia	240	0	4,440	15,650	0	0	850	15,650
3	Native trees with regenerates	190,450	8,070	34,430	15,650	5,080	3,430	14,490	235,850
4	Assisted natural regeneration	190,450	8,070	34,430	15,650	5,080	3,430	14,490	235,850
5	Protection only	190,450	8,070	34,430	4,680	5,080	3,430	13,860	224,880
6	Luxury timber	240	0	4,440	15,650	0	0	850	15,650
7	Flooded forest regeneration	6,150	510	0	0	10,730	5,490	600	12,100
8	Cassava with peanuts	--	--	--	--	--	--	--	--
9	Cashew plantation	240	0	4,440	15,650	0	0	850	15,650
10	Bamboo	240	0	4,440	15,650	0	0	850	15,650
11	Native trees	11,520	740	2,340	850	430	320	35,260	35,260
12	Bamboo	11,520	740	2,340	850	430	320	35,260	35,260

The creation of a map of grouped intervention options for the three provinces allows the display of a clear visual of restoration priority areas. In coordination with an in-depth cost-benefit analysis, the Cambodia project was able to generate a net present value for 12 restoration options, displaying each one's potential net present value in the study area.

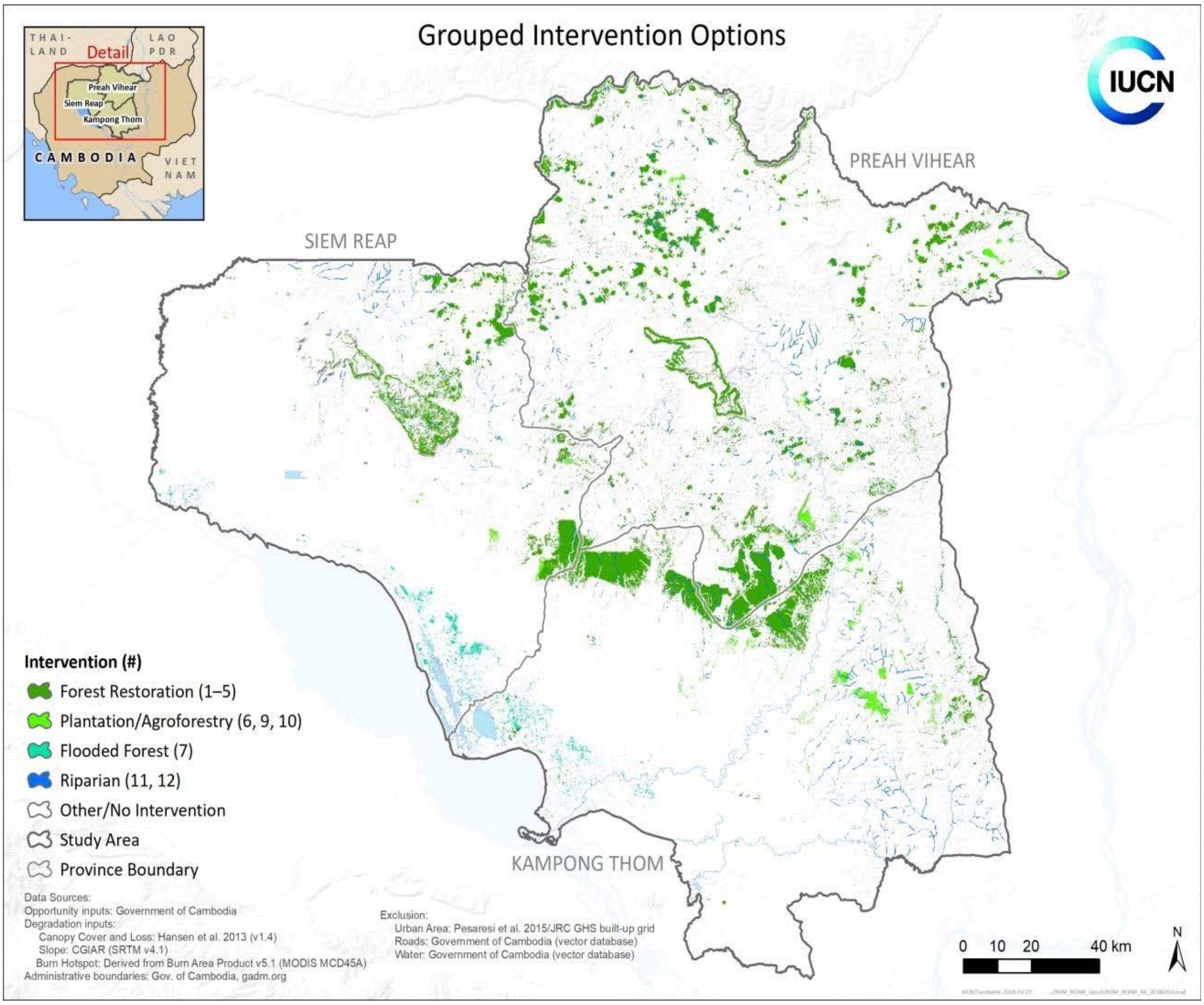

Figure 3.1: Grouped intervention options in Kampong Thom, Preah Vihear, and Siem Reap, Cambodia (source map: Bernacki et al, 2018)

The following figure shows the amount of area identified in the geospatial analysis in each of the various opportunity areas that overlaps with at least one land degradation criterion. Areas of overlap between opportunity criteria and degradation criteria were determined to be priority areas for restoration opportunities.

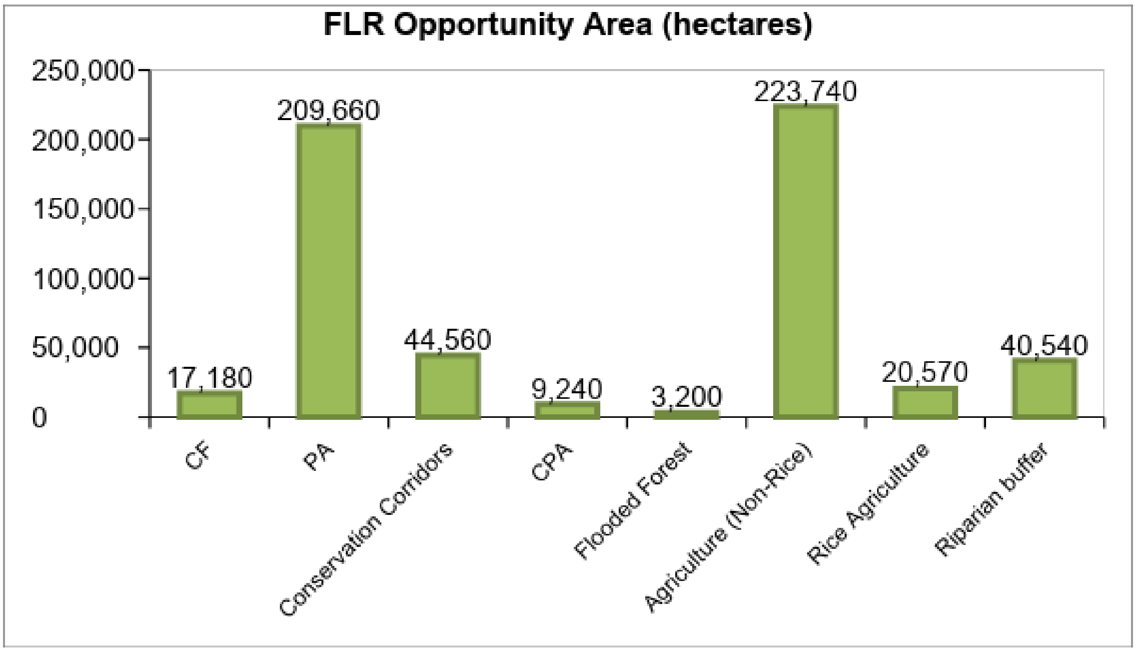

Figure 3.2: FLR Opportunity Areas by types (unit: ha)

According to the FAO forest cover estimate from 2015, to meet the INDC target of 60% forest cover by 2030 Cambodia needs to restore approximately 1.2 million hectares of forest. Approximately one-quarter (approximately 280,000ha) of that area has been identified inside of opportunity areas in this assessment, and restoring some of the degraded land outside these opportunity areas (approximately 325,000ha) could add considerably to this 60% forest cover goal. Given that the opportunity areas are largely areas with clear land tenure rights, this represents the most easily accessible land for forest restoration in Cambodia.

It should be noted that focusing restoration efforts solely in public and community-managed areas would not likely be sufficient to meet these ambitious targets for restoration. Given this, in order to meet these targets, it will be critical to also engage private landowners and users to expand these interventions into private land.

Recommendations for FLR interventions include options for native forest restoration on deforested land with an emphasis on NTFP species in CPAs, economic timber species in CFs, and locally extirpated species in PAs and conservation corridors. Restoration of flooded forests in and around CFis is recommended due to their critical role in creating and maintaining healthy fisheries near the Tonle Sap.

Throughout agricultural areas, general principles of conservation agriculture should be applied (e.g. green mulching and reduced tilling) and alternatives to season-after-season cassava monoculture should be considered. These alternatives could include intercropping with peanuts, growing cassava with grass hedgerows (especially on sloping lands), or implementing new rotation cropping strategies such as maize-maize-fallow, maize-maize-sunflower, maize-soybean-fallow, and maize-soybean-sunflower, which have been shown to reduce erosion and improve soil fertility.

An additional option for unproductive rice cultivation land and areas for riparian restoration is planting of bamboo species, which can be utilised in construction or sold as canes, shoots, or propagative cuttings.

3.2 China (State Forest Farms)

China has a population of over 1.3 billion people and is the most populous country in the world. Its landscapes vary significantly across its vast width. It is one of 17 mega-biodiverse countries, lying between two major eco-zones. Nationally, the country has over 34,000 species of animals and vascular plants, thus making it the third most biodiverse country worldwide.

A major environmental problem for China in general is the continued expansion of its deserts, in particular the Gobi Desert in the north and northwest. There have been ongoing efforts to plant barrier trees or a "green wall" for roughly four decades in an attempt to reduce sandstorm frequency and stop desertification. Despite this conservation method, prolonged drought and poor agricultural practices have brought dust storms that plague northern China every spring season, spreading as far as the Korean Peninsula and Japan. The primary concerns framing the forest landscape restoration programmes for the Chinese government and local NGOs are more than just forest cover and land degradation, but also other landscape functions such as water quality, erosion, and pollution control. As the most populated country on the planet, China needs its FLR programmes to address these other environmental and development needs at local and landscape level. If successful, their approaches and lessons learnt would be of great value to developing countries and regions.

For the last decade or so, there have been multiple key FLR projects undertaken by IUCN in partnership with local government and NGO partners, including the Livelihood and Landscape Strategy (LLS), Megacities and Watersheds Initiative (MWI), and The Restoration Initiative (TRI). They focus on different aspects of conservation at the stakeholder, watershed, policy, and other levels. For LLS, which is applied primarily in the Miyun watershed (the drinking water reservoir for the 19 million residents of Beijing), there was a focus on field-level demonstration of integrated forest management practice compatible with development strategies through the implementation of a participatory forest management plan. Measures were also taken to improve local livelihoods and wellbeing, such as putting in place a sustainable energy use framework (energy efficient stoves and bedding systems); rural cooperation development; and a multi-stakeholder platform for the key stakeholders of Beijing municipality and Hebei province for information sharing, joint watershed management and restoration efforts, as well as discussion on PES schemes.

MWI continued to the work in the Miyun Reservoir Watershed, which is a key source of Beijing's water supply. It includes work with three major work streams to a) demonstrate nature-based solutions in priority sub-basins, b) advocate for the watershed and increased institutional development, and c) monitor the results and use them to educate stakeholders, decision-makers, and the public.

China's national attention is now turning towards improving the quality of forests and maximising ecosystem service benefits ranging from water regulation and carbon sequestration to the mitigation of natural disasters arising from climate variability and long-term change. The TRI project has the goal to reform logging lands to management zones, with 3 municipalities and forest landscapes in general. There is a focus on forest quality and soil and water conservation, using the metrics discovered to assess how the ROAM process can transform concerted local restoration efforts. This is a multi-tiered process involving a) a focus on State Forest Farms; b) use of FLR and SFF reform; c) intervention at the site, municipal, and national levels; and d) using field, policy, institutional, and knowledge-based components to outline the continued study. Specifically, the project will enable China's State Forestry Administration to develop and test new standards of planning, implementation, monitoring and ecosystem service valuation, building expertise and awareness to support longer-term and broader restoration initiatives far into the future. Centred around the state forest farm system of former production forests covering 8% of national territory, the project will increase collaboration across sectors and scales to restore forest ecological functions and increase the benefits of forest ecosystem services to society.

