Enhancing livelihoods from improved forest management in Nepal

ACIAR FST/2017/037

EnLiFT2 Mid-term Review Activity Reports and Reflections

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Table of Contents

Introduction ____ *1*

Summary of Key Achievements and Reflections ____ **1**

Moving Ahead ____ **6**

Community forests ____ 6

Private forests ____ 7

Experiments in value-adding and markets ____ 7

Public influence and social media ____ 8

In conclusion ____ 9

Context ____ **10**

COVID and its impacts on EnLiFT2 ____ 10

Scientific vs Sustainable management of forest ____ 10

Frequent changes of officials and impacts on project implementation ____ 11

Objective 1: Enhance adoption and benefits from Active and Equitable Forest Management (AEFM) and improved private forestry practices ____ ***12***

Activity 1.1 Participatory action research on implementing improved silviculture in community forests ____ **12**

Activities ____ 12

Achievements ____ 14

Demarcation of pine plantation silviculture systems trials plots ____ 14

Capacity building ____ 14

Problems and challenges ____ 15

Reflections ____ 16

Shifting rigid silviculture experiments to silviculture demonstrations ____ 17

Trialing silviculture systems for socio-ecological services ____ 17

Activity 1.2 Participatory action research on developing silviculture regimes for private forestry in Nepal: private forests ____ 18

Activities ____ 18

Achievements ____ 20

Impacts of problems ____ 20

Reflections ____ 21

Activity 1.2 Participatory action research on developing silviculture regimes for private forestry in Nepal: government nurseries. ____ **22**

Activities ____ 22

Achievements ____ 23

Impact of problems ____ 23

Reflections ____ 24

Activity 1.3 Monitoring and assessment of social, economic and ecological impacts of silviculture practices ____ **25**

Introduction ____ 25

Activities ____ 25

Activity Timeline ____ 33

Achievements ____ 34

Impact of Problems ____ 34

Reflection ____ 35

Objective 2: Develop and institutionalise equitable community forestry planning and governance frameworks within the new local government system ____ ***37***

Activity 2.1 Analysis and demonstration of community forestry planning framework at CFUG level. ____ **37**

Activities ____ 37

Developing a framework for Planning Studio 37
Literature review on CF planning practice: 38
Research and Analysis - Case Studies on CF Planning Practice: 38
Research and Analysis - Focus Groups: 38
Research and Analysis - Planning components within Socio-Ecological Survey: 38
Action and Reflection - Training on CF planning: 38
Achievements 39
Reflection 39
Reasonable progress: 39
Limited availability of time: 39
An interest in planning contingent on resource availability: 39
Superficial planning processes: 39
CFUG planning not tied with local government planning: 39
Linking Planning Studio with EPPL: 40
Misplaced representation: 40
Increased need for a new CF planning model: 40
Reimagining transformation in CFUG planning and governance: 41
Activity 2.2 Analysis and demonstration of responsive institutional cooperation framework between CFUGs and local governments 42
Activities 42
Achievement 42
Reflection 43
Collaboration in planning: 43
Environment plan – forest plan: 43
Linking EPPL with Planning Studio: 43
Designing and promoting deliberative forums between CFUGs, LGs and other stakeholders: 43
Synergizing mobilization of resources between CFUG and LG: 44
Joint Monitoring and Evaluation: 44
Making the case of PES: 44
2.3 Analysis and piloting of gender equitable decision-making model in CF governance. 44
Activities 44
Preparation of Women Empowerment Index in Forestry (WEIF) Framework: 44
Achievements: 45
Additional outcomes: Impact of COVID19 reverse migration on food systems 46
Impact of problems: 46
Reflection: 46
Objective 3: To design and facilitate the establishment of pro-poor small-scale forest enterprises 47
Activities 47
Achievements 47
Timber Industry Value Chain Map 47
Main Stakeholders for the Timber Value Chain 48
Key Constraints in Timber Trade 50
Key Opportunities and Enterprise Models 51
Major Value Chain Upgrading Strategies/Interventions 52
Impact of problems 53
Reflection 54
Activity 3.2 Analyse and facilitate better regulatory systems for sale of timber and other forest products from private and community forests 54
Activities 54
Achievements 55

Activity 3.3 Facilitate local forest-based enterprises that address social disadvantage **55**
Trans-objective policy research. ***56***
Activity 1.4 Institutionalising science-informed silviculture policy in community forestry **56**
Shifting Policy context: 56
EnLiFT 2 policy analysis and engagement 57
Communications and social media. ***60***
Introduction: 60
Activities 60
Basecamp: 60
Social media: 60
Monitoring and evaluation 62
Social media protocol 62
Achievements 62
Reflections 63
COVID-19 Impact 63
Future strategy 63
Appendix 1 EnLiFT2 – The project team ***64***
Appendix 3. Brochure of EnLiFT2 CF Silviculture Systems Trials ***65***

INTRODUCTION

This provides a summary of EnLiFT2 Project achievements and reflections, an estimation of the extent to which the project has achieved outcomes of each objective. Following that is project team reflections.

Summary of Key Achievements and Reflections

Table 1 summarises the key achievements and points of reflection across the 12 project activities. Details of these in Activity chapters later in the document.

Objective 1: Enhance adoption and benefits from Active and Equitable Forest Management (AEFM) and improved private forestry practices	
Participatory action research on implementing improved silviculture in community forests	
Achievements	• Twenty four 1-hectare plots demarcated in 6 sites and operations plans approved for 5 out of 6 sites • Safe chainsaw operations training conducted in Kavre and Sindhupalchowk • Madan Bashyal's study tour and silviculture mentoring in Australia with support from Crawford Fund • Informal capacity building with government forest technicians in Kavre and Sindhu on improve silviculture practices through establishment of trial plots in 6 CFUGs
Reflection	• Delays in harvesting of trial plots adversely impacted delivery of other activities in Activity 1.1 • Contextual changes bringing uncertainties in silviculture trials • Need to revisit silviculture trial design to suits with current political and administrative scenarios and responding better to the needs and aspirations of forest users as supported by results from the socio-ecological survey • Input from CF planning/ governance, gender, policy and enterprise streams of EnliFT2 are needed to have a more holistic silviculture practices. • Strengthen collaboration with FRTC and DoF in the ownership, establishment and maintenance of silviculture trials.
Participatory action research on developing silviculture regimes for private forestry in Nepal	
Achievements	• A total of 22 (18+4) farmers participated in seven PF demonstration trials at 4.28 ha of land in Sindhu and Kavre districts. • Nursery training was held every year focusing on best practice small demonstration covering all sites. • Currently, eight nurseries (two DFOs, one each local government and community, and four private managed nurseries) produced more than 100,000 tree seedlings every year and distributed to farmers. • Thirty-nine (16+23) farmers are involved in four UUL plantation trials in 3 sites of 6 • Three Research Papers (one rapid PF inventory and two nursery related papers) published
Reflection	• Forest nursery sector needs to improve its capacity to meet species and quantity demanded by seedling consumers. • The mass seedling production and distribution from DFO managed nurseries should be gradually shifted to community and private nurseries as independent economic enterprise. • The large standard size silvicultural trial plot design was not possible in PF because of smaller size of the plot, and therefore small demonstration trial design was adapted. • Looking into the workload of field researcher, one additional full-time staff is recommended.

Monitoring and assessment of social, economic and ecological impacts of silviculture practices	
Achievements	• The Socio-ecological Monitoring Protocol was developed and published. • 600 households in target communities completed the initial socio-ecological survey relating to forestry in the Nepali mid-hills • The data is being analysed to develop understanding of the socio-ecosystem, to inform EnLiFT2 activities and to test the approach to gathering local perceptions of change • One important early finding is that while a majority of respondents do not value the commercial sale of forestry timber highly, a minority are interested in more activity in the sector • Education attainment is important descriptor for respondents who were more actively managing the forest
Reflection	• The Socio-ecological Monitoring Protocol appears to be functioning as a tool for understanding local perceptions of forestry and management systems. • Further interlocutor training, translation issues and data uploading were identified as local procedural challenges with the survey • Two smaller follow-up surveys are planned, which should be targeting communities where EnLiFT/EnLift2 silvicultural activities are underway • The protocol develops understanding of where opportunities lie to target effective interventions • Some further statistical support and follow-up interviews might enhance the Activity.
Objective 2: Develop and institutionalise equitable community forestry planning and governance frameworks within the new local government system	
Analysis and demonstration of community forestry planning framework at CFUG level	
Achievements	• Planning Studio has been adapted to EnLift 2 research and is being implemented for exploring and improving CFUG planning practice and governance at the local level; • A Review of Planning Theory and Practice in community forestry completed • Two detailed case study reports of CFUG level governance and planning being finalized • Implementation of planning studio including deliberative planning cycle
Reflection	• Availability of time of forest users has been the most constraining factor for researching CFUG planning and governance. • The interest of attending a meeting or overall activeness of CFUG is largely dependent on the availability of forest resources. • CFUGs do not tend to follow the annual planning process. Eecutive Committees (ECs) make quick decisions and implement them on ad hoc basis. • CFUGs do not or cannot harness Local Governemnts (LG) resources due to the mismatch between the planning cycles of LGs and CFUGs. • Planning Studio and EnLFIT Policy and Practice Lab (EPPL) complements one another to facilitate change from CFUGs to the government levels. However, clarity and efforts to link these two complementary streams of work would enhance impact. • Representation of poor, women and marginalised groups in CF planning practice seems to be misplaced because these groups do not seem to effectively voice their concerns. • The functioning and sustainability of CF is threatened by rigidity of CF planning in the context of remittance economy and political volatility. • Transformation in CFUG planning and governance is needed in the current institutional arrangement of community forestry to ensure CFUGs to be sustainable, inclusive, and equitable.

Analysis and demonstration of responsive institutional cooperation framework between CFUGs and local governments	
Achievements	• Framework has been developed and being implemented for enhancing and nurturing the partnership between CF and local government • A Report on Regulatory Analysis for developing a partnership framework for CF and LG – completed • Completion of 9 workshops with 5 local government officials
Reflection	• Collaboration in planning between CFUG and LG is needed, but LG and CFUG planning cycles are totally different in terms of timing and focus. • LG and CFUG can work together to co-develop the Environment plan –forest plan. • While we are implementing the Planning Studio, we are also providing inputs into the organisation of EPPL in the pursuit of developing a cooperative framework between CFUGs and LGs. • We need to design and promote regular deliberative forums between CFUGs, LGs and other stakeholders to enable co-development of plans • There are strong possibilities for synergizing the mobilization of resources between CFUG and LG • Local governments should also be involved in collaborative monitoring and evaluation of CFUG's activities. Palikas can also encourage CFUGs to adopt public auditing system. • CFs provide environmental services such as carbon sequestration and watershed conservation, while LGs can facilitate in establishing upstream-downstream linkages by examining the contribution of CFs in water source conservation and supply.
Analysis and piloting of gender equitable decision-making model in CF governance	
Achievements	• Developing and implementing the gender empowerment index • Final draft of Womens Empowerment Index Framework (part of O32) • Draft of Gender Interim Report (O32) • Draft of Literature review report (031) • KII are conducted and field notes are prepared
Reflection	• There is pressure for efficiency and profitability of CF which has potentials to trade off with gender inclusion in benefit sharing, participatory governance and collective actions. In this situation, it is likely to further reinforce participatory exclusion. • Despite several efforts from government and non-government sectors, it is mainly the external agencies who see gender and social exclusion as a problematic. The dominant groups inside CFUGs do not see it as a problem. • Poor, women and marginalised groups are further marginalised by livelihood crisis in ever increasing emerging market economy. As these marginalised groups are not benefiting from CF, they are gradually alienated from CF. • Gender equitable frames have been explored and adapted to co create the knowledge base for GESI in CF. We may need to review outputs that will lead to women's empowerment and equitable decision-making.
Objective 3: To design and facilitate the establishment of pro-poor small-scale forest enterprises	
Survey of existing forest enterprises in two districts.	
Achievements	A much better understanding of the existing forestry value chain in central Nepal, including who the key stakeholders are as well as the major constraints, opportunities and potential enterprise models.

Reflection	• Enterprises we interviewed along the value chain seemed genuinely interested in partnering with us to explore opportunities to improve the development of the industry. • Thorough analysis of timber value chain from Sindhu and Kavre up to Kathmandu valley shows important issues and opporunitiies for value chain development Th
Analyse and facilitate better regulatory systems for sale of timber and other forest products from private and community forests	
Achievements	• Completion of literature review: *Regulatory challenges relating to the sale of timber and other forest products from private and community forests in Nepal* • Fresh review of regulatory analysis ocmpelted, including inetification of barriers and opporunities
Reflection	• Thorough review of regulatory challenges and identification of opportunities for impvieement • There are quite a few opportunities where stakeholders are likely to come in agreement through evidence based discussion
Facilitate local forest-based enterprises that address social disadvantage	
Achievements	Work on this activity has not yet begun.
Reflection	We should still be able to deliver with an extension to mid-2024
Trans-objective policy research.	
Institutionalising science-informed silviculture policy in community forestry	
Achievements	• Conceptualisation and testing of EPPL (EnLiFT Policy and Practice Lab) building on the national focused EPL method developed in the EnLiFT 1. EPPL has emerged as a new science-practice-policy platform at the lowest level of state-society interface (Kavre-Sindhu joint district level). • Intensive engagement of two district level stakeholders and local governments in joint sessions of dialogues around the merits and value of active and silviculture based forest management • A third way perspective of Active and Equitable Forest Management has been shared with policy makers, creating a neutral policy pace in the highly contested environment around Scientific Forest Management. • Stronger field evidence of silviculturally sustainable and productive modesl of forest management demonstrated to district and local government stakeholders
Reflection	• Inadequate efforts on national silviculture workshop follow up and use research trials to improve the silviculture policy understanding and engagement. • Attention and investment focussed more on horizontal scaling out and less on vertical policy engagement (such as revitalising silviculture working group etc). • Team efforts and skills need to be improved to present and communicate evidence to influence publish debate drawing on active and equitable silviculture work demonstrated on the ground. • Project advisory group can be better mobilized to create more enabling space for silviculture. • Annual EPL events on AEFM can make significant contributions to science-informed silviculture policy, but more human resources and capability is needed to deliver this.
Facilitating government ownership of research outputs through research-policy interface for improved CF planning and governance	
Achievements	• One EPL organised to facilitate evidence-informed dialogues on the new Forest Bills in 2019 (Report – Ojha and Banjade 2019)

	• Collaborative review of community forestry in the changing context by engaging government agency based, academic and civil society experts on community forestry and development commonly agreed principles (Paudel et al 2021) • Analysis of CF-LG regulatory systems overlap and contradictions (Banjade et al 2020) – a ground prepared for EPPL which can facilitate more cooperative interactions in forest governance at the local level.
Reflection	• Frequent transfer of government officials has been a major challenge to continuous learning and innovation. • More efforts needed to write joint analytical products engaging MOFE officials, DFOs and FECOFUN. • Frequency of EPL and EPPL was reduced due to COVID-19 and this should be increased through virtual or face to depending on the COVID-19 impact situation. • Work on CF planning and governance needs to better aligned with EPPL and enterprise related activities of the project. • More efforts needed to reduce regulatory burden on CFUG in CF management and forest product marketing • Market oriented modalities of CFUGs organisations need to be tested through EPPL process.
Facilitate policy development promoting local forest entrepreneurship	
Achievements	• Some inputs and evidence-based contributions to new Forest Act 2019: analysis of proposed Bills and used the analysis to influence the content of the Law to ensure community rights over forest for both subsistence and commercial use. • Participatory analysis of how formal regulatory systems are distorted in practice, and how actual practices of regulatory enforcement undermine / hamper sale of timber and other products through EPPL event 2 • Analysis of how the new Local Government Operations Act and Forest Act interact (within the new federal system), overlap and implications for CFUG management of forest (constraints as well as opportunities) • Value chain analysis has generated more evidence on regulatory fault lines (Paudel et al 2021) • Contributions to policy debates through direct participation in events and processes (such as scientific forestry, new Forest Act 2019) • Improved engagement with downstream value chain actors beyond CFUGs (bilateral meetings and through EPPL)
Reflection	• Timber trade agenda has become more politicised at the national level, and procedures are even more bureaucratised at the implementation level. • Frequent transfer of DFOs from project districts has led to dissipation of our investments in engagement. • Inadequate team efforts in policy engagement in an opportunistic way when windows of opportunity emerged. • Nepal team needs improved capacity and resources to craft and communicate policy-oriented message into and out of EPL/EPPL processes. • The project also needs to recognise and invest in complementary and diverse forms of policy engagement to optimise the impact of EPL/EPPL.

Moving Ahead

All members of the project agree that to embed a substantive legacy in policy and practice we will need an extension to mid-2024. While some components of the current project structure need not significantly change, there needs to be more flexibility in other parts of the project to respond to opportunities as they arise in this very fluid political and institutional environment.

Community forests

It is of course a source of great frustration that we have not been able to establish our community forest silvicultural sites yet. AEFM was enthusiastically received by forestry officials at the end of EnLiFT1 and we have held high hopes that the demonstration and promulgation of knowledge of various silvicultural options would be well advanced by now. It is still possible if we return to some post-COVID normalcy soon, and our permission to harvest from community forests is not restricted, that we could achieve about 60% of our original goal by mid 2024. This will still be worthwhile pursuing but perhaps with a different agenda for the use of the forests and their products.

As it has happened in the past, disasters can perversely create opportunities (remembering how our access to harvest plots was greatly facilitated by post-earthquake demand for timber for reconstruction in 2015). While plot harvesting has been delayed our socioecological survey has revealed that the majority of CFUG members do not value the commercial sale of forestry timber that highly. The survey also identified the minority of CFUG members who are interested in more activity in the sector. Implicit in our original trial design was the assumption that all CFUG users will be enthusiastic about returns from timber sales form their forests. Apparently, this is not the case, and it would be folly to pursue timber enterprise development with those groups who express little interest. So maybe it is a good thing that we haven't progressed in this activity as quickly as planned.

ForestAction has very recently released a draft paper reviewing policy and practice in community forestry [1]. The review explains very well how the farm-forest link has weakened as a response to socioeconomic and technological change. The institutional and regulatory environment of selling timber from community forests has also created serious disincentives for involvement. The review presents numerous options in response to the new socioeconomic context. I have just selected a few which could be applied in a revised approach to our silvicultural trials in concert with our planning and forest-enterprise work. One certainty is that we need more activities than just silviculture trials to facilitate the scaling up of AEFM for CFUGs to the get economies of scale.

The review calls for a strengthening the economic rationale for community forestry by "*Reforming the regulatory environment in favour of strong tenure security, trade and enterprise, addressing uncertainty, strengthening support services,* ***supporting capacity***

[1] Paudel NS, Ojha HR, Banjade MR, Karki R, & S. Tamang. *Reframing Nepal's community forestry in the changing socioeconomic context: A collaborative review of policy and practice. Working draft January 2021*

development and creating favourable markets *…… An important part of these interventions is the* ***promotion of wood-based products and technology****, to help this sector compete against imported substitutes. ….. **Active experimentation of forest management, enterprise development and marketing** should be promoted to allow innovations in these areas. In addition to wood, there are prospects of enterprises based on non-wood products and ecosystem services including eco-tourism*." (p11-12 my emphasis in bold).

Private forests

This part of the project has already overachieved the target number of participating private forests originally set for December 2022. It is well on the way to achieving the broad outcomes intended from this work. For this reason, extra evidence was presented in the Outcomes for Private Forestry tables above. Private forests are easier to work in than community forests. This is an area where EnLiFT2 could expand to ensure substantive visual impact of good silviculture and livelihood enhancement. Private forests are also a domain where we are likely to find early and strong traction with enterprise development and training in value-adding (see next section).

Related to this is our work with forest nurseries. This work is also progressing very well. As proposed in Activity 1.2: nurseries we believe there is an opportunity to experiment with an 'enterprise model' of government forest nurseries, where the species distribution system is focused on consumers' demand and location. It could mean raising a diverse range of high-value seedlings (e.g. fruits, nuts, NTFPs, ornamentals) along with timber species at the central nurseries but distributing them through sub-divisional offices. The high-value species will be for sale while the timber species will be free as usual. Further to this, we have an opportunity to promote appropriate enterprise models and training for private nurseries. Having both government and private nurseries competing in the market will not only ensure the widest range of species but also their distribution into more remote areas.

Experiments in value-adding and markets

ForestAction's "Reframing" review concluded that the best way forward is to provide radical autonomy to CFUGS. "*This means expanding the autonomy to choose different management options, giving communities stronger bargaining power in the market, and reducing transaction costs, especially by substantially reducing regulatory and administrative requirements*" (p.10). This can only be achieved by experimenting with possible management options. EnLiFT2 has an opportunity to contribute here in at least two areas that could easily be integrated with our current silvicultural trials:

1. In-field value-adding of timber by using a CFUG operated portable mill and securely storing timber as it cures on-site. There will also be a lot of training involved with this activity.
2. Experimental marketing exercise where the participating CFUG is facilitated through the process of negotiating the sale of their value-added timber into the market, independent of the current auction system.

Yes, such an experiment transgresses so many of the current regulations. That's the point. Whenever I have suggested it to forestry administrators and project partners I am politely told it is a good idea but it cannot be done because of the regulations. Therefore, this will

require an agreement from forestry administration for a temporary and closely monitored relaxation of the regulations so we can undertake the experiment, observe the process, measure the increased value returned to CFUG members, and design a model for that increases the autonomy of CFUGs to engage in the timber market. At the end of the experiment policy makers can decide if they want to promulgate the concept and change regulations accordingly.

EnLiFT2 has the capacity to do this because:

- We have the EPL and EPPL processes to engage with policy makers and to win them over to the concept;
- We have the Planning Studio process to bring local government in on the experiment from the very beginning;
- Our socioecological survey has already identified the CFUG users (and private forest owners) who still express interest in timber markets;
- Our forest enterprise survey has developed a knowledge base of the timber industry so that we can identify which industry actors could be involved;
- The project already has in its budget funds to buy a portable sawmill; and
- The Sindhupalchok DFO already has a portable sawmill, but not the full capacity to use it yet. So there is an implicit expression of interest in at least the on-site milling aspect of the concept already within forestry administration.

Public influence and social media

One of the strongest outcomes of EnLiFT1 which has been continued in EnLiFT2 is the EnLiFT Policy Lab (EPL). It has been further developed as EnLiFT Policy & Practice Lab (EPPL) to be used at local government level. These innovative experiments in facilitating science-policy dialogue are the most significant mechanism we have to shift the mindset of policy makers to more rational forest policy and regulations. However, it is not the only mechanism. I believe it is time for EnLiFT2 to engage in more vigorous public debate about the problems and potential solutions in community forestry.

As expressed earlier we still have an opportunity to demonstrate the value of Active and Equitable Forest Management (AEFM) but we need to disentangle its association with Scientific Forest Management (SFM). It would also help to dissociate forest regulations applicable to the Terai with those in the Mid-Hills. Dealing with these misconceptions SFM and AEFM, and a geographically nuanced forest administration will take some work.

Shifting the national forestry mindset needs to go beyond the participants in EPL and EPPL. These and all the other problems, and some solutions, concerning community forestry have been very well articulated in ForestAction's recent paper already mentioned. It seems fitting for EnLiFT2 to sponsor a national conference or workshop on community forestry to embed the knowledge generated in that review within the wider forestry community.

Unfortunately, a workshop won't be enough. It is a static event where we need an ongoing discussion. The usual print and broadcast media are good for this. However, we should consider the potential of social media for advocating progress in community forestry.

When I first suggested that EnLiFT2 embraces social media, I had in mind that it would just be an extension tool to promulgate technical knowledge about AEFM. It seems to me its real value could be in stoking and leading debate towards progressive community forestry. Our progress in outreach using social media has been very slow. This is only partially due to COVID19 restrictions. Granted, we don't have a lot happening from day-to-day that can be posted on social media; but I think the problem is we are either: not clear enough about what we are trying to achieve by that communication; or not convinced that it will be effective and worth investing our time. It does not have the 'goad' of a specific project output to work for.

If we are to continue with this activity then the second stage of this project needs a clearly articulated and funded activity to engage in public discourse on community forestry though multiple channels including social media. ForestAction staff are currently receiving mentoring in the use of social media through an ad hoc arrangement. Soon we will need a dedicated allocation to continue. This would be an activity that has a capacity building, advocacy and research components. The research question underlying this activity would be: *Can social media be used to guide effective public discourse towards progressive community forestry?*

In conclusion

Recent political uncertainty around Scientific Forest Management is making our position even more difficult. This is not an insurmaountable problem. The first phase project was beset with its own constellation of disrupting influences: a government that couldn't settle on a constitution for first couple of years of the project leading to lots of national strikes; two major earthquakes and a 5-month fuel blockade.

Nevertheless, by some magic we seemed to achieve some significant progress; at least enough for ACIAR to have the confidence to fund a second phase. Of course it wasn't magic, but the commitment, intelligence, good will and *flexibility* of all partners to get the job done as best as conditions allow us. There is no indication that any of the partners are retreating on any of these principles of good project management. So I am truly confident we have the united team that will ensure a substantive legacy in forest policy and practice by mid-2024.

Context

During the early phase of the EnLiFT2, the country was in the process of forming new laws and redesigning institutional arrangements of three levels of government (Federal, Provincial and Local). The project implementation had to navigate with the transitional dynamics of restructuring of the Ministry of Forest, its departments and formation of new provincial government. Initially there were confusions in the accountability structure of the DFOs – towards federal government or towards provincial. Also, the roles and relations of federal departments and provincial government, and the relation between local governments and DFOs were unsettled.

Project implementation was somehow delayed and more efforts were invested in setting up the project. By now, we have the Federal Forest Act 2019, Provincial Forest Act 2019 and some local governments are in the process of forming their own Forest Acts. DFOs are now part of Provincial government, though it has not fully been resolved. In some of the legal aspects, especially on tree felling, there are still confusion on whether the DFOs are solely accountable to provincial government or partly also to Federal government.

COVID and its impacts on EnLiFT2

Government of Nepal imposed a nationwide lockdown on 24th March 2020. There has been gradual ease of this lockdown though it still exists in schools, cinema halls and some other sectors involving large gathering of people. COVID-19 impacted the project in three ways.

1. Many people in the communities and stakeholders/partners caught it and were physically and psychologically traumatized, lost optimism and did not take any initiative in forest management, including project activities.
2. Field visits were impossible due to lockdown related disturbances in transportation, workshop, meetings, unavailability of food and accommodation.
3. Project team focused on desk-based works: reviews, development of frameworks, initial writing etc. However, due to inadequate field work, even desk-based outputs were also disturbed.

Scientific vs Sustainable management of forest

Government banned on tree felling on 28May 2020 based on allegations on rampant logging especially in Terai. The decision resulted in complete halt in all felling and associated activities across the country. Later the parliament formed two different committees to probe into the issues. Similarly, the government also formed a high-level commission to investigate the case and make recommendations to improve forest harvesting and trade.

All commissions recommended to halt scientific forest management. One of the commissions recommended to take actions against some officials who have implemented scientific forest management programme. This has induced a huge cry especially among the forest officials and they many have shown frustration to the whole dynamics. In general, there is an environment of fear an insecurity. As a result, tree felling has become uncertain even in Kavre and Sindhupalchowk districts, though the government recently has exempted non-sal forests from the decision to halt harvesting and transportation.

Apart from uncertainty in felling in our research sites, such unpredictable decisions and actions have undermined our effort to develop a suitable silvicultural science for more productive forest management. It appears that broader issues of governance and policy coherence are much powerful in shaping forest management than the specific silvicultual science which we are trying to develop and recommend.

Frequent changes of officials and impacts on project implementation

Frequent changes in officials has also hampered the project implementation. In particular, inability to identify and assign focal persons from DoFSC and FRTC has weaken their contribution to the project. In some cases, even though the persons are assigned, they are not given needed time to engage and contribute to the project. Similarly, there have been frequent changes of AFOs in many of our sites. Due to the lack of institutional memory, all the briefing and planning that were developed with a particular AFO has to repeat with newly coming officers. For example, in Chaubas, we had to deal with four AFOs in the last two years.

Change in officials (Since project inception Dec 2018)

Position	Initially	In between	Currently
DG, DoFSC	Krishna P Acharya	Ram P Lamsal	Man Bd Khadka
DG, FRTC	Deepak Kharal	Meghnath Kafle	Yam Pokhrel
Focal Person – DoFSC	Prakash Lamsal	Jibanath Paudyal	Hari Pandey
Focal Person, FRTC	Keshav Gautam	Buddi Pauudel; Sunita Ullak, Megharaj Poudel,	Sunita Ullak
Bagmati province Secretary	--	Shiva Wagle	Sindhu Dhungana
Bagmati Province – Forest Director	-		Bidhya Jha
DFO Kavre	Prem Khanal	Badri Karki	Devi Pokhrel
DFO Sindhupalchowk	Raju Chhetri	Devi Pokhrel	Lok Raj Nepal

OBJECTIVE 1: ENHANCE ADOPTION AND BENEFITS FROM ACTIVE AND EQUITABLE FOREST MANAGEMENT (AEFM) AND IMPROVED PRIVATE FORESTRY PRACTICES

Activity 1.1 Participatory action research on implementing improved silviculture in community forests

Activities

The silviculture action research in EnLiFT2 is a follow-on from the successful efforts made in EnLiFT1. In particularly, the First National Silviculture Workshop jointly organized by EnLiFT1 and Ministry of Forest and Soil Conservation and held in Feb 2017 made 28 recommendations. One of the recommendations is to "implement research trials (harvesting) to identify suitable silviculture systems across different management regimes and context" (MoFSC 2018, p24 https://enliftnepal.org/conference-papers/).

Following on from the National Silviculture Workshop, a technical working group (TWG) was set-up at the Department of Forest, to which members of EnLiFT2 Project served as members, and task to oversee implementation of the recommendations. The TWG also assisted in the development of the community forest active and equitable forest management (AEFM[2]) action research framework.

Table 2 summarises the action research activities undertaken by the CF-AEFM Team from November 2018 to December 2020. The development of the AEFM action research framework began in November 2018 in consultation with Nepali partners and stakeholders. The draft of the action research framework was presented to district stakeholders and feedback were sought for refinement of the framework and completed in the February 2019. The final action research framework is provided in Annex 1 (website). After the finalization of the action research framework, EnLiFT2 team with the help of Division and Subdivision Forest Offices in Kavre and Sindhupalchowk, 6 community forest user groups agreed to collaborate in the silviculture trials, of which 3 FUGs in each district (Figure 1).

To allow implementation of silvicultural trials, EnLiFT2 assisted the CFUGs in getting operational plan (OP) approvals during which demarcation of plots and measurement of trees and ground cover were undertaken. OPs where prepared and submitted to appropriate Forestry Offices for review and approval since Sept 2019 and 5 were approved in March 2020, however due to COVID pandemic harvesting was postponed. The OP for Racchma trial site is still pending at Kavre DFO due to governance problem internal to the FUG.