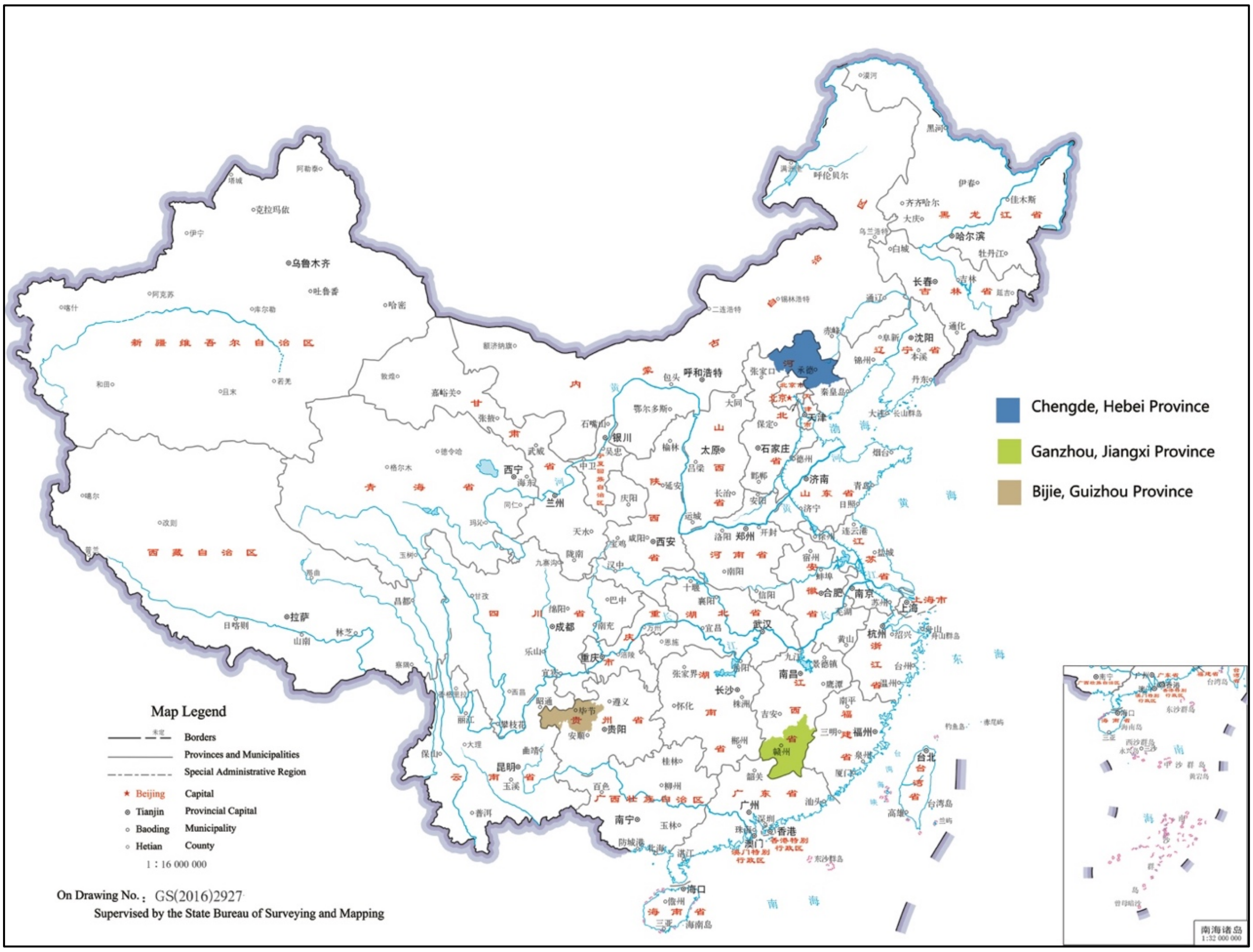

Figure 3.3: Map of China indicating the locations of pilot counties: Bijie City, Guizhou Province (SW); Chengde City, Hebei Province (NE); and Ganzhou City, Jiangxi Province (SE). (Source: Modified based on map source from IUCN, 2018)

3.3 India (Uttarakhand)

India pledged the largest amount of degraded landscape in Asia toward the Bonn Challenge, 13 million hectares of degraded land to be restored by 2020, and an additional eight million hectares by 2030. These restoration initiatives have the potential to provide economic benefits totalling US $6,594 million. Uttarakhand is the key IUCN study site (in particular, the two districts of Pithoragarh and Garhwal). It was formed in 2000 as the 27th state of India and is located in the mountains of Uttar Pradesh.

Uttarakhand has 45.43% of its geographical area under forest cover. A large proportion of the human population is rural (69.77%). Since 11 districts in Uttarakhand are hill districts (covering approximately 86% of the state), Uttarakhand is a good representative of Himalayan states. Hence, the ROAM findings and recommendations from Uttarakhand could also be applicable to other Himalayan states. While the ROAM assessment was carried out for the entire state of Uttarakhand, two districts – Pithoragarh and Garhwal – were selected as intensive sample sites for detailed stakeholder consultations, which were a key part of the assessment exercise.

The landscape restoration interventions proposed in this report are intended to address the specific needs that were identified by different stakeholders – relevant government departments and line agencies, research institutions, NGOs and civil society organisations (CSOs), people's elected representatives, van panchayats (village forest councils) and local communities at state, district and block levels. Stakeholder consultations identified specific interventions for augmenting the health and productivity of degraded landscapes to improve the quality of life of local dependent communities and for enhancing the recharge of natural springs and other ecosystem services. Restoration of degraded forest landscapes would also enhance the mitigation and adaptation potential of the landscape and local communities to climate change.

The ROAM assessment identified the following as the major drivers of landscape degradation in the state: forest fires, invasion by unwanted species (especially chir pine), free livestock grazing, landslides, increasing anthropogenic pressure, and growing community apathy towards agriculture and forest management. The assessment also provided an overview of the major restoration-related efforts undertaken by various agencies, both government and non-government, in the state and in the two intensive sample sites.

Using multi-criteria spatial analysis, the assessment developed a functional degradation map for the state of Uttarakhand; functional degradation refers to the deterioration in quality and standard of performance of a functional unit or area due to degradation drivers.

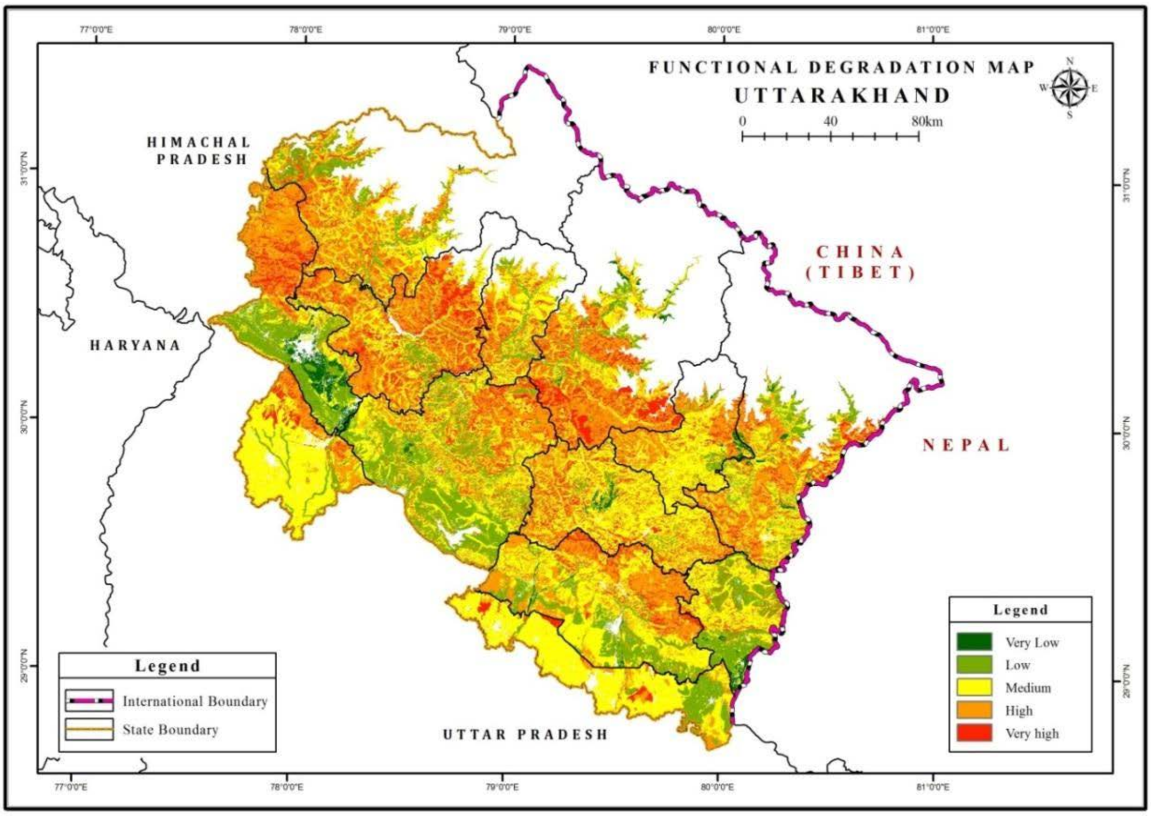

Figure 3.4: Functional degradation map of Uttarakhand (Source map: Bhattacharjee et al., 2018)

As per the assessment, nearly 69.4% of the state of Uttarakhand is experiencing some form of functional degradation, with 21% of the geographical area under high levels of degradation and 8.8% under very high levels of degradation. Most of the functional degradation is in the mid elevation zone (1,000–2,000 m asl). Using the functional degradation map as one of the base layers, along with other factors and criteria identified through stakeholder consultations, the assessment prepared an FLR priority map for the entire state of Uttarakhand. This is crucial because unless one knows where to restore and what the priority areas may be, a restoration plan will neither be feasible nor practical. The FLR priority map was prepared using multi-criteria spatial analysis, which examined a combination of ecological, social and biophysical factors such as forest density, forest type, population, poverty, elevation, slope, and aspect, among others. The FLR priority map can be used to facilitate holistic, collaborative planning and implementation of interventions by different agencies and avoid duplication of resources and efforts.

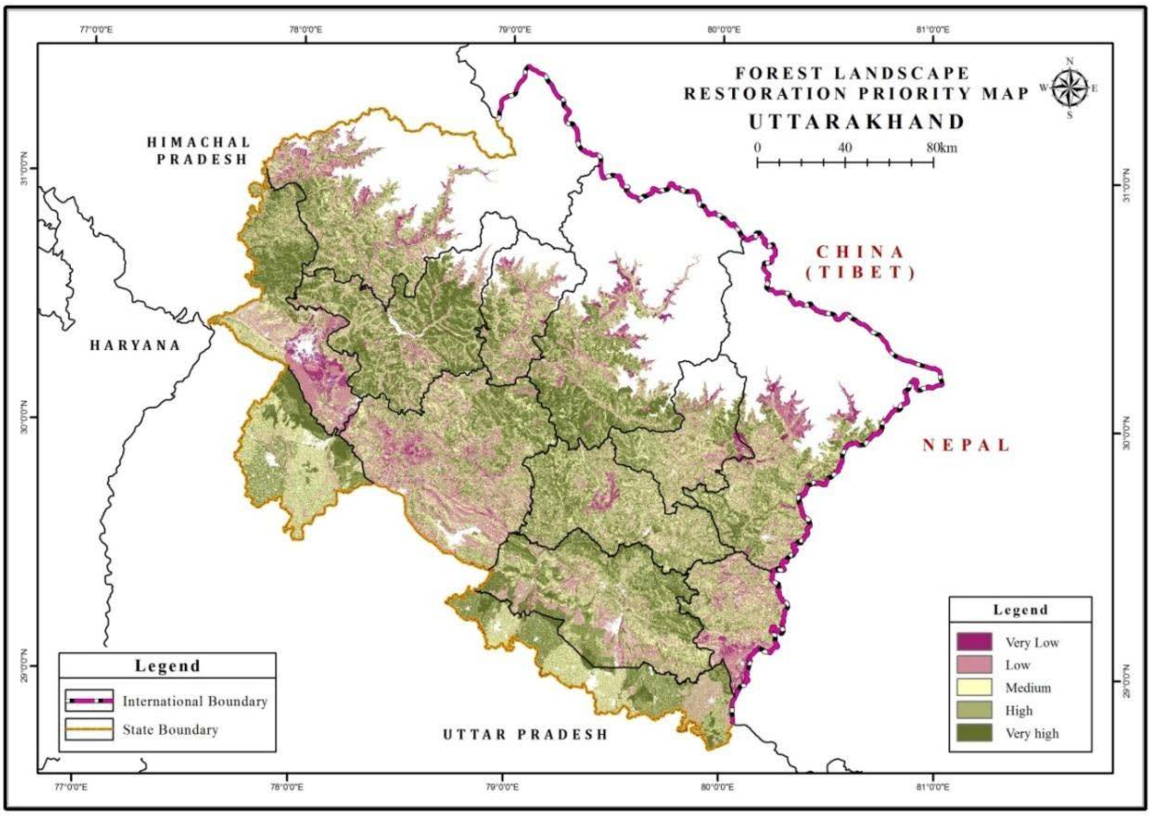

Figure 3.5: Forest landscape restoration priority map of Uttarakhand (Source map: Bhattacharjee et al., 2018)

According to the assessment, 69.6% of the geographical area of the state is in need of restoration using the FLR approach, with 19.1% of the state having high FLR priority and 18.1% having very high FLR priority. The process identified the mid-elevation zone (1,000–2,000 m asl) as the highest FLR priority zone.

This report presents the identified restoration interventions as per the stratification of the assessment area (i.e. altitudinal zones) of the state. The suggested restoration interventions for each altitudinal zone are summarised in table 2.3 below.