[2] AEFM is adopted by EnLiFT as a neutral term between scientific forest management and sustainable forest management which currently are hotly debated in Nepal.

Table 1. Summary of activities of CF-AEFM action research activities

Activity	2018	2019						2020					
	Nov	Jan	Mar	May	Jul	Sep	Nov	Jan	Mar	May	Jul	Sep	Nov
Community Forestry													
Draft AEFM action research framework													
Consult PAC/TWG and district stakeholders on draft AEFM action research framework													
Locate possible sites for CF-AEFM trials													
Demarcation of plots & pre-harvesting tree measurement													
Chainsaw training in Kavre and Sindhu													
Developing OPs, consult CFUG, & seek OP approval													
Madan Silvicultural Mentoring in South Australia													
Engagement with CFUGs via meetings/discussions													

Figure 1. Map showings the locations of the 6 proposed silviculture trials sites (yellow pins)

Developing silviculture skills of Nepali colleagues is an important aspect of EnLiFT2 through formal and informal coaching and training. EnLiFT2 project was successful in getting support from the Crawford Fund for a silviculture study tour and mentoring program for Mr. Madan Bashyal, EnLiFT2 Project Officer. In November 2019, the University of Adelaide hosted and arranged Mr. Bashyal's silviculture study tour and mentoring program in Australia in which he observed silviculture operations at Forestry SA plantations in Mouth Lofty Ranges. Visited saw milling activities, visited and trained on small-scale forestry operations and practical sawmilling at Bambra Agroforestry Farm (Victoria) and attended a certificate course on Safe Chainsaw Operation and Maintenance in which he get a formal chainsaw qualifications (https://www.crawfordfund.org/news/silviculture-mentoring-and-study-tour-program/).

Figure 2. Mr. Madan Bashyal operating a portable sawmill during his training at Bambra Agroforestry Farm, Victoria

Achievements

Demarcation of pine plantation silviculture systems trials plots

The major achievement of the silviculture trial to date is being able demarcate 24 1-hectare plots in 3 CFUGs in Kavre and 3 CFUGs in Sindhupalchowk Districts. The silviculture systems trials are being implemented for 2 dominant timber species- *Pinus patula* and *Pinus roxburghii* following an experimental design with 4 treatments replicated in 3 CFUGs. The experimental design was jointly developed by EnLiFT2 researchers and the Department of Forest Silviculture Technical Working Group in Nov 2018-Jan 2019 .

The development of the experimental design involved a series of meetings with the EnLiFT2 Project Advisory Committee, consultation with Divisional/Subdivisional Forest Offices, CFUGs, FECOFUN and municipal/ward government officials. Silviculture plot establishment and research data collection provided opportunities for training of six Foresters 4 of whom are freshly graduated from the Forestry Colleges.

Approvals of Operational Plans (OP) were obtained for 5 CFUGs around Feb/March 2020 but silviculture system trials were halted due to COVID19 lockdowns in Nepal. Pre -harvesting ground cover re-assessment has been undertaken to collect fresh data from the trial plots. Efforts are now on going to seek for re-approval of OPs for harvesting in 2021.

Capacity building

Trainings on Safe Chainsaw Operations and Maintenance were also held in in Chautara and Banepa on 25-26 March and 9-10 April (Figure 3, https://enliftnepal.org/portfolio/training-on-safe-operation-and-maintenance-of-power-chainsaw/). The training participants include – 17 community forest users in Sindhupalchowk, 17 community forest users in Kavre and 4 male government forest

technicians, 1 female Government Forest technician, 1 female EnLiFT Project staff, and 2 male project staff (https://enliftnepal.org/portfolio/training-on-safe-operation-and-maintenance-of-power-chainsaw/). These trainings were organized and facilitated by the authors and themselves trainers. Next round of chainsaw training will be run by Madan Bashyal with his training and experience from Australia. In formal capacity building also occurred with Forestry Technicians and forest users during the establishment of trial plots.

Figure 3. Participants in the safe chainsaw operation training

Problems and challenges

The implementation of the silviculture systems trials has met several problems and challenges. These include:

- Delay of project start due to delay in sign-off by Government of Nepal
- Difficulty of finding community forests that can accommodate the trial plots design
- Slow OP approvals
- COVID19 Pandemic
- Unpredictable government decisions and actions affecting forestry

The project was supposed to start July 2018 but the delay in project sign-off by Nepal government resulted 6 months which delay in the start of on ground project activities. The project inception workshop was held December 2018, which officially started the project. This delay in project signed-off meant that the time left on 2019 harvesting season was not enough to complete ground works for site identification, plot establishment, tree measurement and OP approvals to be able to harvest before the end of May.

Another challenge that added to the delay in plot establishment is the difficulty in finding community forests that can accommodate the trial plots design. The silviculture trials required 4 one-hectare plots on the same aspect of a forest having similar forest structure and management condition in a community forest. The decision to have one-hectare plots was to minimize edge effects as observed in EnLiFT1 trials where the plots was only 0.4 hectare. This requirement however was proven to be difficult to meet by most community forests due to irregular shapes and rugged topography of community forests. The requirement for sites to have good road access and abundance of community forests in nearby vicinities to facilitate extension works was compromised in Lisankupakhar sites because on community forests in the nearby road heads meet the plot size requirement.

Research and OP revisions data collection had taken 6 months (March -August 2019) to complete 6 sites. This was followed with the submission of OP to Divisional Forest Offices which required revisions and resubmissions of the OP and series of meetings with concerned FUGs. Five OPs were approved in February-March 2020 which was 6-9 months of approval process since submission, while one OP is still in the process of approval which delay is due to internal FUG governance problem.

The COVID19 pandemic put Nepal into lockdown since March 2020 just about the same time when the project was about to start harvesting activities for sites with approved OPs. Because the plots planned for harvesting in 2020 was not harvested due to COVID lockdown, this means harvesting could take place in 2021 adding to the blocks scheduled for 2021. This presented a challenge because in normal operations, harvesting can only be done for what is scheduled in that year. A special permission from the Provincial Forest Director is needed for the DFO to allow harvesting of trial plots which was supposed to be harvested in 2020.

Implementation of Active & Equitable Forest Management has been derailed due to cases of Scientific Forest Management in several parts of the countries. MoFE has decided to halt all harvesting operation in SciFM areas. The recommendations of three committees formed at different institutions have recommended reforming the SciFM. Not one government field staff is in the mood. There is uncertainty of until when this situation remins. It means, we can have formal direction from the government later in this season of 2021. All our target actions for capacity building linked to tree cutting and hence may not be possible in 2021. However, we will have ToT Manual final draft ready for testing.

The harvesting of treatment plots presented workplace health and safety challenges for EnLiFT due to apparent lack of proper training of chainsaw operators in Nepal in safe chainsaw operation. In EnLiFT2 Project, Edwin is the only competent chainsaw operation resource person who provided the initial training. However due to high demand for this training in the project site, Edwin's limited availability in Nepal and language barrier, the project needed another resource in country to deliver the chainsaw training. This was addressed with support from Crawford Fund for Madan Bashyal's silviculture study tour and mentoring in Australia that allowed him to get certificate in safe chainsaw operation and maintenance.

Reflections

The challenges met by EnLiFT2 in the silviculture trials component allowed the team members to reflect and assess opportunities and prospects for activities in the next half of the project that will deliver scientific and development impacts. The opportunities describe below are presented for discussion and considerations of project team members and project reviewers.

Shifting rigid silviculture experiments to silviculture demonstrations

The aim of Activity 1.1 in EnLiFTF2 was to investigate approaches of scaling-up active and equitable forest management (AEFM) of community forests and its resulting economic and socio-ecological impacts. The rigid silviculture trial design was based on the assumptions that the trials will be established in the first year of the project allowing at least 3 years of scaling-up and scaling-out work. Given harvesting of trial plots remain uncertain at this third year of project operation, it is therefore imperative to revisit the silviculture trials design such that scaling up-work can begin as soon as possible.

This may mean redesigning the trials so that the need for OP revisions approval is avoided yet harvesting timber in an area large enough to be able to put subplots to compare regeneration and stand development after treatment. For example, instead of trialling 3 silviculture systems of 1-hectare plots in a particular CF, one silviculture system can be implemented with one CF in at least 3 harvesting cycles, having an approved OP; preferably those that did not practice SFM. This however remains to be seen if DFOs will allow such forestry operations given the "environment of fear" in which forestry officers are currently working in.

Trialing silviculture systems for socio-ecological services

The socio-ecological survey (see report from Bardsley etal) highlighted that majority of respondents did not see timber sale as important benefit from forestry across sites rather they see timber for private use, fuelwood, leaf litter/mulch and fodder grasses as important benefits from forest management. Although this survey result is not surprising, it is however is contrary to the assumptions made in the design of silviculture trials that intensification of timber production as a priority for community forestry. The majority also sees water quality, improving biodiversity, conserving carbon, responding to earthquake and controlling landslides as important indirect benefits of forest management. It is therefore important to pivot some efforts of AEFM to put up silviculture trials and demonstrations that increase benefits of timber for private use, firewood, fodder and leaflitter.

As working in private forests is not as complicated as in community forests (see Activity 1.2) , the reviewers could consider it better to direct more attention in that area, especially when we come to facilitating timber enterprises.

Activity 1.2 Participatory action research on developing silviculture regimes for private forestry in Nepal: private forests

Activities

As a part of participatory action research on developing silvicultural regime for private forestry in Nepal, a survey of private forest[3] owners and under-utilised land (UUL) owners was conducted across the 6 research sites to understand private forest owners and UUL owners' forest management objectives, private forest resources, perceptions on growth and economic performances and silvicultural problems. A total of 1982 trees from 173 (8.7%) PFs were sampled from a total of 1996 private forests (229176 trees) in six sites. The total volume that can be harvested from all sampled private forest was 95485 m3 (RPS volume 2019-01 published). The findings from this survey was incorporated in the larger socio-ecological survey outlined in Activity 1.3.

In each of the four sites (except Banepa and Sunkosi), Seven participatory private forest silviculture demo trials have been established: They are:

1. Taxus plantation under thinned Alnus trees; (
2. Cinnamon and Michelia planted under thinned Shorea and Schima trees;
3. Silviculture regime mono-culture medium aged pine thinning;
4. Pine plantation establishment early aged thinning;
5. Growth performance of Michelia and Cinnamon under existing Sal, Chilaune and pine trees;
6. Growth performance of Michelia and Cinnamon under existing Alnus and pine trees and;
7. Alnus thinning trial demonstration.

A total of 22 farmers participated in these trials on 4.28ha of private forest land (Table 1).

Table 1: Seven silvicultural demos on private forests

Name of trial	Site	No of farmers	Plot size (M^2)
1. Taxus plantation under thinned Alnus trees	Dhungkharka	1	1000
2. Cinnamon and Michelia planted under thinned broad leaf Shorea and Schima trees	Daduwa	1	3000
3. Silviculture regime under monoculture medium aged pine forest -thinning	Chaubas	1	2000
4. Pine plantation establishment early age thinning	Chaubas	1	2500
5. Growth performance of Michelia and Cinnamon under existing Sal, Chilaune and pine trees	Daduwa	11	15300
6. Growth performance of Michelia and Cinnamon under existing Alnus and pine trees	Dandapakhar	3	12798
7. Alnus thinning trial demonstration	Dhungkharka	4	6250
Total		22	42848

[3] Private forests are defined as small-scale woodlots that were either planted or managed-natural regeneration.

One of the recently established Alnus thinning trial plots at Dhungkharka (Rameswor's private forest) is shown in Figure 1 below.

Figure 1: *Alnus* thinning trial demo at Janajgriti, Dhungkharka

Hands-on training of private forest owners and land owners were being facilitated as field days on site for the implementation of these silviculture trials. A manual is being prepared and targeted to be published in 2022. Mentoring and coaching of participating private forest owners and land owners are being provided regularly. These trials were designed based on farmers' preferences and according to the size of private forests. Standard silvicultural experimental design was not possible for these trials because of smaller size of private forests and therefore they are mostly demonstrations. Because of COVID-19 crisis, periodic data collection was not possible and therefore EnLiFT2 Research Officer (Ms. Rupa Chapagain) have contacts with participating farmers and obtained data during the early lockdown period.

Recently she managed to get data herself and prepared the report. For example: the average height of Michelia and Cinnamon has increased more than four folds now than initial planting recorded from one of the farmer's trials. Michelia seedling height was 20 cm at the time of planting in July 2019, which is now increased to 90.25 cm (See differences in pictures below) and Cinnamon seedling height was 15 cm, which is now increased to 73 cm. Weed infestation in the planted plots were controlled by the use of cardboard paper mulching at Daduwa and Dandapakhar. Extension activities for private land owners are being planned in Dhungkharka and Chaubas sites (Figure 2).

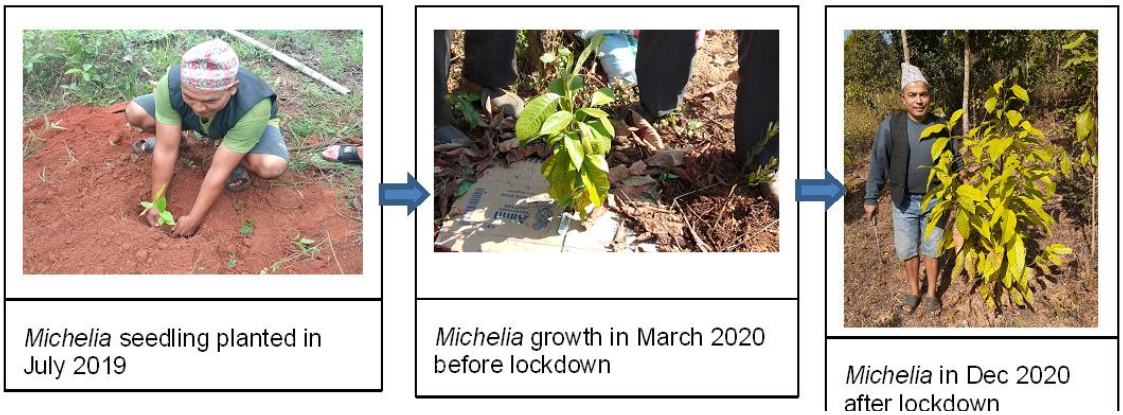


Figure 2: Growth performance of *Michelia champaca* planted under early age Shorea robusta trees at Daduwa, Sindhupalchok

Achievements

One of the research paper series was published in the beginning of 2019.
P Pandit, B Baniya, E Cedamon, I Nuberg, BH Pandit (2019), Rapid Private Forests Owners Survey in Kavre and Sindhupalchok Districts of Nepal, ***Research Paper Series on Improved Forest Management in Nepal,*** 2019-01:1-26.

Mixed legume fodder trees (*Flemingia* and *Tephrosia* species) were planted along terrace edges of one of the farmers' fruit garden terraces at Daduwa of Sindhuplachok in May 2019. They are now bearing fruit pods for seed collection (Figure 3). Seeds produced from this plot will be sold to private nursery growers for fodder tree seedling production in the next one or two months. This is also one of the achievements of the implementation of private forest activity.

Figure 3: First year planted mixed legume fodder trees fruiting pods for seed collection

Impacts of problems

- There had been a problem in the time management of field researchers for thinning trial expansion due to corona crisis in the last 10 months or so, but now Research Officer, Ms. Rupa Chapagain is being able to manage her time in the field. However, looking into her workload to manage seven trials, it is recommended to hire another BSc forestry graduate for detail data collection and analysis after MTR.
- Chain saw operator was not available right in time at Janajgriti CF in Dhungkharka last year and so Alnus thinning trial expansion has been delayed until Dec 2020.
- Because of market price drop for timber, buyers are not easily available. Therefore farmers are reluctant to pursue further trials. Coupled with market price drop and

private forestry registration issue, one of the farmers at Dhungkharka cleared all his *Alnus* trees irrespective of size from his forest for agriculture cultivation.

- Nutrient deficiency was observed in plantation trial in Daduwa and Dandapakhar. Based on Team Leader recommendation, biochar based organic fertilizer was used to correct this deficiency. The growth performance is now excellent.
- Weed encroachment in private plantation was also a serious problem during the initial phase. A cardboard paper mulching helped to control weed infestation in these trial plots.

Reflections

A bigger and standard silvicultural experimental design was not possible because of limited private forest area in all sites. Therefore we tried to adapt the trial based on preferences and choice of the participating farmers as a demonstration. The field days training, mentoring and coaching have been helpful to motivate farmers to continue these trials. A few other farmers (3 to 5) at Dhungkharka and Chaubas have also shown interest to try and expand these trials in their private forests. This is a good indication for next phase of the project.

Activity 1.2 Participatory action research on developing silviculture regimes for private forestry in Nepal: government nurseries.

Activities

As part of Activity 1.2, the project started forest nursery activities in Sindhu and Kavre districts in the beginning of 2019. The objective of this activity was to promote the best practice forest nursery in one selected government forest nursery in each of the research sites. In the month of March 2019 (13-17 March in Kavre and 27-31 March in Sindhu), the project facilitated forest nursery training in each of the two districts.

Training participants at Budol, Kavre

2019

Training participants at Patlepani, Sindhu

In Kavre, the total number of participants were thirteen (male 8 + female 5) while it was eight (7 male & 1 Female) in Sindhupalchowk. The nursery training program was focussed on best practice small demonstrations, such as installing low-cost germination shed, above-ground transplant with shading rails and above-ground hardening beds. Of the total 18 nursery training participants, only 10 were involved in forest nursery seedling production in the following year. A total of 128,450 seedlings were produced in the first year. Of the total nurseries promoted first year, two were DFO, one each community (Deupokhari) and local government (Chaubas) and the rest were individual farmers.

The second year nursery program was devoted more to private nursery seedling production and their plantation activities. The nursery training was organized for eight nurseries (two DFO of previous year, one each community and local government and four private nurseries). The seedling production and distribution of the second year program is presented in Table 1. The total seedling production was 256,209 of which more than half (135,557) was distributed for plantation and the rest is still in the nurseries. These nurseries produced the seedlings required for private forest plantation trials. Additionally, the best practice forest nursery trial will be a useful demonstration for other government forest nurseries in Nepal.

Table 1: Nursery production and distribution during March to Dec 2020

Nursery type/ address	No of species	Total seedling produced	Total seedling distributed	Remaining seedling at the nursery
1. Budol DFO nursery, Kavre	13	19413	9608	9805
2. Patlepani DFO nursery, Sindhu	20	83928	30990	52938
3. Chaubas LG managed nursery, Kavre	15	32123	14189	17934
4. Deupokhari CF nursery, Sindhu	9	12120	7850	4270
5. Daduwa private nursery, Sindhu	10	4536	4496	40
6. Kalapani private nursery,Kavre	13	13127	5427	7700
7. Khahare, private nursery, Kavre	13	13571	1506	12065
8. Badare private nursery, Sindhu	17	77391	61491	15900
Total		256209	135557	120652

Achievements

One of the Research paper series on best practice nurseries has already been published.

1. Pandit, B.H., Chapagain, R., Cedamon, E., Paudel, N.S., Pokhrel, D.C. and Nuberg, I. (2020), Choosing best practice nursery: A way forward for a successful plantation project, ***Research Paper Series on Agroforestry and Community Forestry in Nepal,*** 2020-01:1-31

This publication is also part of the case study papers targeted for publication under output 12. Additionally another RPS with contribution from Department of Forests and Soil Conservation and Divisional Forest Office is being ready for publication.

2. Lamsal, R.P., Pandit, B.H., Pokhrel, D., Paudel, N.S., Cedamon, E., and Nuberg, I. (2020), Current Practices and Suggested Management Modalities for Promotion of Forest Nurseries in Nepal, ***Research Paper Series on Improved Forest Management in Nepal,*** 2020-04: 1-28.

Impact of problems

Despite COVID-19, the project was able to manage forest nursery training in Feb 2020 and produced more than 200,000 seedlings from eight nurseries (Table 1). Monitoring and supervision of these nurseries and associated plantation activities has been a problem in the last 10 months or so. However, information on these nurseries and plantation activities were obtained through the respective nursery operators, especially from private nurseries and farmer leaders. They were paid for their services. Information on nursery records were obtained every month through telephone talk and occasional field visit by EnLiFT field researcher (Ms. Rupa Chapagain).

One year action research program suggested to several measures which could improve the current nursery practices for better seedling quality. The forestry sector requires a serious attention in undertaking a firm strategy and committed actions for long run to improve the seedling quality and successful plantation. This suggests a major departure from the current

model of nursery as a public business. The gaps in responsiveness with the changing need, poor performance and high recurring costs of nursery seedling production strongly suggests that scarce public money should be limited to research and development of nursery mostly related to biodiversity conservation but not for commercial production. The mass production and distribution should be gradually shifted to community and private nurseries as independent economic enterprise itself.

While few private small-scale forest nurseries exist in the Kavre and Sindhu Districts, Divisional Forest Nurseries remain the major producer of the seedlings. However, the problem of seedling distribution to consumers is apparent at the Divisional Forest nurseries with thousands of overgrown seedlings present in nurseries in the initial year. It became clear from the nursery trainings conducted by EnLiFT2 Project in Kavre and Sindhu districts that many nursery operators lack proper seedling production skills, there are overriding problems, administrative issues affecting the overall operations of government forest nurseries in the research districts.

Reflections

The scope of the nursery action research component of Activity 1.2 became clear after a series of field visits and discussions with nursery in-charge Forest Officers and Division Forest Officers in Kavre and Sindhu Districts. From these field observations and discussions, it was realized that the forest nursery sector needs to improve its capacity to meet species and quantity demanded by seedling consumers – primarily the private landholders that they could be developed as nursery entrepreneurs.

This presents the opportunity to experiment 'Enterprise Model' of government forest nurseries where the species distribution system is focused on consumers' demand and location. This is because of the fact that private nursery operators are now going to be engaged on producing high value cash species nurseries mostly fruits and NTFPs. DFO nurseries will be focussed to conserve locally threatened timber and a few fodder tree species. This means that the nursery will engage in sales of more diverse species-base to include production of commercially valuable fruits, nuts, non-timber forest products (NTFPs), and ornamental trees while still providing free seedlings of conventional timber species like pine.

The Division Forest Officer of Kavrepalanchok district Mr. Devi Chandra Pokharel proposed that subdivision forest offices (SDFOs) could serve as distribution or transhipment centres as a retail nursery, where consumers will have better access to the seedlings. The seedlings produced from private, community and local government managed nurseries under DFO network will be distributed through SDFOs. There is a strong support from current Division Forest Officers in the research districts to pursue a trial of involving private sector in the DFO nursery program as an enterprize oriented nursery business. This action research is being regularly followed-up in consultation with DFOs and related staff. Recently, there had been a small consultation meeting of EnLiFT2 country coordinator and nursery activity coordinator with DFO staff of Kavre district at Budol nursery. In the next pay period, a small green house for germination of locally threatened species will be constructed at this nursery (Budol DFO nursery) with support from EnLiFT2 project. DFOs in collaboration with EnLiFT2 staff will prepare a plan of action for the next phase program. Retail seedling distribution through Sub-divisional Forest Office will be implemented in the second phase program.

Activity 1.3 Monitoring and assessment of social, economic and ecological impacts of silviculture practices

Introduction

In this report we outline the work undertaken to date for Activity 1.3 of the ACIAR project, *Enhancing livelihoods from improved forest management in Nepal* (EnLiFT2). Activity 1.3 aims to determine how local Community Forestry User Group (CFUG) households are valuing and utilising the forests in Nepal and work with other Activities across EnLiFT2 to develop appropriate responses to that knowledge. We describe the major activities to date; provide an introduction to the analysis of data and outline how it will progress further; and make several suggestions for possible further work that could expand on the socio-ecological analysis. The analysis of the large dataset from the initial socio-ecological survey (SES) is still being undertaken, so here we highlight what we have done to date, provide some examples of the interesting findings and then reflect on the approach, including explaining the future focus of the Activity.

Activities

Much of the initial phase of Activity 1.3 involved developing and implementing the SES, as outlined in the activity timeline above. The detailed explanation of that process has been published in the EnLiFT2/ACIAR report Bardsley et al. (2020), described in the achievements. Rather than repeating much of that information, here we briefly summarise some of the initial findings from the SES to indicate how it is already providing important information for EnLiFT2, and has the potential to help guide broader forestry research and policy development in Nepal.

Very importantly, forests have multiple values in Nepal. For that reason, the large SES was undertaken to generate quantitative and qualitative data from a Nepali version of the questionnaire, working with 600 households in target communities. The large initial survey was developed and implemented in 2019-2020, entitled “Enhancing livelihoods from improved forest management in Nepal - Socio-ecological Questionnaire.” CFUG households were asked to explain how they use the forest, its values and its management. The surveys were undertaken across five sites (Bhumlu, Bethanchowk and Banepa in Kavrepalanchok; and Chautaura and Lisankhupakha in Sindhupalchok); with three CFUG communities and at least 100 respondents represented at each of the five sites. The approach taken was an initial random household sample, but subsequent purposive sampling was undertaken after an initial period to ensure representation of:

- At least 20% of households with access only to CFUG forest, and no private forest;
- Men/women household representatives, with at least 40% from both genders;
- Ethnic groups (at least 10% from 1= Brahmin / Chhetri, 2 = Janajati, 3 = Dalit).

The SES was completed successfully, with exactly 600 respondents and a fantastic array of data. Data collected during surveys is stored securely at Forest Action and the University of Adelaide. Local Nepali field assistants based at Forest Action facilitated the surveys, coded and transcribed the data, and the data is now being analysed by the EnLiFT2 research team to see how technical and policy support could be better targeted to assist individuals and communities to develop successful forest enterprises.

The SES sample is balanced quite evenly across genders and the five research sites. Younger males are slightly less represented across the sample, probably because of the disproportionate out-migration of that cohort from the region. The sample is dominated by the upper classes, but the 10 percent minimum target of the disadvantaged Dalit caste was met, again with a well-balanced gender representation. Almost one third of respondents are illiterate, and a full two-thirds of respondent either were illiterate or were literate but had no schooling. Only 5 percent of the sample had gone on to further education beyond schooling. These low education attainments suggest that the majority of respondents have limited livelihood opportunities beyond their immediate agro-forestry or labour migration opportunities. It might also explain why many people show little interest in being provided with written materials to inform them about agroforestry, EnLiFT or in fact, the SES questionnaire itself.

A low number, only about 8 percent of the cohort (52/600), had previous experience working with EnLiFT activities. It will be interesting to examine if these experiences correlate with particular values or activities. Nevertheless, almost all respondents are involved in CFUG activities, and about one quarter of respondents (164/600) also use private forests, with limited leasehold forestry (10/600). Again, analyses against these two latter sub-groups might be interesting to examine who they are and what they are doing differently to the broader community.

Salla (*Pinus* spp.) species form the majority of the forests but numerous households manage Chilaune (*Schima wallichii*), Uttis (*Alnus nepalensis*) or mixed forests (Table 1). Again, the analysis of where and who are managing the alternative forest types might be of interest. Chilaune, for example are a slow growing, twisted grain tree, often grown in marginal upland areas as a substitute for Sal (*Shorea robusta*), which is altitude limited and barely represented in the sample, even though it is the most widely traded timber across Nepal. Such a species as Chilaune may represent an opportunity for some other places, so we can ask the data: who is currently using the tree and where?

Table 1. Forest type/ species distribution by municipality

Forest type/species	Municipality					Total
	Banepa	Betanchowk	Bhumlu	Chautara-Sangachowk-Gadi	Lisankhupakhar	
Angeri	0	3	1	13	0	17
Bakle	6	0	2	0	0	8
Bans	2	2	0	0	0	4
Chhap	0	0	5	0	0	5
Chilaune	81	2	54	113	43	293
Dabdabe	1	2	0	0	0	3
Dhalke	0	0	0	2	0	2
Dhupi	0	0	4	0	0	4
Dudhilo	1	3	0	0	0	4
Guras	15	27	4	9	9	64
Jhingane	1	0	1	0	10	12
Jhyanu	0	0	1	0	9	10
Kafal	21	0	0	6	3	30
Katus	15	0	1	9	2	27
Khasru	1	59	0	0	7	67
Kush	0	2	0	0	0	2
Kutmiro	0	0	2	4	0	6
Lampate	0	0	0	0	1	1

Lapsi	4	0	0	7	0	11
Mauwa	1	0	0	1	0	2
Mix pine-broadleaf	21	31	24	19	60	155
Mix Katus-Chilaune	1	0	8	1	17	27
Mix Katus-Guras	0	1	0	0	0	1
Other	36	64	25	83	8	216
Padke	1	0	0	0	0	1
Pahele	0	1	12	0	0	13
Paiyu	1	0	1	0	0	2
Phalant	1	0	2	0	0	3
Rakchan	0	0	0	0	12	12
Sal	0	0	0	7	0	7
Salla	117	173	131	121	115	657
Setikath	2	0	0	0	0	2
Tuni	0	0	1	0	0	1
Uttis	48	50	73	20	90	281
Total	124	119	116	120	119	598

The overwhelming and important initial result is that it rapidly becomes clear that most respondents do not value the sale of timber highly, prioritising non-use, aesthetic values or non-destructive use values such as timber for private use, fuel, mulch and fodder (Figure 1). In other words, there does not appear to value highly the commercial exploitation of the forests for timber, but there is a strong recognition of agroforestry values for local building, fuel and agricultural resources. Only approximately 10 percent of respondents have sold timber at a particular time. Again, this raises questions about who is valuing the forest in different ways, which is being answered through further analysis, including who are the small minority who are valuing timber production highly and why?