Table 3.2: Suggested restoration interventions for different elevation zones in Uttarakhand

Elevation Zone	Landscape characteristics	Recommended restoration interventions
High altitude zone (2,000–3,000 m asl)	● Characterised by high tectonic activity, frequent landslides, intense precipitation, etc. ● Rich in medicinal and aromatic plants (MAPs), forests and biodiversity, alpine meadows and sacred natural sites	● Disaster management ➢ Establishment of disaster management mechanisms (especially at district level) - repositories of all information - disaster maps, vulnerability analysis etc. ➢ Use of bio-engineering measures (mountain risk engineering techniques) for control of flash floods, soil erosion and small-scale hill slope instabilities ➢ Capacity building of community on disaster preparedness and mitigation ● Forest protection through promotion of sacred groves/spiritual forests ➢ Documentation on sacred sites ➢ Documentation of the process, key players, results and incentives to improve the mechanisms through which communities create new sacred sites (dev vans) ➢ Documentation of case studies on community-notified sacred sites and their impact on regeneration of these sites ➢ Promotion of the concept of dev vans across the state and their scale up where possible ● Promotion of livelihood options ➢ MAP cultivation (on abandoned cropland and community forests) ➢ Promotion of eco-tourism
Mid altitude (1,000–2,000 m asl)	● Forest-dominated region (a large part under community forests) ● Rain-fed agriculture ● Increasing urban centres ● Chronic forest degradation through invasion of chir pine ● Increasing water scarcity	● Forest fire management ➢ Introduction and protection of broad-leaf and non-timber forest product (NTFP) species (e.g. Kaifal (*Myrica esculenta*) and Amla (*Emblica officinalis*) in areas occupied by chir pine. Engagement of communities in forest fire control (including through use of technology, such as mobile phones and applications) ➢ Engagement of communities in forest fire control (including through use of technology, such as mobile phones and applications) ➢ Scaling up of schemes using pine needles for economic activities (bio-briquetting, gasifiers, paper making, etc.) ● Promotion of community forestry through van panchayats

	• Incidences of forest fire	➢ Skill building and knowledge sharing, including pilot implementation of community forest based carbon mitigation projects (REDD+ schemes) ➢ Livelihood options for van panchayats (nature-based tourism, NTFP/wild edible plant-based livelihood models) • Promotion of silvi-pastoral systems (on highly degraded land and rangeland) using native plant species with high quality and acceptance in the community • Interventions for rejuvenation of water sources ➢ State-wide hydro-geological assessment to identify spring-water recharge zones ➢ Implementation of springshed management in identified priority sites
Low altitude (< 1,000 m asl)	• Characterised by valleys, moderately sloping regions and flatlands in river plains • Livelihood activities include modern cash crop-based agriculture • Urbanisation • Invasive species (*Lantana* and *Eupatorium spp.*) and human-wildlife conflict	• Promotion of cash crop based agriculture, horticulture and floriculture ➢ Cultivation of aromatic plants such as *Rosmarinus officinalis*, *Asparagus racemosus*, *Ocimum basilicum*, *Matricaria chamomilla* and cut flowers, such as *Gladiolus* and *Lilium spp*., which have a comparatively higher benefit-to-cost ratio compared to traditional crops. • Promotion of agroforestry system (e.g. bay leaf for income generation) • Scientific and community-based management of community forests, silvi-pasture development, use of pine needles, etc. (as recommended for mid-altitude zone)

Besides the interventions mentioned in the table, the report also suggests some cross-cutting interventions that are relevant for all elevation zones; these include improved availability of alternative sources of energy (e.g. LPG, solar heaters and cookers, biogas plants) and plantation of fuelwood and multi-purpose trees in degraded landscapes.

Some of the recommended strategies are already being adopted in the state. For instance, the District Magistrate in Pithoragarh district has started organising a GIS cell under him to ensure convergence of all mapping exercises within the district. The Uttarakhand forest department has also started identification and restoration of dry springs in forested areas.

3.4 Indonesia (Tanjung Panjang landscape)

Indonesia is one of the world's largest island countries, and home to the second most endemic species of any country. The country spans 1.9 million km^2, with 257.6 million people living in the island nation, 46% of those as rural populations. Much of Indonesia's (non-mangrove) deforestation is due to palm oil plantations, which have cleared over 18 million ha of native forests for the expansion of oil palm. Indonesia also has much of its mangrove forests and coastline being degraded at unsustainable rates, and the land converted into aquaculture ponds and agricultural areas. Indonesia has committed to restoring 4.7 million ha of these degraded areas by 2020, which is a 2.5% increase in forest cover, bringing the total official forest cover to 56.5% countrywide.

The Indonesian study site was focused on mangrove forest landscape restoration (MFLR) in Tanjung Panjang, Gorantalo, a critically degraded Indonesian coastal landscape. Tanjung Panjang mangrove cover has reduced from 8,847 ha to some 3,500 ha, about 40% of its primary cover, mainly due to the rapid expansion of fish aquaculture run by South Sulawesi fish farmers. While there were both political willingness and a local policy framework for restoration, tenure disputes coupled with stakeholder conflicts have yet to see much progress.

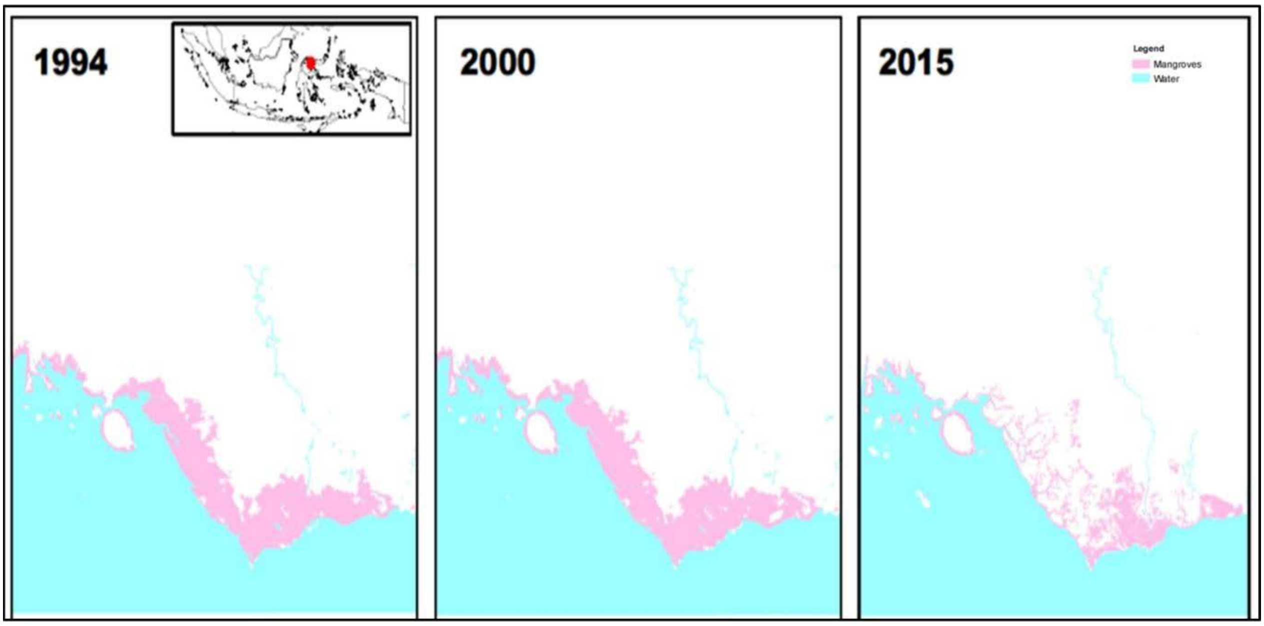

Figure. 3.6: Trend analysis depicting mangrove cover change (pink) between 1994-2015 for Pohuwato District. The map depicts reduction from 8,847 to 3,543 ha of mangroves over a 21-year period. (Source map: Brown et al, 2015)

Through the ROAM process, both the biophysical and socio-economic conditions for restoration were reviewed and stakeholders were facilitated to discuss common grounds on restoration objectives, priorities, timeframes and ecological restoration techniques. Currently, stakeholders have developed three mangrove restoration scenarios in the landscape, totalling 2,493 ha of mangrove restoration priorities out of the landscape of around 5000 ha. The three phases of restoration vary in terms of the extent of ecological restoration implementation in degraded mangrove areas: Scenario 1 calls for conservative mangrove restoration (133 ha); scenario 2 calls for essential ecotone restoration (842 ha), and scenario 3 calls for more ambitious mangrove restoration coverage (2,493 ha).

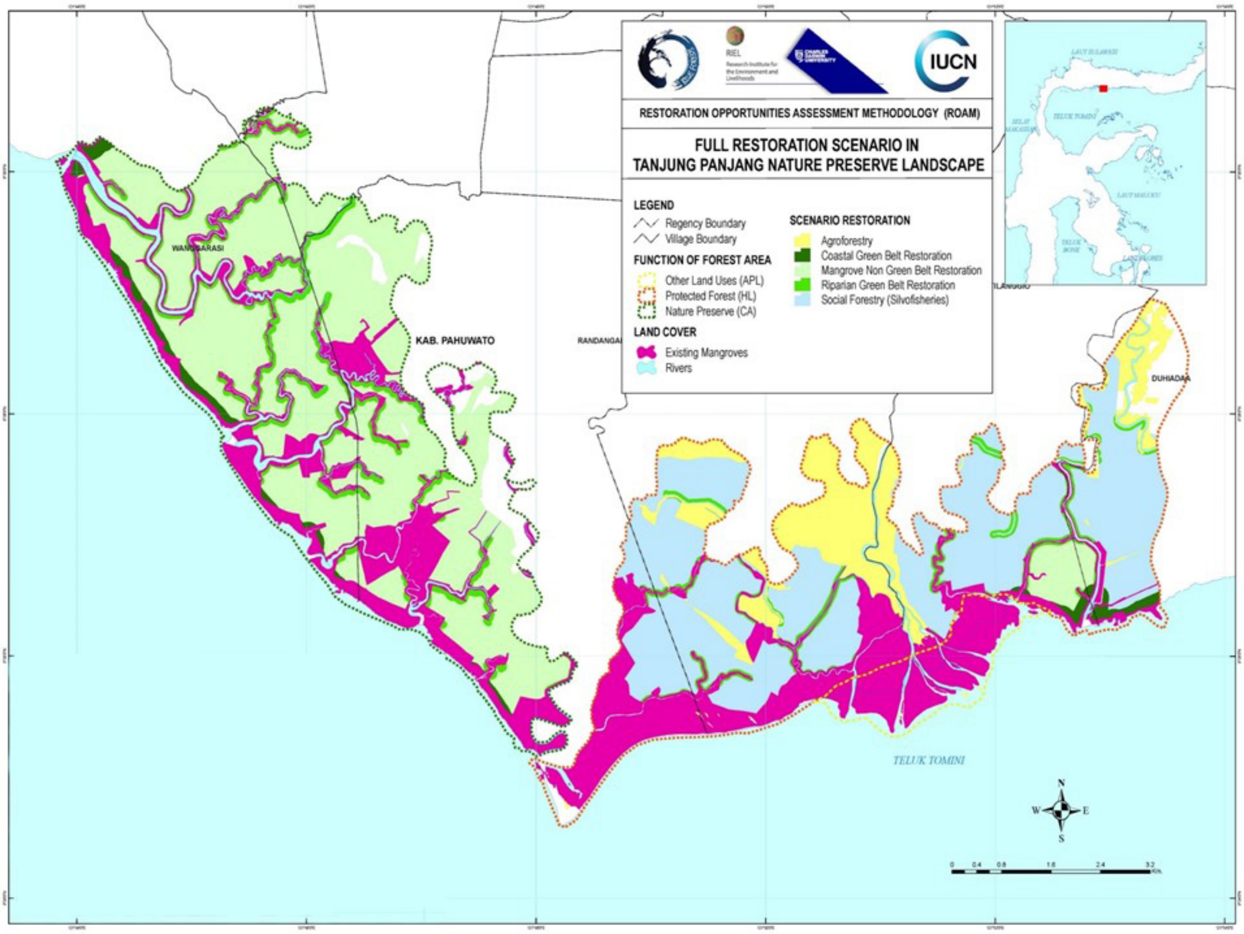

Figure 3.7: Scenario III: Mangrove Forest Landscape Restoration includes 2493 ha of mangrove restoration and 525 ha of hinterland agroforestry enhancement (Source map: Brown, 2018)

The main method of restoration identified primary areas and plans for ecological mangrove restoration (EMR), which requires human-assisted natural and hydrological amendment. Both Scenarios 2 and 3 provide a positive net cost benefit of ecosystem services at different discount rate and restoration performance benefits over a proposed 20-year period, while conservative scenario 1 could result in a net economic loss in the case of poor restoration survival rate.

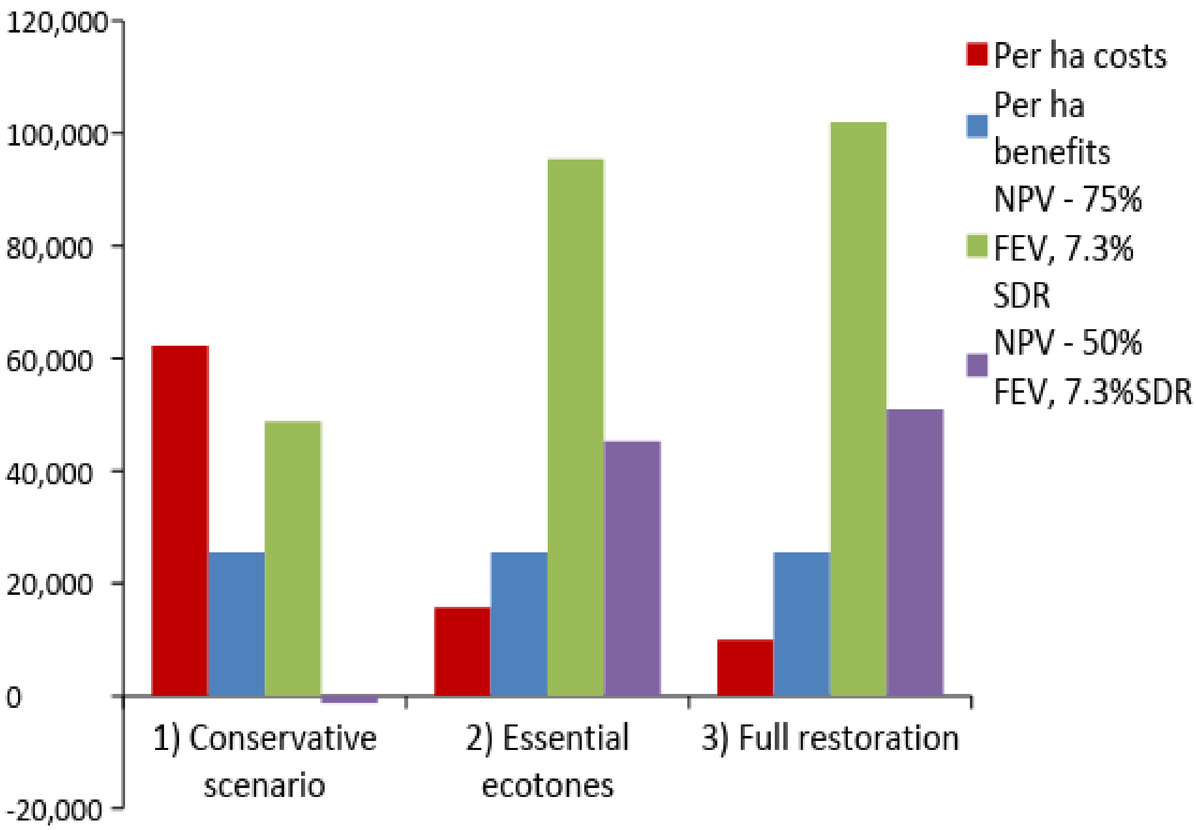

Fig. 3.8: Comparison of cost benefit analysis results of three scenarios. FEV: restoration performance, SDR: discount rate. Figure produced by Li Jia for this report, based on Benjamin Brown's research on the ROAM process on Tanjung Panjang landscape (Source: Brown, 2018).