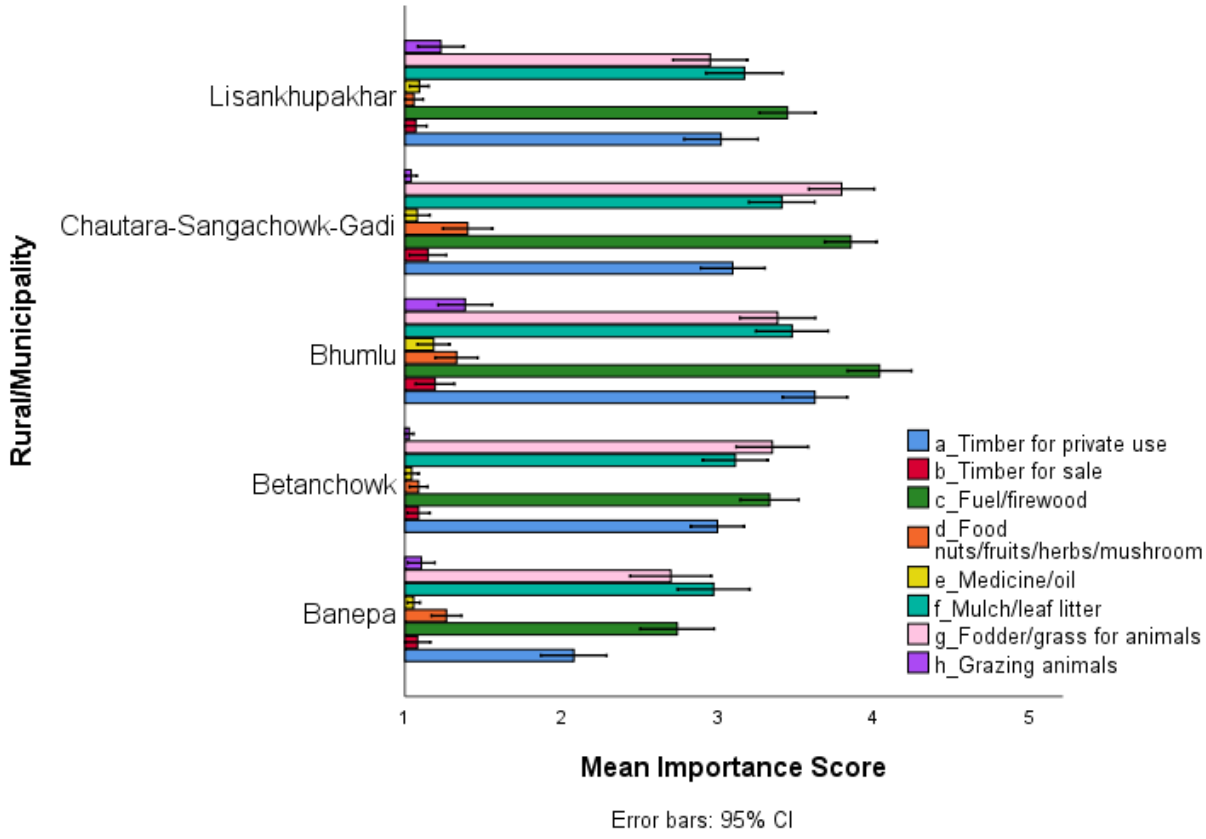


Figure 4. Mean importance scores of direct benefits or forest products by municipality

The forest is being used in a complex range of ways, but largely for subsistence production or only indirectly for commercial activity. Perhaps there is not a widespread culture of viewing the forest as a direct source of income. Perhaps the lack of acknowledgement of commercial timber values may be linked to a history of bad experiences with such activities in relation to large scale felling, the marketplace or from a governance perspective.

That said, and almost in contrast, many respondents stated that they were interested in investing more into their community and/or private forests and learning about new forest products, especially for timber and medicines (Table 2). So the results suggest a latent demand for more forestry opportunities to be provided to communities, but also ongoing conceptual and real barriers to commercialising timber production, which may make the goal of translating the aims of further forestry investment and interest into on-ground outcomes difficult without careful tailoring of programs.

Furthering that challenge, households commonly stated that they are less actively managing or utilising the CF than they did 5 years ago (Table 3). That broad trend across the sites may suggest that Nepali forestry policy, and EnLiFT activities in particular, are working against a socio-demographic trend in declining engagement with community forestry across the Nepali mid-hills.

Table 2. New commercial forest products preferred by respondents

New products	N	Percent (%)
Flowers	3	1.1
Fodder	4	1.4
Fruit	9	3.2
Medicinal & aromatic plants	89	31.9
Non timber products	14	5.0
Timber	158	56.6
Vegetable	1	0.4
Water	1	0.4
Total	279	100.0

Table 3. Importance score and number of respondents for forest related activities now and 5 years ago

Forest related activity	Community Forest				Private Forest			
	Now		5 years ago		Now		5 years ago	
	Mean score	N	Mean score	N	Mean score	N	Mean score	N
Change in land use	NA	NA	NA	NA	1.10	118	1.19	119
Planting new species	1.69	522	2.45	565	1.47	222	1.82	219
Fencing	1.03	484	1.09	493	1.01	214	1.02	210
Pruning	1.63	526	2.07	557	2.11	230	2.26	226
Clearing unwanted trees	1.98	531	2.50	563	2.07	229	2.16	227
Weed control	1.42	522	1.58	546	1.49	226	1.59	223
Insect pest control	1.02	488	1.03	497	1.04	221	1.03	218
Gully control	1.07	491	1.11	501	1.09	220	1.11	217
Fertilising/mulching	1.12	487	1.12	495	1.11	220	1.12	217
Grazing control	1.24	505	1.26	503	1.21	219	1.23	216
Harvesting timber	1.74	541	1.89	532	1.93	230	2.02	228
Harvesting fodder/grass	2.48	571	2.89	566	2.85	233	2.82	231
Harvesting firewood	2.50	577	2.97	572	3.05	235	3.06	233
Harvesting food & medicine	1.13	503	1.15	492	1.20	206	1.23	200

NA – not applicable. This question was not asked for community forestry because changes in land use were not expected to occur in the last 5 years

There are a number of very interesting initial results by site. Betanchowk, for example, has distinctly different results from the other sites, and seems to more innovative in its forest species exploitation. A small sub-project might follow-up on why that place has been able to exploit a more complex forestry system, perhaps in association with its good access to Kathmandu and dairy industry development. The food sufficiency from private lands is generally low across all sites, but particularly in Lisankhupakha and Bhumlu, the more remote, higher altitude sites (Figure 2).

The values of timber for private use, fuel/firewood, fodder, mulch/leaf litter were all ranked significantly less in Banepa, the more commercially-orientated agricultural site close to Kathmandu, than other sites (Figure 1), perhaps because respondents in the peri-urban site have access to many other inputs and also have an economy that is regularly supplying the city. With further analysis it might be possible to use the five sites as case-study examples based on characteristics such as distance to Kathmandu, travel time to markets/marginality, altitude or rainfall to develop a typology of the agroforestry values and activities according to the type of settlement. For example, about 20% of land is currently under-utilised across the sample, but that is mostly concentrated in Lisankhupakha and Bhumlu (Table 4).

In those same more remote sites, respondents were particularly interested in planting trees on their private land (Figure 3), which suggests that CFUGs might be interested in more innovative forestry opportunities to overcome livelihood and food security challenges within marginalised communities. Timber and fruit remain the most popular opportunities identified by those people who are looking to plant trees on under-utilized lands.

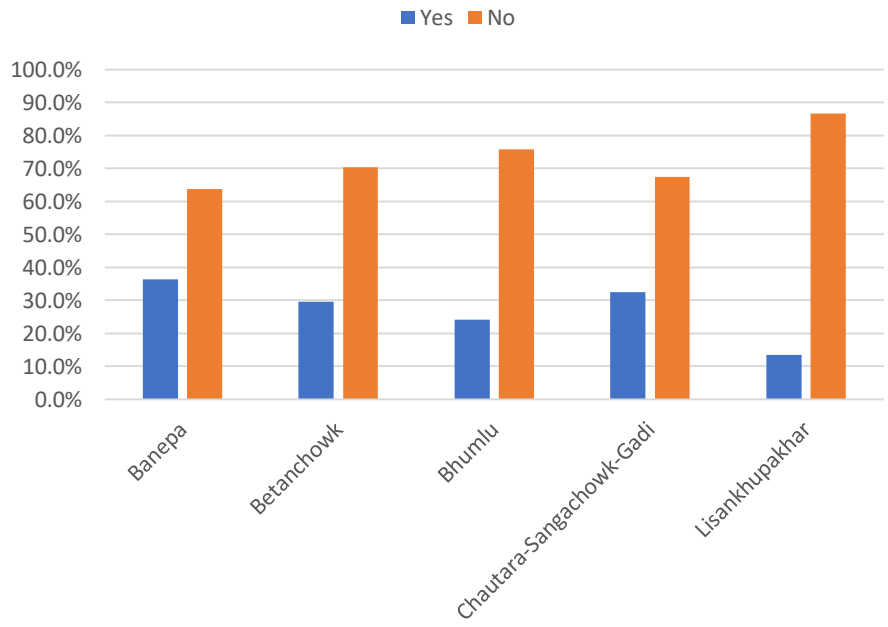


Figure 5. Percentage of respondents generating food sufficiency from private lands

Table 2 Number of respondents and land area (rupani) of under-utilised lands (UUL)

Municipality	Number of respondents with UUL	Total area of UUL (rupani)	Mean area of UUL (rupani)	Number of respondents expanding forestry into UUL	Percentage of respondents expanding forestry into UUL (%)
Banepa	9	15.58	1.73	5	5.1
Betanchowk	16	51.45	3.22	12	12.1
Bhumlu	34	261.00	7.68	26	26.3
Chautara-Sangachowk-Gadi	18	120.00	6.67	13	13.1
Lisankhupakhar	62	409.10	6.60	43	43.4
Total	139	857.13	6.17	99	100.0

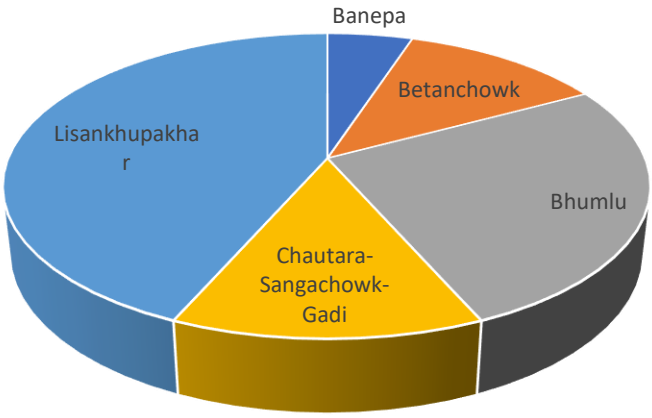


Figure 6. Distribution of total number of respondents by municipality who are interested in forestry expansion into under-utilised land

There are some important results according to socio-economic characteristics. For example, family income is the major mechanism to pay for food, but debt (~10%) and ongoing inability to access food (~5%) are also important (Table 5). The poor food access levels run across classes, but the Janajati and Dalit are more likely to have debt or ongoing access issues. Only 5 percent of Dalit respondents stated that they are food secure from their own lands, yet they largely are not seeing the CF as a pathway to supporting local food security. The Janajati caste are valuing the forest for timber for private use and firewood/fuel more than the other castes, which may be associated with the Janajati often having wooden framed houses that need regular repairs, unlike the Brahmin and Chhetri castes that are more likely to clay or brick houses.

Table 3. Frequency and percentage of respondents by Caste using pathways to accessing food alternative to on-farm production

Pathways of accessing food	Brahmin/Chhetri		Janajati		Dalit		All respondents	
	N	%	N	%	N	%	N	
Family income	156	98	209	96	59	100	424	97
Social welfare	8	5	12	6	2	3	22	5
Food-for-work	1	1	1	0	2	3	4	1
Community support	0	0	0	0	1	2	1	0
Forest food	1	1	1	0	0	0	2	0
Debt	11	7	33	15	11	19	55	13
Remains difficult to access sufficient food	1	1	21	10	6	10	28	6
Total	159	100	218	100	59	100	436	100

More broadly, the results suggest that people who are more educated appear to be making more use of the forest timber for commercial sale, as well as accessing foods such as fungi, fruits and herbs (Figure 4). If the project wishes to engage in a more targeted manner with communities, it may be possible to more explicitly recognise the importance of education to enable people to develop business activities linked to timber or other commercial uses.

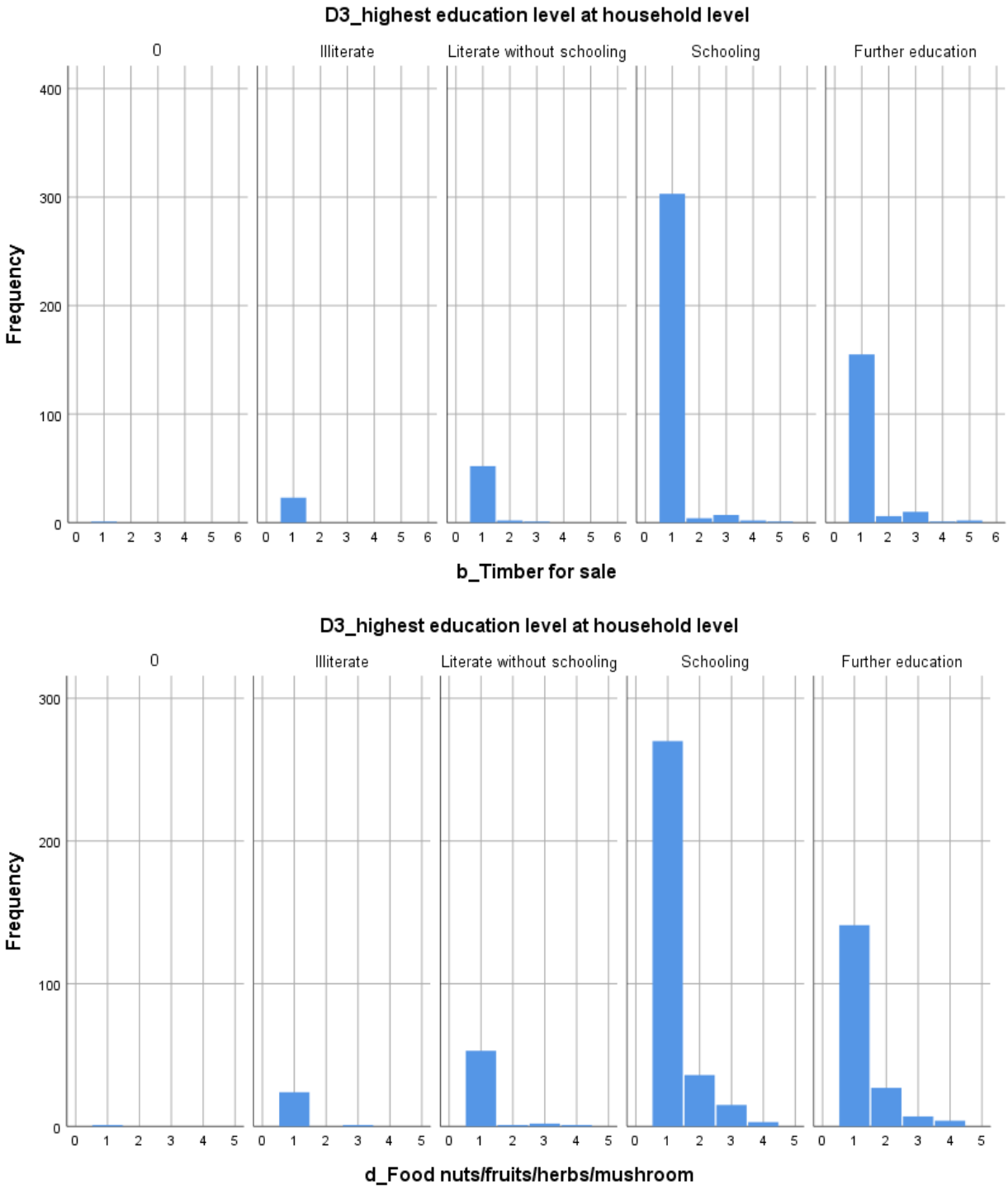
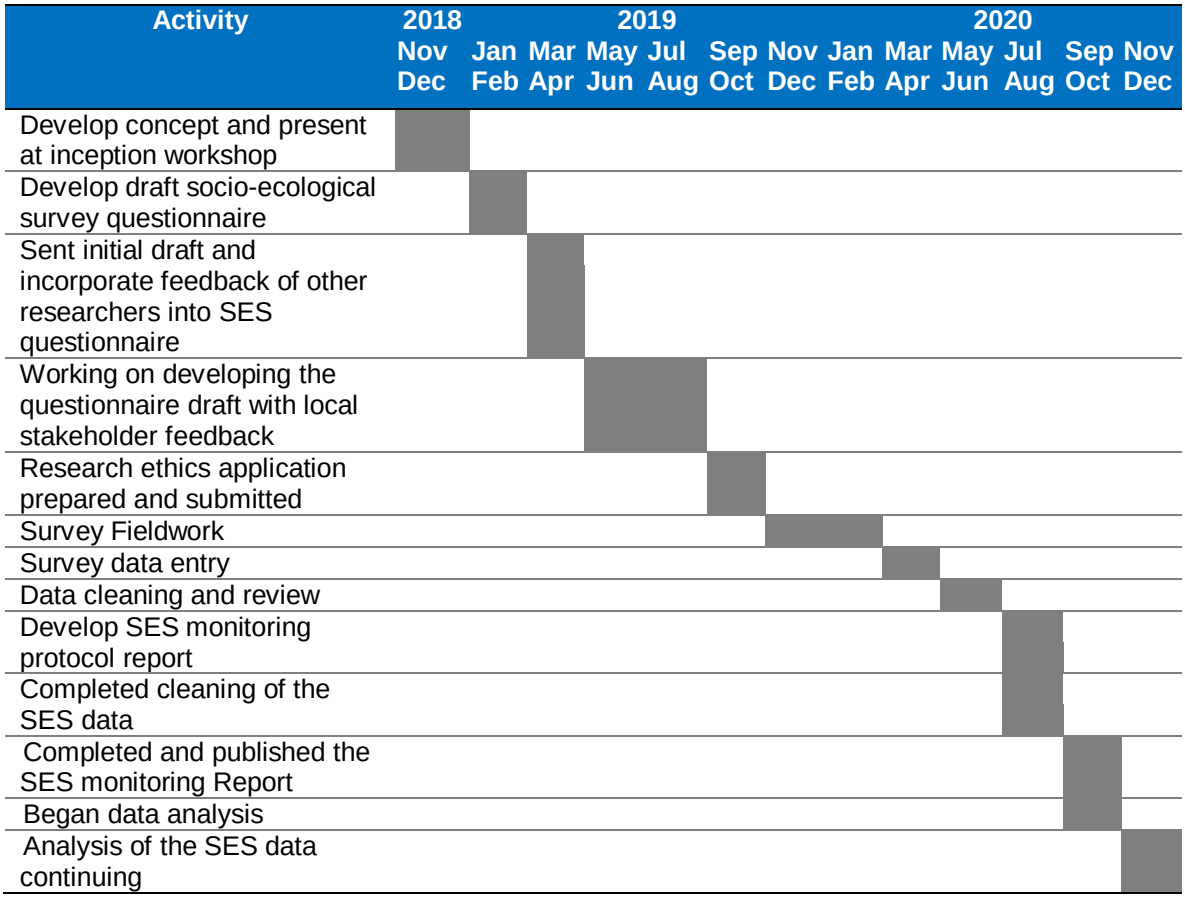


Figure 4. Frequency of respondents by importance score and by highest educational attainment at household level for timber for sale and forest foods

A lot of forestry activity and policy is organised as though most Nepali households are still largely dependent on forestry and agriculture for their livelihoods and food security, but the SES suggests that the situation is actually far more complex. Further analysis of the data will help EnLiFT2 to identify how efforts could be best spent to maximise outcomes from forestry by guiding targeted interventions and policy, especially as the Activity 1.3 team works with other Activities to delve into particular emerging questions relevant to them.

Activity Timeline



Dec 2018: Helped organise and attended inception workshop, including a brief presentation of previous work on the role of socio-ecological analyses. Initial discussions with Nepali colleagues about the opportunities for a cross-disciplinary SES that would link findings from the different activities within common narratives.

Jan-Feb 2019: Developing draft questionnaire for the SES.

Mch-Apr 2019: Developing draft questionnaire, including beginning to build in ideas suggested by leaders of other activities. Sent initial draft to all stakeholder activity leaders.

May-Jun 2019: Working on developing the questionnaire draft with local stakeholder feedback.

Jul-Aug 2019: Working on developing the questionnaire draft with local stakeholder feedback.

Sep-Oct 2019: Supported Research ethics application. Access database developed for SES data entry. Organising final draft of questionnaire before review in Nepal with feedback from Nepali stakeholders. Helped organise and attended Nepali trip to work with survey team to finalise, test and initiate SES. Presented outline of ideas and then in a series of meetings, tests of the questionnaire, translation and revision, we developed the work into a

final version. Initial surveys undertaken and data began to be uploaded with some problems with the Access database.

Nov-Dec 2019: Fieldwork being undertaken in Nepal

Jan-Feb 2020: SES being undertaken by ForestAction in Nepal generated both quantitative and qualitative data of a stratified sample of households in Kavre and Sindhupalchok (600 households).

Mch-Apr 2020: Survey data continued to be uploaded by ForestAction with initial reviews suggesting that the quality of data uploading needed revision. Work impacted by Covid-19 pandemic.

May-Jun 2020: Errors in data uploading being managed. Developed an initial statistical analysis plan for the SES data. Wrote the draft Socio-ecological Monitoring Protocol report.

Jul-Aug 2020: Completed cleaning of the SES data. Finalising the Monitoring report.

Sep-Oct 2020: Completed and published the Monitoring Report. Australian researchers began analysing for relationships between values, silvicultural management approaches, forest types, and community and household characteristics.

Nov-Dec 2020: Analysis of the SES data continuing. Drafted report of initial results for Activity 3. Drafted mid-term report for Activity 1.3.

Achievements

More general achievements have been introduced above in relation to the completion of the initial SES in Nepal. Specific outputs include two reports, one published and the other for internal use, that describe and begin to synthesise findings of the SES:

- Bardsley D., Cedamon E., Gyawali B., Paudel N., Banjade M. and Nuberg I. (2020) *Socio-ecological Monitoring Protocol for EnLIFT2*. Research Paper Series on Improved Forest Management in Nepal, 2020-03:1-31.
- Draft summary report to support Activity 3: Cedamon E., Bardsley D. and Nuberg I. (2020) Preliminary Results from the Socio-ecological Survey on Experiences and Opinion on Forest Product Sales in five selected municipalities in Kavrepalanchowk and Sindhupalchowk, Nepal. November 2020.

Impact of Problems

The most significant problems were associated with Covid-19 pandemic, but it was great how ForestAction could undertake the SES in a timely manner, which ensured that the data was largely able to be generated prior to the broad outbreak of the disease in Nepal. Further interlocutor training and some issues with translation were identified as local procedural challenges, but also that the lengthy questionnaire needed to be administrated

in a range of remote locations to groups who did not necessarily see the value of the process. Some particular challenges were encountered with data entry, and the process was needing to be overseen very carefully by Edwin to ensure accuracy of translation from paper to electronic interfaces. We had some issues organising the transfer of funds internally from one Faculty to another within the University of Adelaide to cover Douglas's role in the project. This was not finalised until May 2020 and held up some activities.

Reflection

The survey process was broadly successful and there is no specific reason why it shouldn't form a good mechanism to monitor attitudes towards the forest and community forestry programs over time. The next monitoring survey of 150 households is timed to run in the first half of 2022, with the final survey in the second half of 2023, if the whole project is to be completed to June 2024. The subsequent analyses will aim to identify changes in perceptions and behaviours associated with more EnLift2 interventions.

Only a relatively small component of the overall dataset has been analysed to date, but from the initial analyses, the data looks very interesting and it is likely to be useful for specific sub-projects as well as providing a mechanism to draw together those sub-projects around central themes. Nevertheless, it will take much of 2021 to fully work around the key questions emerging from the large data set, especially as we aim to work with sub-groups and develop analyses of interactive effects of the different variables on perceptions. Further discussions will be undertaken with leaders of sub-groups to determine which analyses will be most useful for their activities. For example, to inform Objective 3. Timber Market and Value Chain Analysis we have already been able to provide important data on the commercialisation of forest products (egs Table 1 and Figure 1).

Beyond the specific interaction with other EnLiFT2 activities, the protocol is developing important results that will allow researchers and other users of the information to better understand the local socio-ecological complexity in relation to forestry issues in the mid-hills of Nepal. Some of the results are surprising; some suggest that future commercial forestry will be difficult to develop in the region; while others suggest particular opportunities associated with support for different groups and communities.

From the perspective of the EnLiFT2 project alone the socio-ecological analysis is worthwhile, but the values go beyond the project itself. Too often development projects are implemented without acknowledging the range of values and needs within a place or community, and a monitoring protocol such as we have developed and applied provides an important approach to guide research and development that can account for unique local situations. There are many assumptions that are taken prior and during development projects, especially when they are run by external actors.

The undertaking of the socio-ecological protocol incorporates elements of social and environmental impact and vulnerability assessments, to generate a mechanism for asking unique questions that are relevant in the development or implementation of a project, and could guide surrounding policy and activities to support future actions. Without such sophisticated information, it is easy to imagine how a lot of work and investment could miss

the target of responding to specific needs or generate new problems by undermining or neglecting key issues, especially if project actions are working against broader socio-economic, demographic, political or environmental trends. The protocol assists the researcher to understand where opportunities lie to target the most effective interventions, and similar approaches could be useful for other ACIAR projects, or development projects in general, in the future.

If further funding was available, it would be useful to employ a part-time statistician to assist Edwin to increase the rate and detail of analyses. Monitoring will be sufficiently covered by the survey process, but to add depth to the analysis of the quantitative data, it would be interesting to pursue such targeted qualitative data gathering. It would be interesting towards the end of the project to undertake some additional interviews with key stakeholders to identify their opinion of the protocol and of the data generated by it, especially those people in CFUGs who are identified as the innovators/lead farmers. Some follow-up interviews would enable some greater in-depth analysis of opinions of risks and opportunities from forestry, and the implications for policy. In such a manner, the SES could become a stronger tool to help guide future forestry activities in Nepal.

OBJECTIVE 2: DEVELOP AND INSTITUTIONALISE EQUITABLE COMMUNITY FORESTRY PLANNING AND GOVERNANCE FRAMEWORKS WITHIN THE NEW LOCAL GOVERNMENT SYSTEM

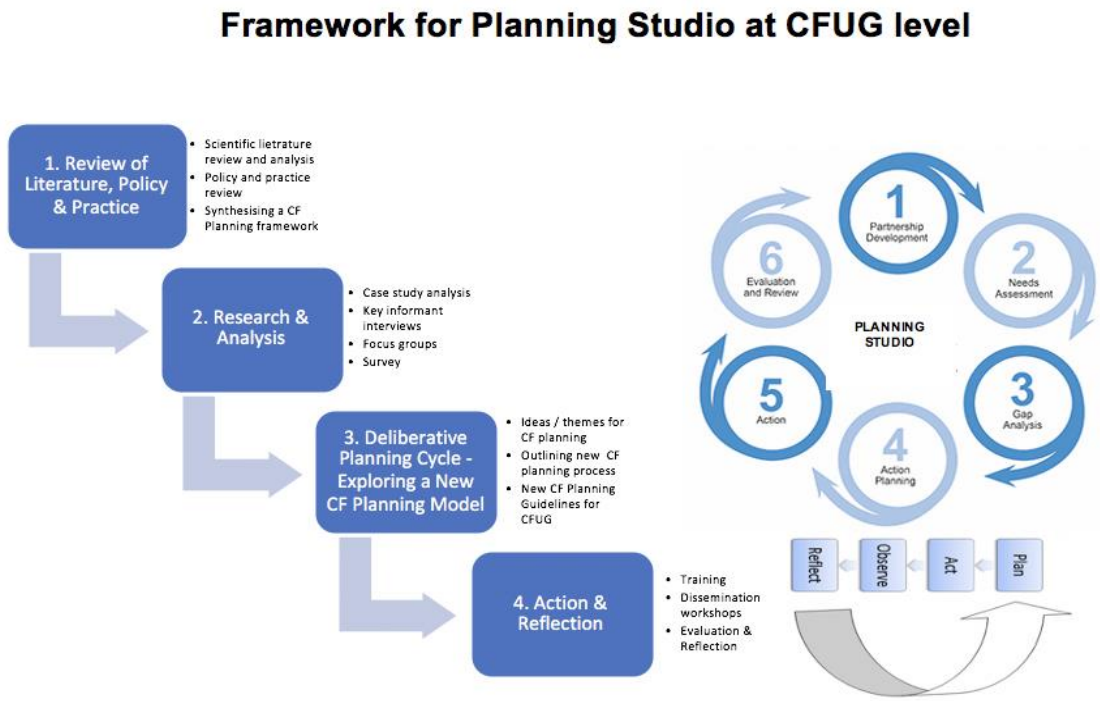
Activity 2.1 Analysis and demonstration of community forestry planning framework at CFUG level.

Activities

Research work is progressing well under this objective, despite some delay in the commencement of the project. We have implemented the Planning Studio in the six research sites of Kabhrepalanchowk and Sindhupalchowk districts. Activities which have been commenced or completed to date are as below:

Developing a framework for Planning Studio

We have adapted the idea of Planning Studio, which has long been used in planning research and learning for many decades but is new to NRM research and learning, to organise our action research at the CFUG level. Drawing on a range of literature on planning scholarship, we have developed a framework for Planning Studio to enable us in critical thinking/ analysis, collaborative problem-solving and creative learning (O22). The Planning Studio includes the following four elements: a) literature review, b) qualitative field research, c) deliberative planning cycle, and d) Action and reflection training (see Figure below).



Literature review on CF planning practice:

Literature review of CF planning practice has been completed. This review is reported in Report - Output. This review includes key insights of the evolving CF planning and includes a wide range of literature covering historical evolution of decentralised forest governance globally, community forestry evolution in Nepal, CF planning practice in Nepal, and issues of equity, gender, social inclusion, forest governance, and forests under federalism in Nepal are well under way. The review also identifies and assesses key debates on CF planning, governance and gender. The reviews, which is an evolving process and will continue.

Research and Analysis - Case Studies on CF Planning Practice:

Another component of Planning Studio is to collect data through various instruments. Case studies are one of the instruments. As the work commenced in all the six CFUGs of Kabhrepalanchowk and Sindhupalchowk districts, our data collection for case studies on planning practice also started in all the CFUGs. However, due to COVID-19 induced strict lockdown followed by a limited travel and meeting opportunities, we could only complete case studies in two CFUGs using 17 Key Informant Interviews (KIIs) with CFUG executive committee leaders, ex-CFUG committee members, woman leaders, ward chairperson and AFOs) and 5 Focus Group Discussions (FDGs) with CFUG executive committee, women groups, mixed group in two CFUGs only, namely Sansari and Shreechhap CFUGs of Chautara-8 and Chautara-13 respectively. In addition, data collection for case studies in other 4 CFUGs have now started. We have completed 22 KIIs, 9 FGDs in the remaining 4 CFUGs. The case study reports for CFUGs are under preparation. These research activities form the part of our deliberative planning cycle on the ground.

Research and Analysis - Focus Groups:

For the CFUG planning purpose, Tole (hamlet) meetings, executive committee meetings, visioning workshops and general assemblies have been facilitated in all the six CFUGs. These visioning workshops are focused on developing the vision statements and long-term strategies from the CFUG perspectives. The detailed action plans for the next five years are yet to be completed due to COVID. The next cycle of deliberative planning will be conducted in 2021.

Research and Analysis - Planning components within Socio-Ecological Survey:

We also included questions related to CF planning in the Socio-Ecological Survey, of which data analysis and reporting is underway. The results from the survey will also substantiate the case studies.

Action and Reflection - Training on CF planning:

A two-day training to the members of the project team, DFO staff, CFUG leaders and ward chairs was conducted on inclusive and deliberative planning process. The CFUG level training on deliberative planning was planned for 2020 but impacted by COVID.