Overall, there is a positive ecosystem services benefit from restoring the landscape but the main challenge remains that more market-based incentives should be imposed. More incentives will help fish-farms to switch to more sustainable land-use models. Implementation of either Scenario 2 or 3 will require alternative livelihood generation and proper compensation.

Despite the positive ecosystem services gain, various future barriers exist that could impede these restoration scenarios in the future. One of the key barriers identified by stakeholders is insufficient incentives and funds for rehabilitation. Within the current system, restoration methods can be funded through a variety of potential sources, such as government, private foundations, private corporations, development banks, and multilateral institutions. Other financial opportunities are possible, but less likely at a landscape-level scale of restoration. Finance analysis reveals that numerous institutions, both national and international, have mechanisms in place and interest in supporting FLR in Tanjung Panjang.

In light of this challenge associated with tangible financial incentives, a special study was commissioned through the ROAM process on the carbon mitigation impacts of the three restoration scenarios, in the hope of exploring the possibility of tapping into carbon finance. When annual returns on a per ha-1 basis from other afforestation / reforestation (A / R) projects and REDD+ projects are compared to the potential mangrove A / R of aquaculture ponds at Tanjung Panjang under Scenarios 2 and 3 (-32.94 Mg $CO2e$ ha^{-1} $year^{-1}$), results indicate that mangroves may be highly competitive purely from a carbon returns perspective (leaving aside consideration of project implementation costs) with an emissions mitigation potential ~2-4 times greater than that of other currently listed A / R and REDD+ projects encompassing various habitat types (figure 2.9).

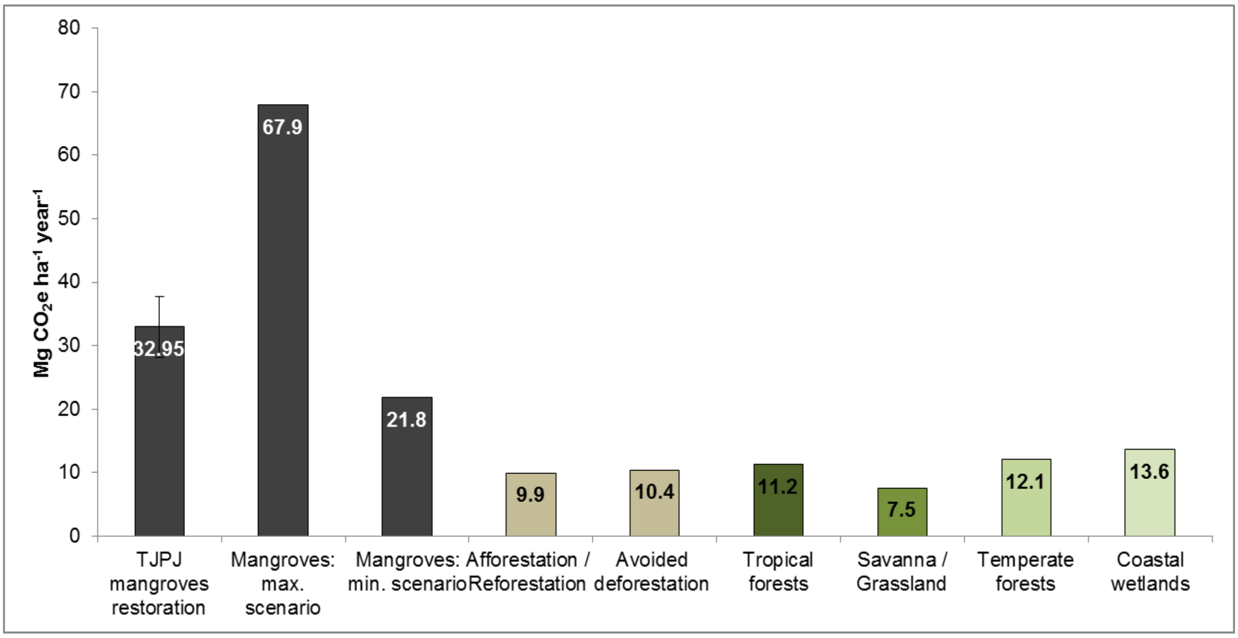

Fig. 3.9: Comparison of potential net ERR resultant from mangrove restoration of aquaculture ponds at Tanjung Panjang with other A / R and REDD+ projects. Note: TJPJ Mangroves restoration: Tanjung Panjang Mangroves restoration data. Other data is sourced from an analysis of selected projects (n= 100) in the VCS project database (accessed May 2018) under the agriculture, forestry, and land-use sectoral scope. Figure produced by Clint Cameron from James Cook University (Source: Cameron, in press).

While the uptake of FLR strategy is yet to be fully realised, during the final validation phase of ROAM, the results of scenario 1 were adopted by the Planning Agency of Gorotalo Province (BAPPEDA) for inclusion in the 2018 budget and planning process.

3.5 Myanmar

Myanmar has undertaken an ambitious plan to restore 1.2 million ha of forest cover to the country by 2026, mainly through its National Rehabilitation and Restoration Plan (NRRP). This would amount to a 2% increase in forest cover, but means immensely more, as it would also stall a deforestation rate from logging that is the third highest in the world (a rate of roughly 1% loss per year for the past 100 years) In light of the forest loss in Myanmar and its government's plan to restore ecosystems for the benefit of Myanmar's people and environment, IUCN conducted a national ROAM mapping process from January 2017 to January 2018, with funding from the UK Department for International Development (DFID) International Forestry Knowledge (KNOWFOR) programme, and The Nature Conservancy (TNC).

The ROAM process identifies strategically important geographical areas in Myanmar to address key FLR objectives, including

- Supporting Myanmar to recover from its forest loss,
- protecting key watersheds which are the foundation of production activities depended on by millions of rural people, and;
- protecting key biodiversity areas,

The identification of objectives and the consequential multi-criteria mappings were conducted in a participatory manner with extensive consultation at national and field levels. The final outcome was produced in support of the National Reforestation and Rehabilitation Program in Myanmar (NRRPM), which was approved in 2016, as well as other restoration efforts in Myanmar, including the Global Environment Facility (GEF)-funded The Restoration Initiative (TRI).

The resulting analysis identified up to 2.5 million hectares in Myanmar as FLR opportunity areas before the exclusion layer was applied. After excluding areas where FLR is impractical (built-up areas, water bodies, etc,) or low priority (only delivering one rather than multiple benefits), 713,000 hectares were identified as priority FLR areas. 1.9 million hectares represent river basins with more than 10% of land covered by priority FLR areas.

As mentioned above, Myanmar, through its NRRPM, aims to restore over 1.2 million hectares of degraded and deforested land by 2026, through plantations, community forestry, agroforestry, natural forest regeneration, and enrichment planting. If NRRPM can invest strategically in priority areas and adopt an FLR approach, implementation of such restoration plans will generate multiple benefits for Myanmar's people and biodiversity.

Priority FLR areas include the dry deciduous forest of central Sagaing Region, the mangroves of northern Rakhine State and the Ayeyarwady Delta, the lowland evergreen forest of southern Tanintharyi Region, and the mixed deciduous forest of the Bago Yoma. The map is indicative only. The identification of specific FLR sites requires on-the-ground assessments. A multi-criteria spatial analysis guided by FLR principles has been completed in Myanmar (see figure 3.10) to appropriately combat both deforestation and other barriers for effective ROAM and FLR strategy implementation. The generated maps culminate in an overarching "Forest Landscape Restoration Opportunities" map for the country, which includes data on forest degradation rates, exclusion zones, and overlapping priority areas, along with additional valuable metrics such as watershed and biodiversity conservation priority zones. This ROAM analysis identified 2.5 million hectares as key FLR opportunity areas, and determined from this data that 713,000 hectares were considered high-priority areas, with 1.9 million hectares classified as river basins that have more than 10% of their land covered by these FLR priority areas.

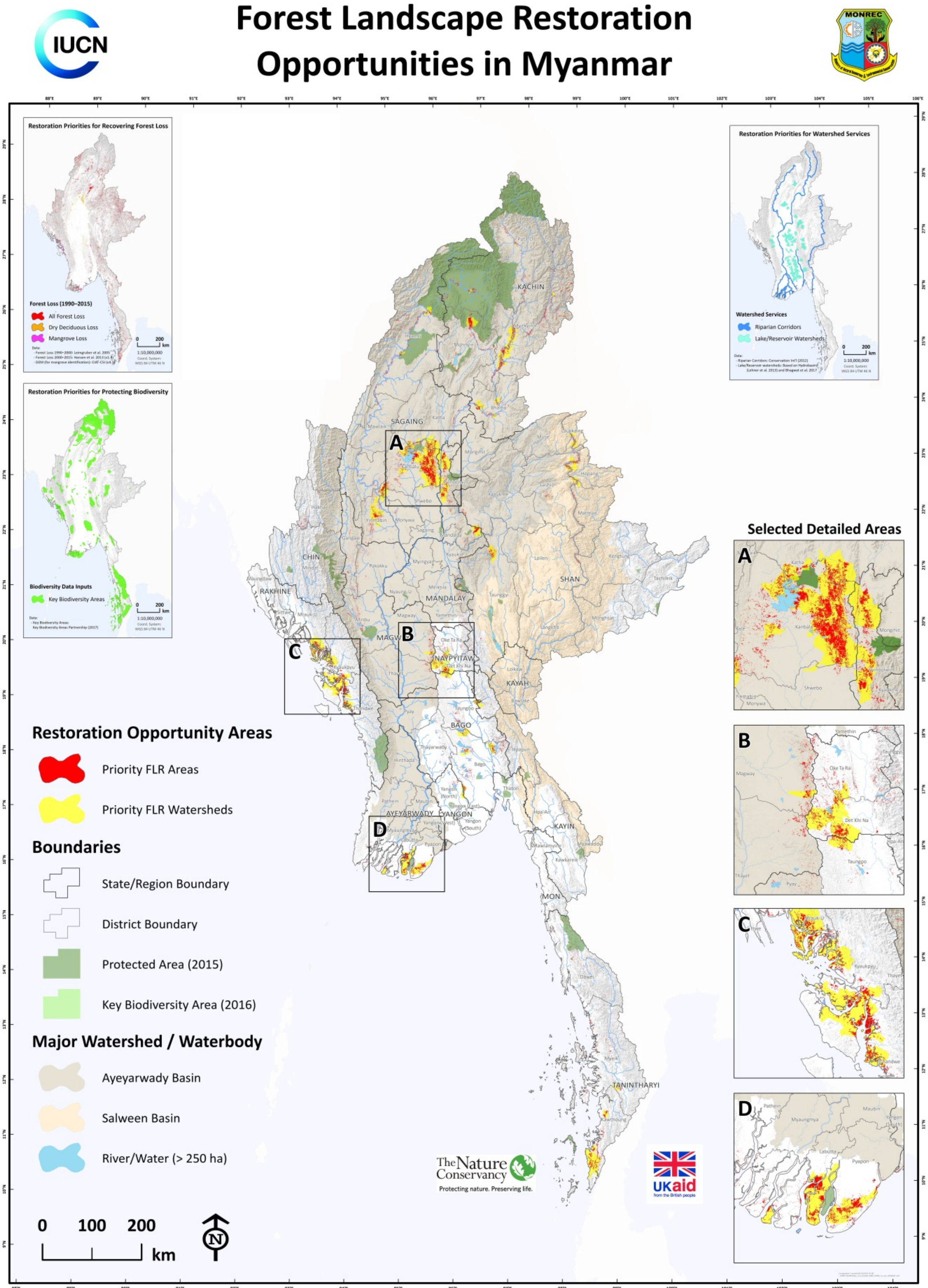

Figure 3.10: Myanmar FLR Opportunities Map (Source map: Constable et al, 2018)

3.6 Viet Nam (Quang Tri Province)

Landscape challenges and goals

Located on the Demilitarised Zone, Quang Tri Province of Viet Nam was devastated during the American War. Following the economic reforms initiated in the late 1980s, the province embraced forest restoration by planting fast-growing eucalyptus and acacia species. Forest cover quickly increased from 98,000 hectares in 1989 to 235,000 hectares in 2016. However, forest quality is generally low, and plantations are almost entirely geared toward short rotation acacia for low-value wood chip. Meanwhile, natural forest has declined. The spatial analysis of the Forest Carbon Partnership Facility shows that between 2005 and 2015, Quang Tri lost 35,000 hectares of natural forest, which was offset by a 57,000-hectare increase in plantations, resulting in a net forest gain of 22,000 hectares.

The planned conversion of natural forest to plantations has been accelerated by rules that allow forest below a certain volume per hectare to be converted to plantation. Virtually all of Quang Tri's good-quality natural forest is confined to two special-use forests (SUFs) or protected areas. Quang Tri also faces increased pressure on its forests from expanding agriculture. The expansion of cassava cultivation on steep slopes is of particular concern. The expected increase in droughts, intensive rainfall events, storms, and pests and diseases in north-central Viet Nam as a result of climate change further undermines the resilience of forest landscapes and forest-dependent communities, demanding a strong and strategic approach to cope with these challenges.