Achievements

- 022 Report_ Review of Planning Theory and Practice in CF
- 023 Case Study Report_Sansaridanda CFUG
- Implementation of field activities as outlined above

Reflection

Reasonable progress:

Like everything else in the project, COVID-19 has had a lot of impacts on the way research activities under this Objective could have been implemented in practice, and the outstanding progress that might have been achieved. Yet, we are pleased to note that we have managed to do a lot of the activities that were planned to include both field activities and desktop reviews. This achievement is due mainly to the drive and energy of the team members as well as the availabilities of research respondents in case study villages with relatively less severe COVID-19 risks.

Limited availability of time:

Availability of time of forest users has probably been the most constraining factor during CFUG planning and processes. Attendance in Toles level meetings was relatively better than during workshops and assemblies. For instance, deliberative planning process included 3 full days of workshop for situation analysis, visioning and plan development activities but the participants spent about two half-day time. Interviews and group discussion also invariably confirm the case of having increasingly difficult to find time of users and EC leaders in CF related activities. The opportunity costs are high and temporary migration of members to cities is also significant constraining the possibility of face-to-face meetings.

An interest in planning contingent on resource availability:

The interest of attending a meeting or overall activeness of CFUG is largely dependent on the resource potential. When there is opportunity of harvesting and income, EC meet frequently otherwise less frequent meetings observed. The frequency of meeting is significantly high around harvesting period.

Superficial planning processes:

Despite the provision of annual planning process *ad hoc* planning processes are dominant in practice. Rather than putting specific activities in annual plans, the ECs tend to make quick decisions and implement them when they find certain activities important. In case the activities are endorsed by the general assemblies, they hardly develop detailed project reports for those activities.

CFUG planning not tied with local government planning:

While there are considerable opportunities of synergizing resources by collaborating with local governments, the CFUGs could hardly harness them due largely to the mismatch between the planning cycles of local governments and CFUGs. The CFUGs normally develop

their plans between September to December which are implemented immediately after assembly approves them and should be completed by mid-July. Whereas the planning process of local governments starts in December and completes in June-July. The local governments normally required that the CFUGs should be able to share costs, which is not possible for CFUGs as they cannot ascertain an availability of fund when LGs make plans.

Linking Planning Studio with EPPL:

Planning Studio provides a framework for analysis, experimentation and solutions at the CFUG level, encompassing literature review through dissemination, focused on the problems and solutions to the planning practice at the CFUGs level. Deliberative planning practice is an integral component of the studio being implemented to diagnose problems and explore solutions. Essentially the Planning Studio is focussed on improving planning and governance within the CFUG. Meanwhile, the project has another research stream of work in the form of EnLift 2 Policy and Practice Lab (EPPL) which focuses on the government interface with CF issues and opportunities. Essentially, Planning Studio and EPPL complements one another so as to facilitate change from CFUGs to the government levels. However, clarity and efforts to link these two complementary streams of work would enhance impact.

Misplaced representation:

Representation of poor, women and marginalised groups in CF planning practice has increased over time. This is partly due to the mandatory provisions for reservation for those groups. Moreover, it is also a result of facilitation and capacity building interventions. However, this representation is misplaced because these groups of people do not seem to effectively voice their interest and concerns. This is also the case where authoritative leadership dominate decisions leaving the voices of poor and marginalised unheard. Likewise, the deeply embedded conception of social hierarchy still prevails in the rural settings, which is visible in different forms. The notion that women cannot work as effectively as men, lack of cooperation in working with Dalit leadership among others manifest the challenges towards inclusiveness.

Increased need for a new CF planning model:

CF planning in Nepal initially focused on involving local communities in protection of forests, and then changed to involve a more focus on livelihoods. In the early years the communities were often relatively isolated geographically and forest use was largely, but not entirely, for self-consumption. Over the years this has changed greatly and communities are increasingly involved in market economies amidst the volatile political situation in the country affecting CFUGs. Global changes such as internationalisation of labour have led to large numbers of Nepalis working outside Nepal; many of them being CFUG members. Labour migration has meant the transfer into Nepal of large amounts of income in the form of remittances, leading to significant increase in the wealth of rural people, the emergence of a remittance economy.

The effects of remittance economy and the politicisation of Nepali societies are felt in CFUGs. The CF planning practice that was introduced almost 50 years ago relied on CFUG as community institutions to be able to do CF planning and managed forests effectively. However, these institutions have become less stable and effective to undertake inclusive planning of CF due to unprecedented migration and feminisation of local communities.

Moreover, over time, forest-people interdependency has lessened along with the shifting social values on wealth maximisation. This has been compounded by a rigid, often protection oriented CF planning with overriding influence of forest bureaucracy, often in alliance with social elites. CF planning has become less functional and un-strategic. The functioning and sustainability of CF is threatened by rigidity of CF planning in the context of the rise of remittance economy in Nepali villages and highly politicised, often exclusionary decision making systems. This highlights the need for a major rethinking in the ways CFs are planned in the changing context.

Reimagining transformation in CFUG planning and governance:

We believe that a radical change in the current institutional arrangement of community forestry is needed to ensure that CFUGs can plan and manage forest resources effectively and benefit from multi-purpose management and expanding forest-based value chains that are sustainable, inclusive, and equitable. We will continue to implement the Planning Studio and consider some research priorities to explore reform in the existing planning practice and institutional arrangement within CFUGs:

- redefining and strengthening executive functions of CFUGs so that they can function more effectively as organisations to make related decisions more efficiently, without compromising the democratic conditions that all of its decisions adhere to resolutions of AGM;
- empowering EC leaders with certain discretionary powers for timely decision and efficient actions again with institutional safeguards for any misuse of powers;
- empowering poor, women and Dalits to have their voice in CF planning, to enable inclusive decision making process and equitable / meaningful benefit sharing mechanism in place
- establishing rules for more effective use of forests that addresses forest under-utilization and equitable benefit sharing within the community, translating the ideas of 'just sustainability' in practice, and
- redefining the ways external actors such as forest bureaucracy, businesses, consultants and experts, could assist, not hinder, strategic and equitable management of forest within a new CF planning and governance framework.
- engaging experts to advise CFUGs to enhance capacity of CFUGas in the areas of sustainable and equitable use of forest products and services, and to assist in planning, technical issues (e.g. inventory, execution of forest management activities), and respond to the increasing regulatory requirements.

- Facilitating change in the current incentive structures to enable EC leaders and other users to be adequately incentivised for their time subject to resource availability. It can be either regular annual pay or based on specific tasks.
- Strengthening CFUG level governance through more active use of information and communication technologies for transparency, inclusivity, fairness and more importantly efficiency. For example, test/experiment a customisable CFUG internal governance APP with functionality of real time monitoring of CFUGs operations by CFUGs members.
- Developing multi-stakeholder CF forum as a platform for participatory, transparent and inclusive policy dialogue and learning at the local level.
- Encouraging and incentivising watershed/landscape level network institutions of CFUGs which can help achieving economy of scale through resource pooling, integrated service provisioning and business collaboration.
- Diversifying service provisioning beyond DFO and encourage, support and incentivise the private sector, local government or CFUG-cooperatives (employing technical staff) to deliver technical, institutional and other business services. DFO's primary role should be redefined as providing regulatory oversight and administrative service

Activity 2.2 Analysis and demonstration of responsive institutional cooperation framework between CFUGs and local governments

Activities

We have reviewed Local Government Operation Act 2017 and the new Forest Bill, which is already passed by the parliament as Forest Act 2019 that eventually replaced the 1993 Forest Act. We prepared and submitted some insights to the government and the wider public and conducted EPL around the issue among policy actors. We also contributed to preparing province level forest regulation.

We have organised 9 workshops with the five local governments. These workshops focused on the CF-LG collaboration, how local governments can facilitate local forest issues and enhance cooperation (e.g. establishment of cooperatives of CFUGs, technical forest service delivery and partnership opportunities). These workshops led to further collaborative works at ward level – one forest technician be hired in cost sharing basis between LG, respective CFUGs and EnLiFT project.

Integration of planning processes of LGs and CFUGs are also discussed in workshops and meetings with LGs. Our analysis shows that the alignment between LG and CFUG planning requires policy level provisions.

Achievement

- 027 Report on Regulatory Analysis_Developing a Partnership Framework for CF and LG – completed
- Completion of 9 workshops with 5 local government officials

Reflection

Collaboration in planning:

Local governments are mandated to collect the project demands from local people from each hamlets or settlements. They required to identifying program and plans and prioritising them in consultation with local community groups. So, CFUGs are in perfect position in providing inputs in local project identification including needs assessment and prioritizing plans as projects that become the projects of the local government. Similarly, each CFUG can invite ward office to support in CFUG planning process. Forest Act 2019 also mandates CFUGs to coordinate with local governments while planning poverty reduction related activities. Moreover, CFUGs also requires to get recommendation from the respective local government while sending the revised operational plan of the CFUG. Palikas (LGs) can also help in identifying, establishing and sustaining forest-based enterprises by individual CFUGs, multiple CFUGs or individuals. However, LG and CFUG planning cycles are totally different in terms of timing.

Environment plan – forest plan:

Local governments can benefit by developing a strategic plan for environmental conservation. These plans can accommodate forests and other landscapes. EnLiFT project will facilitate in developing environmental plans in at least Two local governments such as Lishankhupakhar and Bhumlu.

Linking EPPL with Planning Studio:

While we are implementing the Planning Studio, we are also providing inputs into the organisation of EPPL in the pursuit of developing a cooperative framework between CFUGs and LGs.

Designing and promoting deliberative forums between CFUGs, LGs and other stakeholders:

Local governments are mandated to form a thematic committee (*bishayagat samiti*) to oversee forest, environment, and disaster management. The committee is responsible for facilitating planning process which starts with identifying local community groups and NGOs and organize meeting with them as part of local government's annual planning process. Local governments have also started to engage with palika-level FECOFUN, and have been organizing coordination meeting with CFUGs at ward level. To increase the relevance and effectiveness of these initiatives, deliberative forums at ward and palika levels. At ward level, a deliberative forum comprised of all the CFUG representatives from the ward, representatives of women's groups and other interest groups and the ward representatives. At the palika level, the deliberative forum headed by the thematic head of the Forest, Environment and Disaster Management should be formed, which should also include representatives from Sub-division Forest Office, FECOFUN, FENFIT, representatives from other forest-based industries from the area, and NGOs. The forum would reflect on the progress of ongoing initiative in the area, help attain the economies of scale by bringing resources and technologies, and promote entrepreneurship in the area. The forum can also lead the process of developing landscape level programs and plans and provide necessary technical and other services to the respective CFUGs, as and when demanded.

Synergizing mobilization of resources between CFUG and LG:

When both the institutions would like to promote forest management and make best use of forest resources and benefits derived from them, collaboration between these institutions can also help in synergizing financial, leadership, human, physical, institutional resources available to them. Local government can collaborate with CFUGs in forest conservation, fighting forest fires, developing ecotourism infrastructure and supporting livelihoods improvement programs. Similarly, CFUGs can help local governments in promoting greenery in cities, distributing seeds, seedlings and other forestry technologies to local government, and helping local governments in local infrastructure development.

Joint Monitoring and Evaluation:

Local governments should also be involved in collaborative monitoring and evaluation of CFUG's activities. Palikas can also encourage CFUGs to adopt public auditing system. Moreover, Palikas can develop a database of all the CFUGs and develop a mechanism for updating information; the information is then analysed and shared at the deliberative forums for making informed decisions.

Making the case of PES:

As the CFs providing other environmental services such as carbon sequestration and watershed conservation, the Palikas can also facilitate in establishing upstream-downstream linkages by examining the contribution of CFs in water source conservation and supply, thereby setting up royalties channeled to the respective CFUGs from the downstream communities, who receive the services.

2.3 Analysis and piloting of gender equitable decision-making model in CF governance.

Activities

The project inception was held in December 2018 one of the key persons for this stream of work, Sujata Tamang, formally joined in EnLiFT2 from October 2019. This report provides details of progress mainly after this date.

Literature review: As part of Planning Studio, literature review on gender in community forest management is an ongoing work. The additional literatures were explored and added in the earlier version drafted prior to October 2019 version. The draft report of the review has been prepared.

Preparation of Women Empowerment Index in Forestry (WEIF) Framework:

WEIF is adopted from IFRI's Women's Empowerment in Agriculture Index (WEAI) (IFRI 2012) to measure the empowerment, agency, and inclusion of women in the forestry sector in five domains: a) decisions about community forestry, b) access to and decision-making power over forest resources, c) control over use of CFUG income, d) leadership in the community,

and e) time use. The elaborated details on WEIF is presented in Output 32 the report of WEIF itself. As key activities within this, team (Krishna K Shrestha, Sujata Tamang, Samata Manandhar, Naya Sharma, Mani R Banjade) prepared the framework first. Then a workshop was organized to set the indicators get feedbacks from the experts on gender and social inclusion in December 2019. This workshop helped in revising the draft of the framework. Within this activity 300 household survey, 12 FGDs and 60 KIIs are expected to be undertaken.

Shared a presentation on WEIF: On March 2020, a presentation on WEIF was made in 'Gender Integration in Forestry' by Sujata Tamang. This sharing helped in gathering fruitful comments and feedback and to revise it accordingly.

Preparation of checklists and survey questionnaire: The checklists for Key Informant Interviews (KII), Focus Group Discussions (FGD) and questionnaire for survey are prepared. Data collection: The team have conducted KII and field notes are being prepared. KIIs are being conducted parallelly for WEIF and case study on women's voice. While FGDs and survey will be conducted once KIIs are completed.

Interim report on gender empowerment: All the above-mentioned activities are aimed to feed in the preparation of Report on gender equity in forest management (output 31) and Interim report on gender empowerment (output 32). Hence the interim report on gender has been drafted report capturing the progress and reflections so far which will be produced as final reports by June 2021 and June 2022

Key activities Schedule

Key Activities	Timeline					Remarks
	Oct-Dec 2019	Jan-Mar 2020	Apr-Jun 2020	July-Sep 2020	Oct-Dec 20	
Literature review						
Preparation and sharing of WEIF						
Preparation of checklists and questionnaire						
Data collection						Delayed due to Covid 19
Write ups (review, field notes, reports)						

Achievements:

- Final draft of WEIF framework (part of O32)
- Draft of Gender Interim Report (O32)
- Draft of Literature review report (031)
- KII are conducted and field notes are being prepared

Additional outcomes: Impact of COVID19 reverse migration on food systems

I was fortunate to receive additional funding from ACIAR through the John Allwright Fellow Alumin Research Support Fund (ARSF). This is being used to research '*COVID 19: Impact of reverse migration on local food production systems*' in the sites. I lead the research along with EnLiFT team members. It is expected that the findings and knowledge generation from both the research will be benefiting to each other in broadening research and recommendations. Likewise, we will contributing to a chapter on GESI theme in CF reframing report, which is being advanced largely from the EnLiFT2 team members.

Impact of problems:

Due to Covid 19 and travel restriction, data collection was started late. This has huge impact in delaying outputs through the project period. Additionally, it is likely to be delay in timely completions of outputs due to maternity leave of myself from the beginning of February 2021.

Reflection:

Available literature, field observation and interactions with communities in the sites shows an increased influence of emerging market in CF; though, it is less profitable to communities or collective groups as its mainly in preference of private sectors. There is pressure for efficiency and profitability of CF. This implies CFUGs move towards a market based, semi corporate CF. These expectations produce trade off with GESI in benefit sharing, participatory governance and collective actions. In this situation, it is likely to further reinforce participatory exclusion.

Despite several efforts from government and non-government sectors, it is mainly the external agencies who see gender and social exclusion as a problematic. The dominant groups inside CFUGs are do not see it as a problem. Likewise, it is also observed and is in continuous discussion that community people particularly poor, women and marginalized groups are further marginalized by livelihood crisis in ever increasing emerging market economy. As these marginalised groups are not benefiting from CF, they are gradually alienated from CF.