In collaboration with Quang Tri Province, IUCN conducted a ROAM study to map FLR opportunities. Provincial stakeholders defined three FLR goals:

1. Increase forest biodiversity and quality.

2. Enhance ecosystem services (including watershed protection, erosion prevention and habitats for biodiversity).

3. Improve livelihoods for local people to reduce incentives to encroach on the forest.

FLR options

Four FLR options were identified to help meet these goals: 1) enrichment planting and assisted natural regeneration (EP/ANR) in degraded natural forest, 2) extended rotation (ER) and 3) native species introduction (NSI) in plantations, and 4) soil and water conservation (SWC) in rain-fed agriculture.

1. EP/ANR are used to increase the density of desired tree species in degraded natural forests and the protection and preservation of natural tree seedlings in forested areas; these techniques improve forest quality and biodiversity, reduce erosion, improve water quality, and can provide an alternative source of income for farmers and landholders.

2. ER is about converting short rotation acacia plantations into longer rotation plantations to reduce erosion by decreasing the time land is bare after harvesting; this technique reduces sedimentation and improves water quality, while increasing income from high-value timber.

3. NSI is used to transition monoculture acacia plantations to include native species for improved ecological outcomes for improved ecological outcomes. It contributes to the same goals as extended rotation but has a stronger emphasis on biodiversity.

4. SWC refers to measures to reduce soil loss from erosion and increase water retention in agricultural land, e.g., through fertiliser use, intercropping, and cross-slope barriers; these measures also contribute to higher yields for farmers.

These options increase the resilience of forest landscapes and farmers to cope with the impact of climate change, while at the same time mitigating its impact by reducing emissions and enhancing carbon stocks.

FLR priority areas

FLR priority areas were identified using geospatial analysis, which assessed areas in relation to three criteria: forest quality and biodiversity; water quality in key river basins; and erosion risk on sloping land. The table shows a summary of the results.

The total area proposed for FLR is approx. 54,000 hectares or 11% of the total area of the province (taking into account almost 1,100 hectares of overlap between selected areas).

Table 3.3: Priority FLR Areas
Note: PES=Payment for Ecosystem Services; FSC=Forest Stewardship Council; 1,042 hectare of agriculture (rainfed) at high risk of erosion and 36 hectares of plantations in upstream river basins (> 3 hectare) are located within the biodiversity corridor

Restoration area	FLR intervention	Land cover	Area (ha)	Total
SUF (poor quality sites)	• Enrichment planting and ANR of poor quality forest in SUF, with support of PES	• Poor evergreen forest • Bare land with trees	2,197 4,106	6,303
Biodiversity corridor (selected areas)	• Enrichment planting and ANR of poor quality forest and converted land in corridor	• Poor evergreen forest • Bare land with trees • Plantation • Agriculture (rainfed) • Transitional areas	1,383 2,365 497 2,753 2,881	9,879
Plantations in upstream river basins	• Extended rotation and/or native species introduction (and FSC)	• Acacia-monocultures held by large landholders	9,541	13,533
	• Extended rotation and/or native species introduction (and FSC)	• Family-held acacia plantations, >10 ha	1,332	
	• Extended acacia rotation, with support of FSC	• Family-held acacia plantations, 3-10 ha	2,660	

Agriculture (rainfed) at high risk of erosion	● Soil and water conservation through fertiliser use, intercropping, and cross-slope barriers	● Agriculture (rainfed) at high erosion risk, with particular attention for cassava growing areas	24,975	24,975

Natural forest quality was assessed based on forest type, maturity, and substrate. For FLR purposes, “poor evergreen forest” and “bare land with regenerating trees” within SUFs were prioritised for EP/ANR since it will be easier to restore forests within a protected area. To reduce forest fragmentation and enhance biodiversity, a corridor is proposed to connect the two SUFs and allow wildlife to move between them.

Short rotation plantations frequently expose soil to erosion. To reduce soil loss and its impact of water quality through longer rotations, an assessment was made of plantation types in major upstream river basins; 16,674 hectares of acacia plantations were identified for ER. Family holdings of less than 3 hectares covering 3,141 hectares were excluded because ER is not economically feasible on such small holdings.

ER is recommended for all plantations larger than 3 hectares. NSI is recommended for plantations larger than 10 hectares as this requires a longer timeframe to financially “break even.” Given the growing demand for legal timber from Viet Nam’s booming wooden furniture sector, sustainable forest management certification like FSC is relevant to all sizes of timber from plantations. The advantages of FSC certification may be particularly important for small, family-owned plantations.

The Revised Uniform Soil Loss Equation (RUSLE) was used to map areas at risk of soil erosion based on maximum rainfall, slope length and steepness, and erosion-susceptibility of land cover type. Based on this analysis, 27% of rainfed agriculture, almost 25,000 hectares, is at high risk of erosion and recommended for SWC. Most of this 27% is in mountainous areas in the west of the province, mostly in Huong Hoa District, the main cassava growing area. Another 11,600 hectares of transitional area with high erosion risk (especially in the south) were identified that show extensive signs of human use. Due to the dynamic and small-scale nature of agriculture (mainly swidden) in these areas, it is difficult to target them with specific interventions; they require further attention.

Benefits, costs and barriers

FLR options were assessed in terms of benefits, costs and barriers. EP/ANR are effective in restoring degraded natural forest and enhancing biodiversity, but their costs are high and vary greatly depending on the amount of labour required, and success depends strongly on follow-up and maintenance.

Alternatives were explored to transition short rotation acacia plantations. UNIQUE, a German consultancy, has developed two business models: for ER (11 years) and for NSI (long-term, with step-wise acacia replacement during the first 11 years). Longer rotations reduce soil erosion by limiting the amount of time the soil is bare. Both options are more financially profitable than short rotation acacia. However, high investment costs and longer payback periods limit their suitability to larger plantations. Unlike acacia for wood chip, value chains are currently not well developed for timber production, especially of high-value native species.

To address the impact of agriculture on soil erosion, several SWC measures were identified: fertiliser use, intercropping, and cross-slope barriers. While these were analysed for cassava, they are applicable to other crops. Use of fertiliser and intercropping (with black bean and groundnut) increase yields, improve water retention, and reduce soil loss. The application of fertiliser optimised for cassava allows for continuous cropping and increased yields pay back the higher fertiliser cost within two years.

Intercropping is financially attractive but labour intensive. Cross-slope barriers are particularly effective at preventing erosion on steep slopes but yield increases take longer to materialise.

These FLR options make the forest landscape and its communities more resilient to climate change by reducing the impact of storms, high-intensity rainfall, pests and diseases, especially when combined with measures that increase the diversity of tree species. They also contribute to the conservation of carbon stocks and increased carbon sequestration. On a per unit area basis, the highest potential gains are from natural forest regeneration. But in terms of total carbon sequestration over 25-30 years, the highest gains come from agricultural land because this covers a much larger area. This demonstrates the need for a landscape approach to FLR.

Enabling conditions

Four factors are considered critical for successful FLR: 1) motivation of key actors, 2) capacity and resources for implementation, 3) policy support and enforcement; and 4) access to markets and value chains.

In Viet Nam, factors both support and impede FLR. For example, a high degree of tenure security allows farmers to invest in higher-value timber species, but the need to generate immediate income forces most farmers to rely on short rotation acacia for low-value wood chip. Similarly, logging bans often lead farmers to engage in "cut and run" logging rather than in sustainable harvesting of natural forest, which a series of pilot projects in Viet Nam has shown to be profitable.

An issue in Quang Tri is the dominance of acacia, which has expanded across the province. This has resulted in the rapid increase in forest cover and rehabilitation of degraded lands. However, the large-scale monocultures that dominate the province are vulnerable to disease and declining quality, which is a growing economic risk. The almost exclusive focus on acacia has resulted in the forestry sector, from research to extension to marketing, becoming "acacia-ized," which limits the scope for the province to move up the value chain by investing in ER and NSI. There is also a significant lack of technical capacity at the provincial level to support the availability of high quality native tree species seedlings, sophisticated silviculture methods (beyond "plant and cut"), or FSC certification.

In the agricultural sector, the rapid expansion of cassava on steep slopes increases soil erosion and threatens natural forests. The International Centre for Tropical Agriculture (CIAT) has tested a range of SWC measures in Viet Nam, but smallholder adoption is low, partly because of the high labour requirements and uncertain yield increases. This is an area where government can play a key role by strictly protecting the remaining areas of natural forest and training farmers in sustainable intensification while improving access to inputs.

The key barriers to FLR are not only technical but also financial, policy-related, and institutional. Except for EP/ANR, all proposed FLR options are profitable, albeit often over relatively long time periods and in most cases with high up-front costs, which may be unaffordable to farmers. This is where government can alleviate financial bottlenecks that would allow the forestry sector to achieve its full potential.

A focus on forest quantity rather than quality remains a key policy and institutional barrier. Nationally, forest cover is rising but this is almost exclusively due to monoculture plantations with very low biodiversity value. Shifting priority from quantity to quality would require reforms at the highest level of government. Under the revised 2017 Forestry Law all national sectorial plans will have to incorporate environmental protection, biodiversity conservation and climate change, providing an opportunity to accelerate FLR.

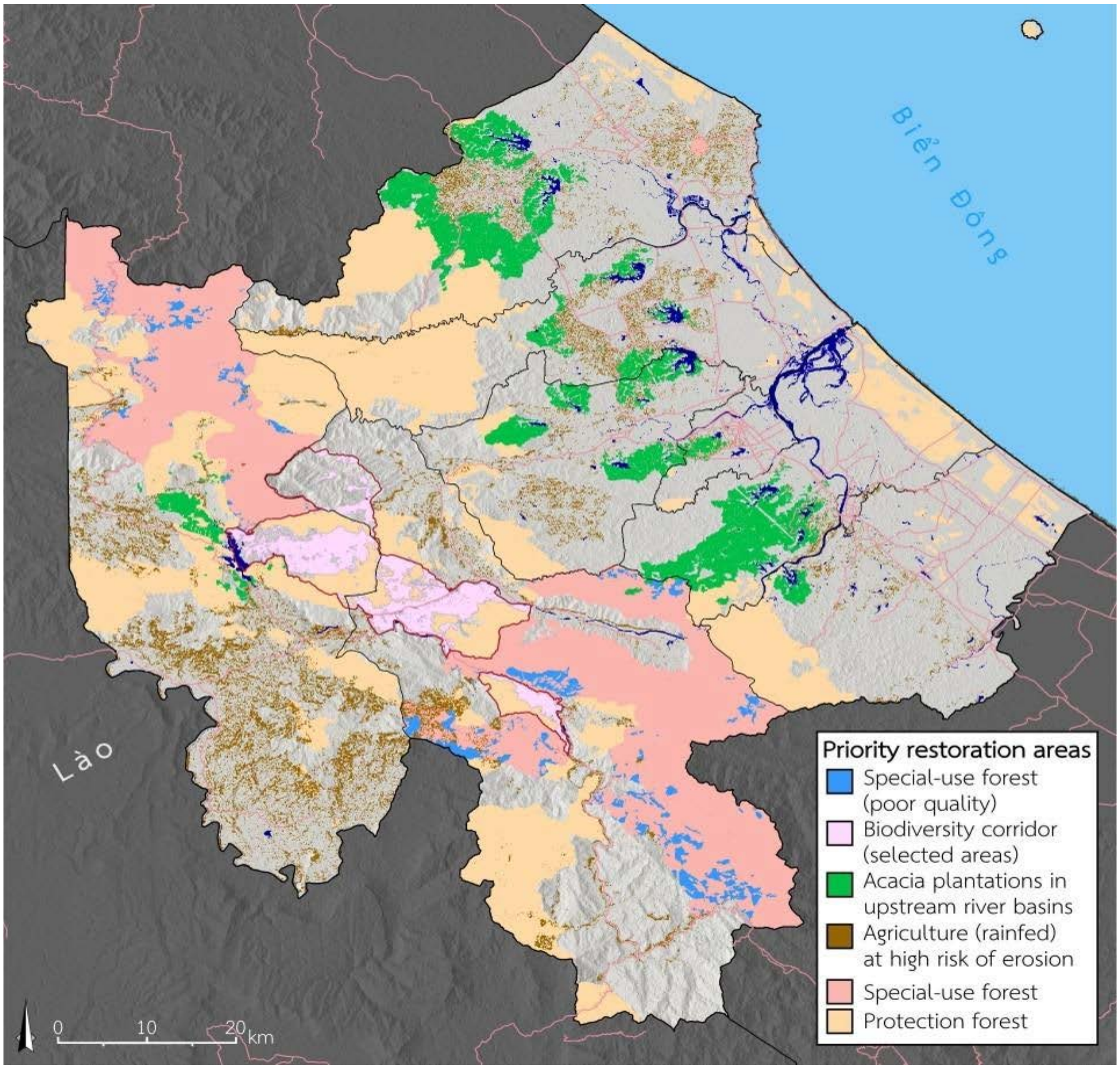

Figure 3.11: Priority Restoration Areas in Quang Tri Province, Viet Nam (Source map: Rizzetti et al., 2018)

4 FLR Programme opportunities

There are many past and on-going FLR initiatives across Asia-Pacific, whether the ROAM methodology has been applied or not. There are also great need for ROAM assessments to support the development and uptake of FLR initiatives. This chapter documents FLR programme experiences and opportunities in Thailand, Lao PDR and Sri Lanka, as shared during the Asia Regional ROAM Learning Exchange (see Annex I).

4.1 Lao PDR

In 1993, the government of Lao PDR placed 21% of the nation's land aside for the purpose of habitat conservation. It has developed a strategy to restore forest cover to 70% of the country's terrain by 2020, meaning trees will need to be planted on about 8.2 million hectares of land. In 2015, Lao PDR had about 46.7% forest cover, which was declining rapidly (and still is in the present day). To approach this 70% goal, forest cover would need to return to 1940 levels, which requires sustainable native plantations and rapid action.

Priority targets for Lao PDR involve addressing the rampant deforestation of native forests, instead producing a positive annual net forest cover rate, reaching 1.5 million hectares restored by 2020. More than 50% of Lao PDR's GDP results from agriculture, forestry, livestock, and fisheries, so a sustainable reforestation of the country will require a multifaceted and dynamic approach.

Currently, Lao PDR is putting together a viable FLR plan through national forest restoration policies. These policies must incentivise private citizens and households to restore forests for environmental protection and conservation and remove incentives for deforestation as a purely commercial process. Many organisations are aiding the Lao PDR government to put together an affective plan, with the United Nations Development Programme stating that environmental protection of Lao PDR's national resources is critical for sustainable economic growth and effective poverty reduction. Additionally, FAO is currently supporting implementation of FLR in Lao PDR (in line with government strategy) through the "Technical Cooperation Programme" project labelled "Promoting Forest Landscape Restoration (FLR) in Selected Southeast Asian Countries."

Habitat loss and degradation are primarily caused by:

1. Forest product extraction

2. Infrastructure expansion

3. Wildfires

4. Conversion of forests to and expansion of agricultural land

Unclear policy initiatives and the current lack of a national forest restoration programme are still the main barriers for FLR in Lao PDR, but national meetings with NGOs, government agencies, and other key stakeholders are currently underway to develop the best solutions for successful implementation of ROAM and other effective FLR options.

4.2 Sri Lanka

Sri Lanka has a land area of 65,610 km^2, a population of nearly 21 million, and has a current forest cover of 29.7%. The country has lost more than 70% of its vegetative cover, while also being home to more than 1,700 endemic species that are threatened by rampant deforestation and land degradation nationwide.

Currently, forest cover has been increasing slowly since 2010 after sinking to 22% cover in 2010. Most of the land use in Sri Lanka consists of forestry, which relates directly to 29.7% of remaining forest cover in the country. Home gardens use roughly 15% of the land, with economic crops (coconut, tea, and rubber production) making up 10% of land use.

Sri Lanka does not yet have a planned FLR strategy, but is looking towards other successful initiatives in ROAM pilot countries to attempt the framework in its own study side. Sri Lanka's pledge of 200,000 hectares in support of the Bonn Challenge to be completed by 2020 requires the nation to take a significant measure towards conservation on a national scale, and address barriers that may impede future FLR implementation.

Possible FLR opportunities going forward, for funding in particular, involve the National REDD+ Investment Framework and Action Plan, pledging US $100 million in 5 years. An additional opportunity is the Eco-Systems Conservation and Management Project (ESCAMP) – funded by The Department for Environment, Food and Rural Affairs – pledging roughly US $75 million from 2017-2021 to fund applications of FLR in local and community settings. This involves general conservation and restoration of small tank cascade systems as practical approaches to better meet the Sri Lanka government's targets set forth under the Bonn Challenge. Additionally, the expansion of Kandyan home gardens would help to meet the general goal of creating 10,000 more Blue-Green villages. Guided by the UN-REDD Programme, these villages will be created to maintain economic growth, minimise natural disaster risk, and conserve biodiversity in a structured and focused manner.

Presently, Sri Lanka faces complex challenges, but has significant funding and interested parties that are ready to implement designated FLR policies. Currently, the country is at the "readiness phase," setting the ground for future FLR initiatives. Many of Sri Lanka's forests are threatened by multiple factors, so the facilitation of both direct and indirect conservation mechanisms will be important going forward as a holistic conservation programme is put into place. This plan will not only combat forest degradation and improve soil quality, but will require involved participation of local stakeholders to sustainably provide alternative livelihoods to low economic areas. Focusing on the overlap between socioeconomic and conservation interests will make both funding and the implementation of sustainable developmental planning more straightforward and effective.

4.3 Thailand

In Thailand, there have been multiple initiatives promoting and implementing FLR. IUCN Thailand was previously involved in an FLR project based in Doi Mae Salong in Chiang Ra, the site of an on-going reforestation project since 2007. Initiated by the Royal Thai Armed Forces Development Command, it is home to a local Thai community as well as refugees from Myanmar. The migrant labour of 5,000 unexpected refugees has resulted in land tenure, improper agriculture, and land cost and availability issues. There is a need for a new and pragmatic approach to restoration in Doi Mae Salong both in terms of its ecological value as well as the community livelihoods. By request of the Royal Thai Army, IUCN supported and implemented an FLR project called the "Livelihoods and Landscapes Strategy", which used a multi-stakeholder platform to restore the Doi Mae Salong landscape.

This project has adopted a participatory approach to negotiate a landscape vision to reduce poverty and enhance forest quality. Stakeholder negotiations were conducted on land-use trade-offs and agricultural productivity to inhibit and reduce the incentive of further illegal encroachment on forested areas. Priority restoration areas were steep slopes and headwaters, and environments that were key to maintaining ecosystem health, and water and soil quality. Land use planning and zoning would be paramount, and school environmental education would help prevent degradation in the future. The key concern for the local community is development prospects, so creating community-based ecotourism and other alternative livelihood options would help to combat deforestation while slowing transforming local ecology to a sustainable model. The key is to balance different stakeholder needs and create common ground that would be the foundation of the long-term sustainability of such projects.

It is important to scale up and replicate FLR approaches in order to support Thailand's ambition of restoring 40% of its land to be under forest cover, an estimated increase of 2.3 million ha of restored land. IUCN Thailand is working with the PTT[7] Forest Restoration Institute, an organisation that has many projects of various sizes in place extending throughout the country. There are also conservation and education facilities in place in the form of the Toyota Eco Forest restoration and learning centre. This facility and various other financiers (such as the Thailand Business Council for Sustainable Development) will allow the possibility for restoration at proposed study sites.

[7] PTT Public Company Limited, or simply PTT, (Thai: ปตท) is a Thai state-owned SET-listed oil and gas company. It is formerly known as the Petroleum Authority of Thailand.

5 Comparing ROAM processes across different landscapes

In this chapter, a comparison between different ROAM processes is provided. Attempts are made to draw common lessons learnt.

5.1 ROAM analysis and process

Scale: In general, the scale of ROAM analyses in each country was done on a municipal or multi-provincial level (Cambodia, China, Viet Nam), with India and Indonesia focusing on a state or larger area of the country, and Myanmar at a national scale.

Data quality (type and quality): Data quality is high for most global and national data concerning landscape type and degradation levels. Socioeconomic and demographic data (concerning stakeholders and local information) is most readily available in China, India, Indonesia, and Viet Nam, with limited access among other countries. Data concerning forest canopy condition, plantations and agriculture, land tenure, and economic metrics can be improved across the board.

Nature and extent of interaction with stakeholders (led by IUCN with consultation; collaborative or shared; or led by partners): The majority of countries led or co-led stakeholder consultations and collaborations, with several countries partnering with other organisations (Cambodia with FAO; Indonesia with Blue Forests, JAPESDA, and KKMD Gorontalo Province; Myanmar with TNC). Additionally, countries worked in coordination with local and national governments (Cambodia, China, India, and Viet Nam) at varying landscape scales. Indonesia was a unique example, with intensive stakeholder surveys completed by over 20 institutions and partner NGOs, providing a complex local analysis of the region.

5.2 The landscape (issues relevant to deforestation and forest degradation)

Area (size): Study site sizes (approximate) in ascending order from smallest to largest:

1. Indonesia: around 5000 ha
2. Viet Nam: 473,630 ha
3. Cambodia: 3,704,738 ha
4. China: 4,800,000 ha
5. India: 5,348,000 ha
6. Myanmar: 66,976,025 ha (excludes smaller islands)

Due to the wide range of restoration study site sizes, implementation of ROAM and other conservation strategies can vary considerably in terms of cost, degradation drivers, and acting organisations involved.

Population: population sizes vary across different landscapes, which indicates varying development pressure to a partial degree.

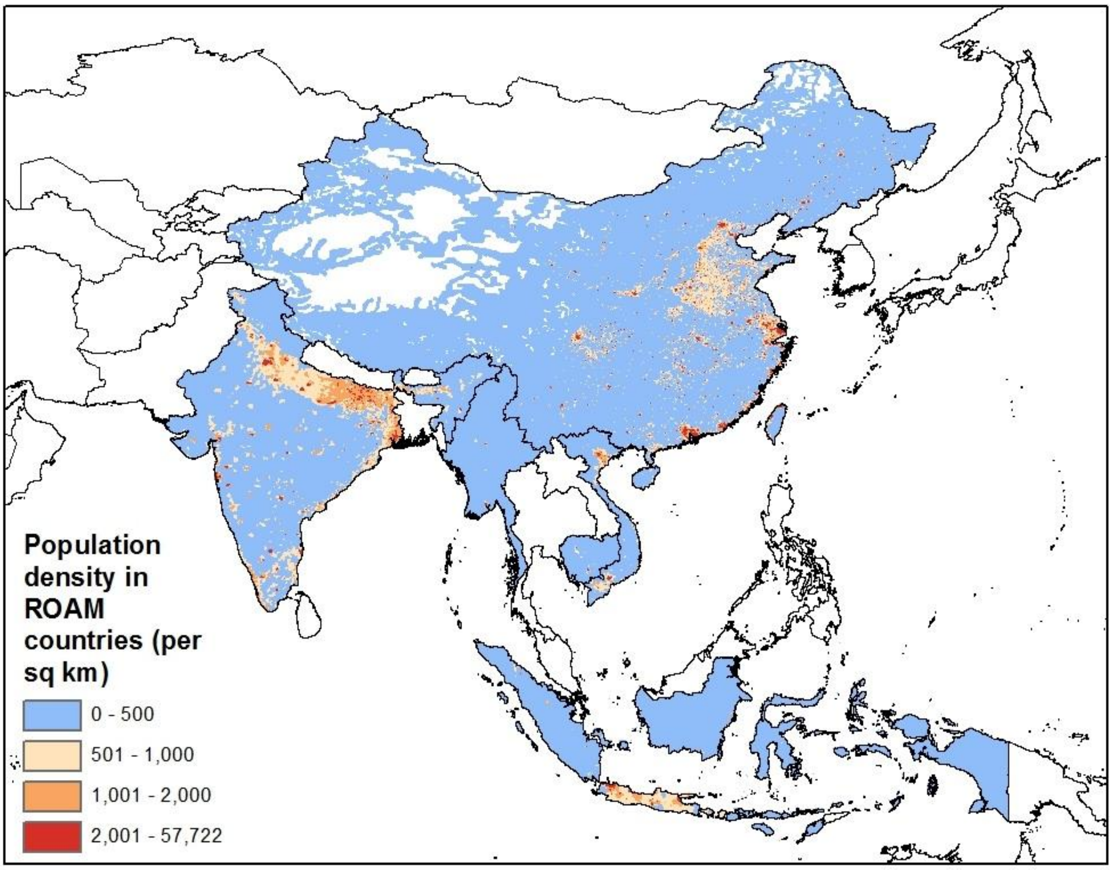

Figure 5.1: Population density in ROAM countries (figure produced by LI Jia for this report, based on data source: Gridded Population of the World, Version 4, 2010)

Population pressure: Figure 3.1 shows the varying density of population in ROAM countries (including areas where ROAM is not in place). With greater populations, restoration practitioners are under pressure to balance immediate development as well as long-term conservation goals. Additionally, the size of population indirectly relates to the complexity of issues and the costs involved in the ROAM process. Interaction with stakeholders can be increasingly difficult with larger study site populations. Indonesia in particular showed significant success with stakeholders due to its small study site population, though India's intensive stakeholder surveys are evidence that higher population sites may still generate valuable stakeholder information.

Forest extent and condition: The country study sites in general experienced quite substantial forest loss in the last 2-3 decades. In general, study sites are experiencing forest loss (Cambodia, Indonesia, and Myanmar), except two countries (China and Viet Nam) which can largely be attributed to the increase in tree plantation. The combination of forest loss and national targets on increasing forest cover gains have implications for framing the restoration mentality to more target-driven rehabilitation approaches which are not aligned with FLR.

Forest tenure and management: Forest tenure stability varied across ROAM countries, with some countries experiencing highly unstable tenures prone to high value logging and agri-development and commercial plantations such as palm oil, rubber, and acacia (Cambodia and Myanmar). China and Viet

Nam experienced more stability, with most forested land owned by households or communes or by forestry-focused branches of the government. Due to historical reasons, land management in India and Indonesia have been influenced by various types of land tenure and traditions. In general, unclear tenure and sometimes conflicting legal and policy frameworks of tenure systems are common issues in Asia, hindering any progress towards coherent and sustainable landscape governance by local communities, multiple government agencies, and other stakeholders.

Degradation drivers: All landscapes face multiple degradation drivers, but the most common are deforestation and degradation for land conversion for economic production purpose, such as agriculture land use in Cambodia and Myanmar, aquaculture in Indonesia and partially Cambodia, and land degradation due to plantation with limited ecological benefits in China, India and Viet Nam. In some countries, such as Cambodia, India, and Myanmar, populations continue to increase and the need for additional land development is expected to continue or even accelerate. Illegal logging for luxury timber and fuelwood demand are additional common occurrences, with mismanagement of these forest areas by individuals, companies, and national governments only worsening this issue. Some countries struggle with forest degradation due to forest fires (Cambodia, India and Myanmar), though others struggle for reasons more unique to their particular landscapes (mining in northern Myanmar and landslides in the Himalayan regions of India).

Key stakeholders within the landscape: Locating key stakeholders in a respective landscape leads to more efficient restoration initiatives and effective combat of degradation drivers. Every country works with different governance institutions, both nationally and locally. For example, forest departments often act as government representation of forest land management, while agriculture departments also have significant influence on other land uses that are an integral part of landscapes. Virtually every ROAM process works closely with forest departments and agricultural departments or owners of agricultural land. Every ROAM landscape worked with local community members and organisations to varying degrees, from extensive community consultation in India on one end, to information gathering on local land use practices in Myanmar on the other end. Several countries (India, Indonesia, and Viet Nam) also actively engaged with local NGOs to facilitate the ROAM process and mobilise local stakeholders. Due to its national-level focus, the Myanmar ROAM process was generally more government-focused and used parallel processes (project preparation for The Restoration Initiative funded by GEF) to collect on-the-ground information on stakeholder involvement. The Viet Nam ROAM process engaged with a wide range of government agencies, community representatives, plantation owners, NGOs and research organisations to facilitate an integrated planning of forestry transition strategy for Quang Tri – from low-quality forest plantation-based forestry to high-quality forestry industry supported by resilient forested landscape. Indonesia involves the University of Gorontalo in addition to other institutions, coordinating with researchers to further strengthen current conservation efforts.

5.3 FLR strategy

FLR Priority Sites; in ascending order from smallest to largest site area:

1. Indonesia: 2493 ha of degraded land to be rehabilitated to mosaic coastal landscape dominated by mangrove forest;

2. India: 1000-2000 m elevation zone is the highest priority, with additional priority sizes located in both the <1000 m and 2000-3000 m zones

3. China: State forest farms, high ecosystem service areas (source waters), and erosion and desertification-sensitive areas will be prioritised as conservation targets

4. Viet Nam: 54,000 ha in poor-quality natural forest within and connecting to protected areas, in acacia monoculture plantations upstream of reservoirs and in rainfed agricultural land

5. Cambodia: 217,000 ha, flooded forests near Tonle Sap and forests in protected areas (Siem Reap, Preah Vihear, Kampong Thom, ELCs in central sections)

6. Myanmar: 713,000 ha in northern Rakhine, Ayeyarwady Delta, Bago Yoma, southern Tanintharyi, and central Sagaing

Most priority sites are near areas prone to rapid deforestation, bodies of water, and sites at risk of urbanisation or land conversion. Additionally, locations near lower socioeconomic zones will likely be at a greater risk of deforestation and timber poaching.

Proposed FLR interventions: Every country had priority FLR interventions focused solely on general restoration (e.g. improving corridors to aid biodiversity, mangrove and protected forest replanting strategies, and improving local soil and water quality). There were a few other similar themes between FLR strategies focused on agroforestry and silviculture (in Cambodia, China, India, and Viet Nam), and valuable restoration-founded approaches to sustainable livelihood development. In line with silviculture, several countries see the importance of the timber industry and high value timber sales to incentivise conservation, restore degraded land, and provide employment (Cambodia, China, India, and Viet Nam). Various countries prioritise local and government partnerships paired with proper programme management as key FLR interventions, focusing on staff and work efficiency in conjunction with effective conservation (China, India, and Myanmar). India in particular focused on forest fire and landslide disaster management, as Uttarakhand is rife with natural disasters that can impede conservation efforts.

FLR financing opportunities: These vary across different countries and landscapes. Generally, programmes utilised government financing on the regional, state, and national levels to fund FLR initiatives. In some cases, FAO or another organisation was able to provide funding as well (Cambodia). Additionally, several countries looked towards the private sector and international donors to provide capital for restoration projects (India, Indonesia). Funding options using financial mechanisms such as GEF or GCF funds are being utilised in Cambodia and Myanmar as alternative financing strategies. Viet Nam is an interesting country case, as many sustainable plantation models are self-financing but require improved targeting and monitoring of state funding, bank credit and institutional arrangements between value chains actors to overcome financial bottlenecks and ensure a stable and high-quality supply of timber. Sustainable options such as these, or a more aggressive and measured approach to generating finances, could assist the creation of larger-scale FLR projects in Asia.

Key barriers to effective FLR implementation: Available funding is a constant concern and barrier to FLR implementation in every country, with a limited budget hampering effective conservation initiatives at local and national levels. Costs for certain programmes are not sufficient in several countries (Cambodia and Viet Nam). This lack of funding, coupled with the lack of capacity or unclear policy and education of staff and stakeholders (Cambodia, China, and India) makes it increasingly difficult to implement FLR at any scale. A constant impediment to FLR is continued human encroachment and the resulting land conversion from forests into agricultural and developed areas (Cambodia, Indonesia, and). Weak market linkages and value chain difficulties hamstring several countries that are focused on the implementation of specific sustainable livelihood initiatives (India, Indonesia, and Viet Nam).

5.4 Enabling factors

Policy support (national policies, NDCs, Bonn Challenge commitments, etc.): Every country is committed to meeting their respective Bonn Challenge goals, ultimately attempting to restore 350 million hectares of degraded land by 2030. Additionally, China and Myanmar are committed to GEF TRI projects currently and into the coming years, with Myanmar also looking at a possible GCF FLR project. Every country is supplementing their Bonn Challenge commitments with national and local government policies targeting forest cover and corridor restoration (e.g. National Law 88 in Indonesia, focused on the restoration of protected areas). Several countries have additional policy support (e.g. Viet Nam with REDD+, PRAP, and FCPF proposals for their Quang Tri site), with others working at different levels of connectedness with their respective national and local governments to develop effective policy support.

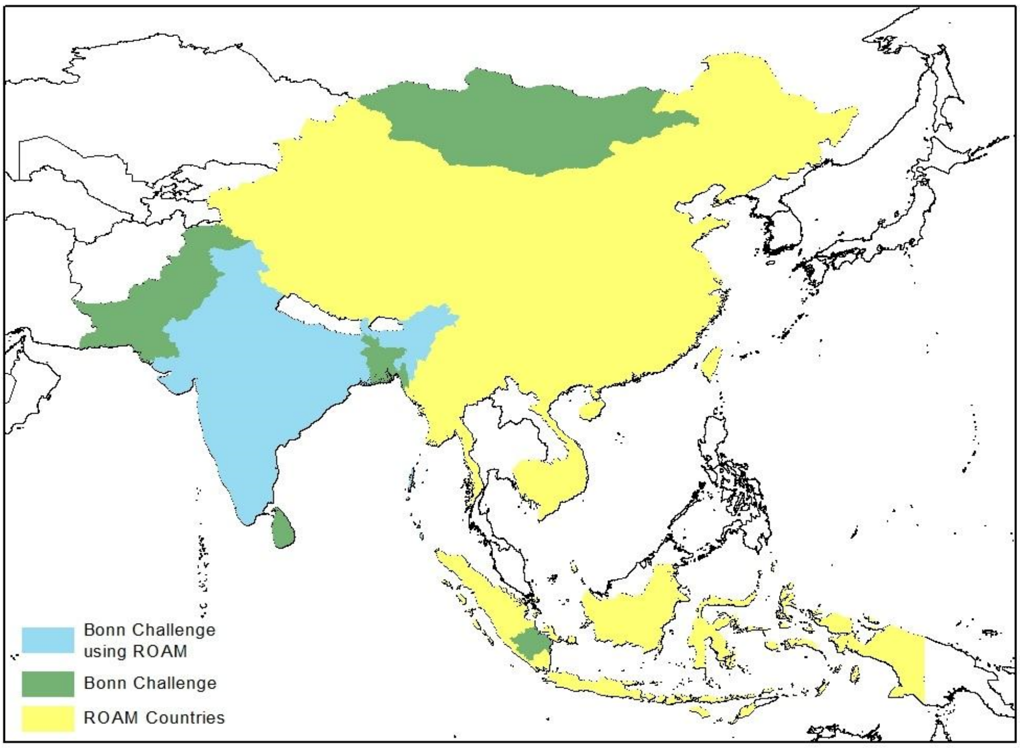

Figure 5.2: Countries committed to Bonn Challenge and / or applying ROAM (Figure produced by LI Jia for this report. Country boundary maps are based on Global Administrative Areas data, https://gadm.org/).

FLR implementation and technical capacity: Technical capacity varies across countries, from high (China and Viet Nam), to medium (Cambodia, India and Indonesia), to low (Myanmar) levels. Resources are constrained in multiple aspects of implementation and capacity, with a gradual loss of protected areas and forests. Supplementing FLR implementation by training and educating farmers, government agencies, and stakeholders about sustainable management and its importance (e.g. in Viet Nam, how to extend longer rotation for acacia plantations and conserve soil and water in agriculture) would likely help to strengthen future FLR plans and those already in place. Country and local experts must work closely with government bodies (such as forest departments), local NGOs, research institutes, and stakeholders to further improve FLR implementation in every country.

Institutional and stakeholder support (motivation): Overall, institutional and stakeholder support remains steadfast in essentially every country. Local and national governments see the importance of FLR and sustainable community and alternative livelihood development, as do the stakeholders in these areas. Enforcement of these FLR plans put in place by strong support networks is important to ensuring continued stakeholder engagement and that institutional statements of support are upheld.

In landscapes that are more advanced in FLR implementation, local heads of the government, especially line agencies and government representation outside of the forest sector, play a crucial role. However, this continues to be overlooked in many restoration programmes, due to the different disciplinary backgrounds practitioners have and the institutional barriers. A potential strategy to overcome this difficulty is to identify common goals and shared interests, which again highlight the role of stakeholder engagement and consensus-building.

Markets and value chains: Primary markets and value chains for every country generally involve the agriculture and timber industries, with certified timber or hardwood and luxury tree plantations, wild capture fisheries, intercropping-friendly products, and medicinal plants underlining the reach and complexity of the possible market for sustainable FLR initiatives. Certain programmes (such as in Myanmar and Viet Nam) have more-developed value chains than some other countries with burgeoning markets or markets with varying rates of success (Cambodia, China, India, and Indonesia). In general, there is significant room for improvement in this realm for every country.

6 Scaling up FLR strategies

It is clear that FLR offers countries, especially the environmental and agriculture ministries, the potential to demonstrate leadership and innovation, both nationally and internationally.

Nationally, environmental and agriculture ministries can push their governments to include restoration activities as national policies and priorities. This is important because restoration activities can contribute to other long-term national goals, such as alleviating poverty and hunger, building sustainable cities and communities, ensuring clean water and sanitation, and improving the country's economy and societal well-being in the long run[8].

At an international level, environmental and agriculture ministries have demonstrated global leadership in aligning restoration programmes with Sustainable Development Goals in recent years. By championing restoration, ministers can expose their governments to international financing for environmental and sustainable development-focused projects.

Regional experience shows that the use of ROAM can support the application of FLR principles within national and landscape contexts, as described in Chapters 3 and 4. The challenge is how to adopt FLR at scale, particularly tackling the financial bottleneck of scaling up FLR in the Asia-Pacific region.

This segment of the report focuses on how national FLR initiative can be better supported going forwards, with a strong focus on identifying financing opportunities.

Restoration efforts are often perceived to be costly, slow and only for the environmental good. This is only true when the approach to restoration is solely for timber production, is based on large-scale plantation, and is not integrated into other sectorial programmes. It is for this reason that an integrated approach to land restoration and complementary financing must be followed.

The multi-objective, integrated landscape approach FLR is based on presents major opportunities for governments to mobilise new sources of international financing and innovative public and private investments.

A recent economic analysis of the potential benefits of restoration, carried out by IUCN, demonstrated that the returns on restoration are much quicker than often assumed. For example, contributions to soil and water conservation through agroforestry and better watershed management can start to manifest tangible benefits within two to three years. Mangrove restoration in coastal areas begins to show returns within the first year with respect to improvements in fish stocks and fishery-based livelihoods, as even young mangrove saplings are highly effective at protecting juvenile fish from predation. As rural communities are interested in a range of non-timber products –not just timber or fibre – enclosure of degraded areas and management of natural regeneration can see important goods and services return after two to three years.

Nevertheless, estimates of total financial allocation for land use mitigation and adaptation range from US $1.3 billion to 51.8 billion per year. A critical gap exists between current financing for FLR needs and the action steps necessary to realise stated commitments. Funding for FLR will need to come from a portfolio of public and private sector sources, but in order to attract private sector investment, public investment in pilot experiences must be facilitated, reinforced and scaled to match the demands of the

[8] United Nations Office for Disaster Risk Reduction 2015; Sendai Framework for Disaster Risk Reduction 2015-2030.

market. Unlocking private finance requires the right architecture, including innovative financial instruments and an appropriate domestic regulatory environment within national strategies.

It is clear that bridging the gap between investors and investees and making the case to both groups to engage in FLR investments is a vital ingredient for achieving scale. In addition, refined strategies that promote commercially viable FLR options and enhance opportunities for private-public partnerships, with a keen focus on benefits to land owners and particularly smallholder farmers, would be beneficial.

International initiatives like the Bonn Challenge can play a key role in mobilising finance for FLR. Countries and jurisdictions that commit to the Bonn Challenge send a strong signal to donors and investors that political will to implement restoration and create an enabling environment for FLR is present. Bonn Challenge commitments also provide a platform for countries and jurisdictions to raise awareness of in-country restoration opportunities and needs for donors, investors, and other stakeholders. Underpinning the Bonn Challenge is an extensive and growing network of practitioners and resources that stand ready to assist countries in planning and implementing FLR.

Asian countries have the potential to become global leaders in the international push against land degradation. This significant role can only be fully realised if countries and communities are able to pursue and deliver a balanced package of locally defined forest goods and services. To achieve a successful policy, FLR excels at bringing people together to identify and implement appropriate restoration activities ranging from agroforestry, to planting native tree species, to watershed protection and much more. By actively addressing degradation and considering key stakeholders' needs, Asian governments can present innovative development models to the world that satisfy the needs of social, economic and environmental development.

Multilateral and bilateral donor funding

Official Development Assistance (ODA) has been a major source of financing for environmental projects in many Asian countries over the last 30 years. The ODA comes from two sources, namely bilateral (official, from country to country in the form of international cooperation) and multilateral (official arrangements between international monetary institutions and countries and in the form of international cooperation from United Nations agencies).

International institutions that mobilise resources for mitigation and adaptation, such as the GCF and GEF, have included forest landscape restoration as a priority in their investment portfolios. The GEF intends to expand its support for restoration in the coming GEF-7 restoration cycle. A recent analysis by the GEF Secretariat found restoration and reforestation to be the most frequently occurring theme in GEF country INDCs, NBSAPs, NAPs, as it was present in 98% of GEF-eligible countries' policy frameworks. The strategy provides options for tackling the drivers of deforestation and forest degradation and aims to support improved management in 20 million hectares of forest landscapes. Since its inception in 1991, the GEF has financed over 300 projects and programmes focusing on forest conservation and management in developing countries, amounting to more than US $1.6 billion total, which it supplemented by leveraging US $5 billion from other sources. In the period from 1991 to 2008, the GEF funded 79 initiatives focused on Sustainable Forest Management and 61 projects focused on land degradation[9]. This creates a solid opportunity to strengthen the mobilisation of innovative and enhanced levels of financing for the restoration of degraded lands.

Restoration of deforested and degraded landscape to address climate change challenges presents opportunities for countries to tap into one of the biggest funding sources for forest management and restoration – the Green Climate Fund (GCF). Currently, the GCF has over US $10 billion in assets,

[9] GEF online reference needed here

raised over a period of six years from developed country donors, and has a mandate to fund 50% mitigation and 50% adaptation projects[10]. The GCF board identified forest and land use as one of five cross-cutting investment priorities. Currently, GCF projects that fall under this area include Sustainable Landscapes in Eastern Madagascar, Building Resilient Communities, Wetlands Ecosystems and Associated Catchments in Uganda, and Bhutan for Life. These support improved protected area (PA) management and increased forestry and land use for climate change mitigation[11]. The GCF board has also defined six investment criteria that all GCF projects must demonstrate in order to receive GCF support. These include the potential for a paradigm shift in the management of environmental resources. One way in which GCF projects can meet this requirement is through the use of innovative financing opportunities, like micro-business loans and personal community loan funds.

Responding to increased demand for restoration, many of these donors and institutions are seeking to scale up their support for restoration through expanded programmes on restoration and through the use of innovative finance to help incentivise and catalyse private sector action on restoration[12].

However, there is still the need to look into new ways to increase the amount of multilateral funds directed to FLR in the region. There are a number of emerging funders from the Asia region that would provide additional support for investing in FLR. These include new ODA sources from a number of large economies such as China, Japan, and the Republic of Korea.

CASE STUDY: BUILDING THE FOUNDATION FOR FOREST LANDSCAPE RESTORATION AT SCALE

The GEF, in partnership with WRI and the United Nations Environment Program (UN Environment), is supporting the “Building the Foundation for Forest Landscape Restoration at Scale” project operating in five countries including India and Indonesia. This project is helping these countries to identify restoration opportunities, define FLR commitments, and create enabling environments for FLR. This project was followed by a larger GEF-supported programme on FLR, “The Restoration Initiative (TRI),” implemented by IUCN in partnership with FAO and UN Environment, and operating in 10 Asian and African countries including China, Myanmar and Pakistan. Among the interventions supported by TRI is a programme of work to develop “bankable” FLR proposals that identify sound opportunities and actions for investment in FLR by businesses and other private sector actors. In addition, it is anticipated that the GEF will significantly expand its support for restoration over the coming GEF-7 replenishment period (covering years 2018-2022), with a dedicated restoration “Impact programme”[1].

Public sector expenditure

Domestic public financing is the major source of financing for forestry activities in Asia, which generally comes from government budgetary allocations to official forestry institutions and revenue generated from state-owned forests. Proactive countries have developed integrated financing strategies and mechanisms blending different capital sources (national, international, public, and private) to invest in FLR in both in their readiness and implementation phases.

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[10] OECD (2016), 2020 projections of Climate Finance towards the USD 100 billion goal: Technical Note, OECD Publishing https://www.oecd.org/environment/cc/Projecting%20Climate%20Change%202020%20WEB.pdf

[11] Source: https://www.greenclimate.fund/what-we-do/projects-programmes#gcf-project

[12] https://www.thegef.org/council-meetings/gef-7-replenishment-first-meeting)

CASE STUDY: INDIA DEMONSTRATES HOW EXISTING GOVERNMENT FUNDS CAN BE USED FOR RESTORATION

India's 20-year National Forestry Action Programme (NFAP) is geared at increasing forest cover from its existing 21.34% to one-third of the country's geographic area. An additional 33.6 million hectares of land area is required to be restored to forests and tree cover, projected to cost US $26.5 billion. The NFAP includes specific provisions for capacity building and technology transfer integrated with the importance of forests and forest cover preservation.

The National Afforestation and Eco-Development Board (NAEB), set up in August 1992 alongside the National Mission for Green India (GIM), aims to increase forest and tree cover to 5 million hectares and improve the quality of forest and tree cover on another 5 million hectares of forest and non-forest land. About 3 million households are projected to benefit from the restored forest services.

These collective efforts have been augmented by policies like the National Agro-forestry Policy (NAP), REDD+, the Joint Forest Management and National Afforestation programmes, and the proposed distribution to states of about US $6 billion under the Compensatory Afforestation programme. India is demonstrating how to build a strong FLR strategy by utilising already-existing public sector funds.

Besides setting up new funds, country can also review its national policy framework and try to remove disincentives for forest landscape restoration, such as removing subsidies for unsustainable land use and securing tenure and harvest rights for restoration programme developers.

Incentives and funds for restoration

A number of innovative approaches show promise, such as the public–private partnership model of the Land Degradation Neutrality Fund being developed by the Global Mechanism of the UNCCD.

Private-sector investors – businesses and individuals – are the key to long-term FLR finance, whether as social investors in the framework of corporate social responsibility or as impact investors looking for a mix of social and financial returns. More than ten private equity impact funds (already operational or in design) seek to invest in landscape restoration projects. They are small relative to the needed budget, but even so, it is a challenge to find bankable projects. This challenge is what makes traditional investors (pension funds, commercial banks) reluctant to invest in FLR even though they have available capital and interested potential clients.

Increasingly, practitioners are seeking to adapt a "blended finance" approach. Blended finance refers to "structured transactions in which development finance and private capital achieves […] environmental impacts, while at the same time delivers adequate risk-adjusted financial returns for the private investor"[13]. Blended finance helps to attract private investments in the much-needed environmental sectors to achieve greater social and environmental improvement impacts, while reducing the burdens on the limited development funding from a handful of developed country ODA programs. Such investment, while promising significant environmental and social returns, would not otherwise happen in a traditional commercial setting, because the risks are considered too high and the returns are either unproven or not commensurate with the level of risk.

[13] GEF, 2017, GEF Innovations in Blended Finance: A Summary. Available at: https://www.thegef.org/publications/gef-innovations-blended-finance-summary

CASE STUDY: BLENDED FINANCE AT GEF (TAKEN FROM *GEF INNOVATIONS IN BLENDED FINANCE: A SUMMARY*, 2017.)

Guarantees and subordinated debt for land restoration: The ‘Risk Mitigation Instrument for Land Restoration’ project, managed by the Inter-American Development Bank (IADB), combines a GEF investment of US $15 million with US $120 million in co-financing to deploy innovative risk mitigation instruments to support public and private sector investment in restoring degraded land in Latin America. The private sector is increasingly seeking investments in the restoration of degraded land as a means of bringing low-productivity land back into production. Such investments, however, have longer payback periods and represent various types of high financial risk, making them difficult to finance. GEF funds will be used to provide guarantees and subordinated loans, helping catalyse additional public and private sector investments by reducing perceived risk. The project will support land restoration and integrated natural resources management activities such as sustainable management for increased ecosystem services; landscape regeneration; intercropping; shade-grown systems; high-value forest products; and silvo-pastoral systems yielding benefits on at least 45,000 hectares. The enhancements to carbon stock in these investments are estimated to yield emissions reductions of 4.5 million tons CO_2 equivalent.

Junior equity for agro-forestry: The Moringa Agro-forestry Fund for Africa, managed by the African Development Bank, will promote sustainable land management in production landscapes in Burkina Faso, Cote d’Ivoire, Kenya, Mali, Tanzania, Zambia, and Congo DR. The Fund will invest in 5-6 scalable, replicable agroforestry projects that combine plantation forestry with agricultural elements to capture most of the value chain. The GEF has taken a junior equity position in the fund with an expected return of 6%. GEF’s position helps lower risks for private sector investors who may be reluctant to consider land management projects on purely commercial terms due to, for example, long payback periods, lack of track record, and uncertainty over product prices. The project also targets 79,000 hectares to maintain significant biodiversity and associated ecosystem goods and services, and more than 200,000 hectares of production systems under sustainable land and forest management. The project is expected to yield GHG emissions benefits of 9.5 million tons CO_2e.

(Source: GEF (2017). *GEF Innovations in Blended Finance: A Summary*. Available at: https://www.thegef.org/publications/gef-innovations-blended-finance-summary)

How ROAM can help with securing funding for scaling up FLR

In order for FLR strategies to attract sustainable finance, it is important to address a number of investment issues to potential investors:

1. Investment returns, investment impacts and expected investment cycles.

2. Risks and risk management strategies (especially concerning social and environmental risks)

3. Implementations and institutional supports.

For future landscapes and countries interested in FLR programmes, ROAM can additionally help provide analytical outputs to communicate to potential investors. ROAM includes analytical modules to analyse the costs and benefits, investment cycles and conditions of restoration options. This is best shown in the Cambodia ROAM example, and the Indonesia and Viet Nam processes to a lesser extent. Additionally, through ROAM, appropriate mitigation strategies for investment and business risks (especially concerning social and environmental risks) can be developed, with locally appropriate monitoring indicators, through a participatory multi-stakeholder process. ROAM is also now supported by additional guidelines on gender and social risks, maximising biodiversity benefits from FLR projects and programmes as well as ecosystem services assessment and modelling.

Conclusions and recommendations

In the past few years, ROAM and the underpinning FLR principles have increasingly been recognised as an effective way to restore our degraded landscapes. This provides an important vehicle for countries to achieve their international commitments to the United Nations Framework Convention on Climate Change, the United Nations Convention to Combat Desertification, the Convention on Biological Diversity, and others. If implemented well, ROAM can enable local and national stakeholders to find effective solutions for achieving the Sustainable Development Goals (particularly SDG 1, 13 and 15). A well implemented ROAM strategy can bring restoration and environmental benefits, and the identification of funding sources from potential donors and reforming institutional frameworks are key issues to address for successful FLR implementation. Completed development of the ROAM roadmap and strategies as an output of ROAM processes will serve as an effective communication and possibly initial investment proposal to share with potential funders and interested governments to foster greater investment in FLR.

Ultimately, any ambitious national and local decision-makers wishing to transform their current development models to meet current and future needs could benefit enormously from a strategic, integrated restoration planning approach, which ROAM is capable of delivering.

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Appendix I: Agenda of Asia Regional ROAM Learning Exchange

Location: Four Wings Hotel, Bangkok, Thailand

Dates: March 15-16th, 2018

Participating Countries: Cambodia, China, India, Indonesia, Lao PDR, Myanmar, Sri Lanka, Thailand, Viet Nam

Objectives:

1. To review the ROAM processes being supported by IUCN in Asia;
2. To support peer-to-peer learning on planning and implementing ROAM;
3. To discuss future FLR program development strategies for the region.

Specific Outputs:

1. Presentations and ROAM documents from all participating countries;
2. Consolidation of FLR /ROAM knowledge products from the Asia region;
3. A draft IUCN Asia regional FLR strategy that identifies future FLR program opportunities at regional and country level.

Time	Topic	Speaker/ Facilitator
Day 1		
8:45 – 9:00	Registration	
9:00 – 9:30	Introduction and ice-breaking	LI Jia
9:30 – 10:00	A global overview of ROAM processes	Mirjam Kuzee
10:00 – 11:00	Reviews of ROAM processes in Asia 1. Viet Nam 2. Cambodia	Country representatives
11:00-11:15	Tea break	
11:15 – 12:30	Reviews of ROAM processes in Asia 3. India 4. Indonesia 5. Additional sharing of FLR program ideas from Sri Lanka	Country representatives

	6. Reflections on country presentations (Mirjam Kuzee)	
	Lunch	
13:30 – 15:30	Reviews of ROAM processes in Asia 7. Myanmar 8. China 9. Additional sharing of FLR program ideas from Lao PDR 10. Reflection on country presentations (Mirjam Kuzee)	Country representatives
15:30–15:45	Tea break	
15:45 – 16:15	Monitoring and evaluation for ROAM – Value for money assessment method	Julien Colomer (GFCCP) via Lync
16:15- 17:00	Wrap up for day 1	
Group dinner at Taling Pling (Thai restaurant). Pick up at 6:30 pm at the hotel lobby.		
Day 2		
8:45 – 9:00	Recap of Day 1	Li Jia
9:00 – 9:45	Communicating ROAM 1. Developing and implementing your communication strategy 2. Communication case study from other regions (GFCCP)	Facilitated by Ann Moey
9:45 – 10:00	FLR program ideas from Thailand	
10:00- 11:00	Group exercises: Elevator pitch - developing your landscape narrative	Facilitated by Li Jia
11:00 – 11:15	Tea Break	
11:15 – 12:00	3. Review current knowledge products in the pipeline 4. Identify gaps and strategies to address communication challenges	Facilitated by Chetan and Elmedina
12:00-12:30	Group report back	
	Lunch	
13:30 – 14:10	GEF/IUCN support for FLR – capturing opportunities (Joshua Schneck) 5. TRI program and links to/support for ARO country FLR work 6. GEF-7 support for FLR, including integration with Food Security Impact program	
	FLR regional strategy development discussion	Facilitated by Jake Brunner

14:10–14:30	Reporting back to country teams on what we captured on ROAM country experience	LI Jia
14:30 – 15:30	Country input on the following 1. Scaling up of ROAM: how to fit in national priorities 2. Horizon scanning for country level FLR opportunities 3. Mapping national and regional stakeholders and partners	Country representatives
15:30–15:45	Tea break	
15:45–16:10	Comments and suggestions by GFCCP	GFCCP
16:10–17:00	The way forward	Jake Brunner
17: 00	Workshop closes.	Scott Perkin

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