In this broader context, gender equitable frames have been explored and adapted to co create the knowledge base for GESI in CF. Future strategies, specifically on data collection for WEIF (300 HH Survey, 40 KII and 12 FGD) sounds ambitious and may take lots of energy and resources. We may need to review and reconsider the methodology and explore alternative action outputs that will lead to women's empowerment and equitable decision-making.

OBJECTIVE 3: TO DESIGN AND FACILITATE THE ESTABLISHMENT OF PRO-POOR SMALL-SCALE FOREST ENTERPRISES

Unlocking Timber Trade for local economy: applying a value chain approach for increased income in Central Nepal

Activities

The initial process was to comprehensively review all of the existing literature and relevant reports on forest enterprises in Nepal. Once this was completed, the key activity was to survey existing forest enterprises across the two targeted districts to better understand the existing value chain structure of the timber industry as well as the key constraints, opportunities and potential enterprise-based models that the project can help facilitate.

Interview templates were prepared, and a list of target stakeholders was discussed at a project team meeting. The interview template was tested and finalised in October 2019, and snowballing techniques were used to conduct 24 key stakeholder interviews over 2020. A list of the stakeholders interviewed, and the semi-structured interview questions for industry and government participants are included in the appendix.

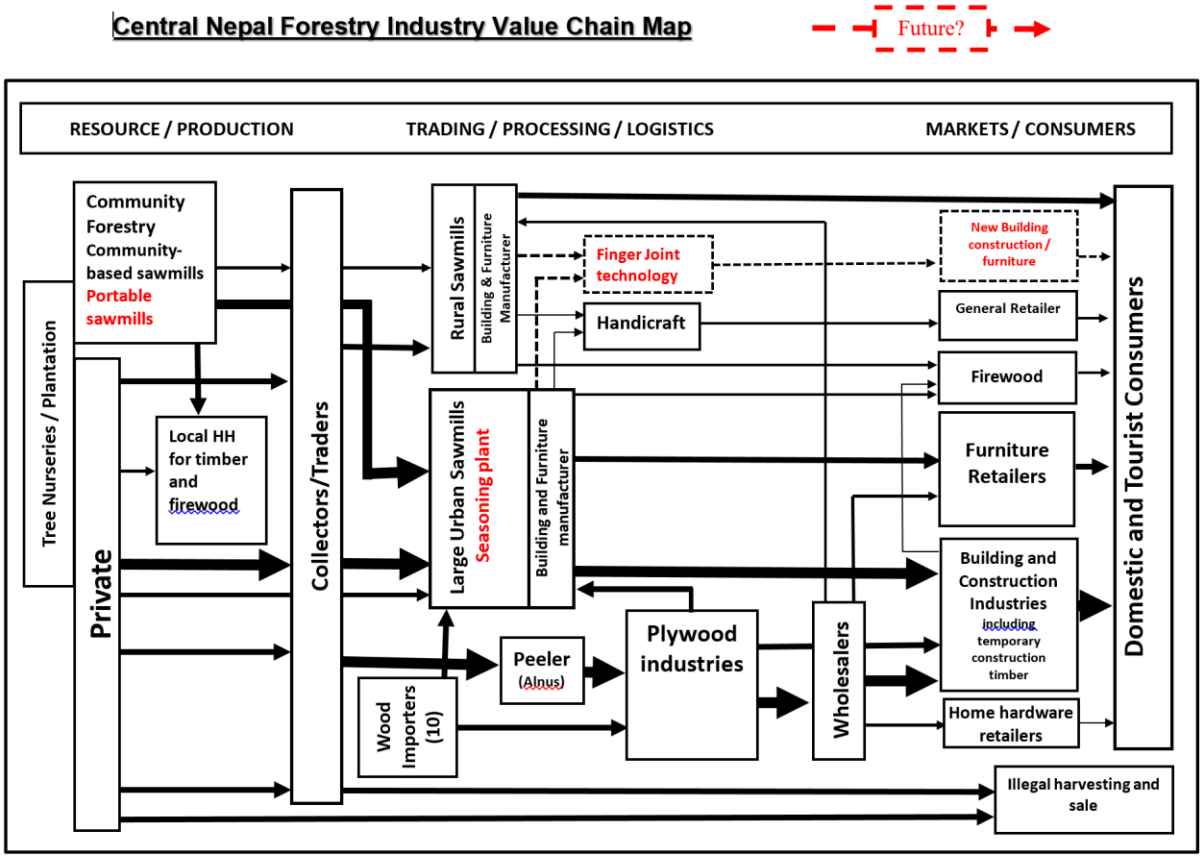
The interview process was designed to not only to extract information but also to assess potential project partners for addressing the identified constraints and opportunities and partner with them on the design and development of new forest enterprise models.

Achievements

A much better understanding of the existing forestry value chain in central Nepal, including who the key stakeholders are as well as the major constraints, opportunities and potential enterprise models

Timber Industry Value Chain Map

This value chain map has been prepared through the inputs of various stakeholders and interviewees. The map highlights the links between key timber industry stakeholders and some of the potential future opportunities. This map shows the source of timber, collection, transportation, processing and the final product to the final consumers through different market channels. There are several issues and challenges (discussed below) that have been observed in the process of understanding the timber value chain in Nepal. This map also indicates some potential opportunities that could be implemented to improve the timber industry.



Main Stakeholders for the Timber Value Chain

Key actors of the timber value chain/enterprises were identified after successive meetings and discussion with Divisional Forest Office (DFO) staff, Federation of Community Forest Users Nepal **(**FECOFUN) District Chapters and Federation of Forest-based Industry and Trade (FenFIT), Nepal.

As seen in the value chain map above, we've included the following key actors who have a strong stake and influence in the promotion of the timber trade:

1. **Private tree growers:** A number of independent farmers grow trees. More than 70% of timber comes to the market from the private forest even though community forests have a much larger area in these 2 districts.
2. **Community forestry user groups (CFUGs):** More than 1000 CFUGs are managing forests as community forest (CF) in two districts and supply timber within the district and outside.
3. **Local timber collectors:** A group of people actively involved in identifying private tree growers who sell timber. They harvest timber and sell to the local contractors. In most of the cases, local contractors work as local timber collectors.
4. **Local contractor traders:** They are middle-persons in the timber business. First, they collect the timber orders from local furniture enterprises and sawmills of the nearby market such as Banepa and Kathmandu. Then, they buy trees in standing form from local tree growers (through action or negotiated price), they do the harvesting,

logging transportation and selling of the timber to the market. Alternatively, they can work on commission for the big sawmills of the city. They also provide support to CFUG's for timber harvesting and buy timber from CFUGs through the competitive auction process.

5. **Local furniture entrepreneurs:** There are many local furniture makers with varying sawmilling capacity. They make furniture based on pre-orders from the customers and provide services to local people for timber sawing; in most cases, they buy logs from the local contractors or local timber collectors. Some of them directly buy trees from the tree growers. However, they feel it's difficult to go through the lengthy permission process with the DFO office.
6. **Big Saw millers/Plywood manufacturers:** They are located in the big city area such as Banepa and Kathmandu. They buy timber from local contractors, or sometimes they send their representatives directly to the auction sites for the purchase.
7. **Retailers (furniture, plywood):** There are several retailing shops which range in size and location and normally specialize in selling finished furniture (local & imported) and plywood to their customers. They also supply local raw materials (such as plywood and other materials) to other local furniture makers.
8. **Divisional Forest Office (DFO):** DFO is the regulatory agency (under provincial government) and provides permits for felling, collection and transportation of logs. They also provide permission for sawing, transportation of processed products to the market outside of the district.
9. **Cottage and Small Industry Development Board (CSIDB- Sindu)/District Cottage and Small Industry Office (DCSIO-Kavre):** These offices are responsible for the enterprise registration, including forest-based enterprises. They are limited to the registration only and hardly do any monitoring.
10. **Federation of Community Forest Users Nepal (FECOFUN) and District Chapters:** They work to develop improved livelihoods and to generate opportunities to reduce poverty through sustainable forest management and utilisation of resources. They also work to promote and protect the rights of community forest users through capacity strengthening, economic empowerment, sustainable forest management, technical support, advocacy and lobbying. They facilitate CFUGs in timber harvesting and marketing in the districts.
11. **Federation of Forest-based Industry and Trade (FenFIT), Nepal and its district Chapters:** They work to ensure the rights of timber entrepreneurs and traders and promotion of timber and non-timber forest products-based enterprises and trade in the districts. They take active roles in conducting advocacy program for promoting the forest-based industry and trade-friendly environment as well as supplying forest products and forest-based goods and services in the market via a simple, easy and sustainable way.
12. **Local governments:** Their roles are not clearly defined, but they have coordinating and supporting roles between timber entrepreneurs, CFUGs and the DFO office.

Key Constraints in Timber Trade

The complex regulatory structure is neither readily understood nor easy to follow for stakeholders involved in the timber trade in Nepal. Although a number of regulatory provisions governing timber trade have relaxed over time, a series of administrative hurdles that were created during the earlier process are still burdensome to industry. Many studies show that the existing policies, regulatory instruments and management practices are controlling in nature rather than supporting or facilitating the entrepreneurs and the timber trade in Nepal. The timber trade in community forestry should be growing a lot faster to become a significant means of improving local livelihoods of forest users' groups and the broader economy. On this basis we were very interested in learning the perspective from the key industry stakeholders.

The enterprise interviews included some very frank conversations about the current state of the timber trade and what the impediments to industry development were. We have tried to summarise some of these key insights below:

1. Complex and poorly implemented regulatory structures lead to lengthy bureaucratic procedures and inconsistency between government institutions;
    - There are multiple permission regulations from govt for timber harvesting, processing, local transportation and export of final products
    - These regulations are not understood well by forest enterprises
    - The regulations are also difficult and restrictive for CFUGs
    - They are arduous in terms of time and cost
    - Central and local government have dual taxation policies across many of these regulations
    - There are restrictions on the types of trees that can be processed and marketed
    - There is confusion over property rights
    - There is confusion over the roles of different government agencies such as DFO office and CSIDB/DCSIO: registration, renew and monitoring enterprises
2. The industry currently suffers from unpredictable raw material supply which is exasperated by relatively long supply chains
3. There is unfair competition between private timber entrepreneurs and the government-owned Nepal Forest Corporation of Nepal (NFC). The NFC can buy timber at base prices, where private entrepreneurs are compelled to buy through the competitive auction process. Consequently, timber from TCN can be found at a cheaper price.
4. Community-based forestry enterprises lack economies of scale, entrepreneurial culture & skills and receive insufficient support from service providers
5. In general, the private sector is still underdeveloped, including business service providers who lack the capability to help the sector capitalise on the market opportunities
6. Across the industry there is a lack of;
    - skilled labour at all levels
    - quality certification systems
    - access to finance, particularly for CFUGs
    - appropriate technology
    - access to market information and analysis of this data

Key Opportunities and Enterprise Models

Forestry is an important sector in Nepal and has the potential to play an important role in enhancing the economy and local livelihoods. Some of the key opportunities identified during the enterprise interviews included;

1. Import replacement as a key opportunity across the industry
    - Densified plywood for more heavy-duty construction applications is imported because the technology to make it is not currently available in Nepal. This is a new area of intervention.
    - A full range of timber is imported from countries like Malaysia and Indonesia because it is not only a favourable price, but it has reliable supply and specifications and is seasoned ready to use.
    - The easy access to local timber should be able to replace these imports if reliability quality and consistency requirements can be met
2. Need for a seasoning/treatment plant to allow local soft timber to be used for a wider range of applications
    - The provincial government has a program to establish a Timber seasoning/treatment plant in Kavre and Sindhu.
    - The properties of local hardwood like Sal (*Shorea robusta)* is actually better than most imported timber. If the local soft wood was properly seasoned/treated, then it could be used in a wider range of construction applications and produce a better resulting end product
    - If pine timber was properly seasoned, then it could also be used for a wider range of applications and would be cheap enough to compete strongly with existing imported products, which includes not only other wood, but also aluminium and UPVC window panes and metal poles (we need to keep in mind the competition for the local wood product is wider than just imported timber). DFO actually already has a budget set aside for investigating this opportunity further, but they are unsure of the business model to use.
3. Address the Government policy issues outlined in the Constraints section above. Any attempt to streamline the regulations across the industry has the potential to improve the timeliness, costs and ability for the private sector to capitalise on market opportunities.
    - The government can also look at potential subsidy provisions to local furniture makers for finance and the implementation of more modern technology
4. The government could also look at their own policy around prioritising local timber when purchasing building construction materials and furniture for government use
    - This would require some strong lobbying to the government from CFUG and FenFIT through Ministry of Forest and Environment (MOFE).
5. The use of portable sawmills and the current policy which specifies the need for these to be located outside of the forestry resource

- a working group is exploring this opportunity
- Permission should be provided for action research to be conducted within our ACIAR project

6. Use of finger joint technology to expand applications and improve timber usage efficiency
    - One factory in Banepa has started using finger joint technology and others are assessing it, but there is an opportunity to expand and accelerate the use of this technology and the markets it opens up
7. Investigate ways to get more investment into the processing sector
    - Discussions have been initiated into the provision of district-level cooperatives to allow investment into CFUG's for timber harvesting. The cooperative can also work as a business service provider to the CFUGs
8. More DFO sealing machines to remove a frustrating bottleneck in the existing system
    - DFOs have agreed on purchasing more, but it is yet to materialise

As an example, some of these priorities can be addressed quite quickly – i.e. the DFO additional sealing machines can provide some significant impact, but it's not going to take a great deal of time to lobby the DFO for that to happen and sometimes those quick win-win opportunities can give some real momentum to some of the longer-term priority projects.

The next step for the broader project team will be to assess these enterprise insights in the context of the wider project, but for the benefit of this report, we have picked a few areas and tried to develop some early value chain upgrading strategies and potential interventions, which have been explored further below.

Major Value Chain Upgrading Strategies/Interventions

1. Reform forestry sector's policies and legislations
    - Allow CFUGs to exercise their resource assessment, planning and management rights; simplify compliance with environmental standards; increase transparency in the permit process for government forests; and grant autonomy to CFUGs to set product prices and deal with the market (Subedi et al., 2014).
    - Ensure harvesting, collection and transportation permits are made straightforward and industry-friendly.
    - Environmental standards should be integrated into local management planning, which should also consider sustainable harvesting.

2. Capacity building for enterprise development
    - Need for a well-designed capacity-building program
        - for existing entrepreneurs and personnel to improve skill sets to manage small-scale forest enterprises
        - for service providers
        - on legal provisions related to tax exemptions for forest-based enterprises

- on value chain development approach, good collection/harvesting practices, certification and enterprise development
- for forest managers, entrepreneurs and traders on certification.

3. Provision of business development service (BDS) in the district: Currently, DFO office is not adequately equipped to provide business development services to CFUG, timber traders and processors. The need for an alternative institution is suggested. The cooperative can also work as BDS in the district. The BDS is important:
   - for capacity building, business advice and counselling, market information and product promotions, and networking
   - for preparing business plans, distributing information on marketing and value chain development and providing access to legal services
   - for technology, financial access and market support;

4. Improve access to finance and financial products
   - forest-based enterprises with the start-up outlay (capital) and capital to sustain their business.
   - developing a broader range of funding opportunities and financial tools for the timber business
   - establishing the partnership of forest-based entrepreneurs with banks and financial institutions for developing loan products fit for the forest enterprises

Impact of problems

COVID-19 has a big impact on the timber business in Nepal;

- Restricted harvesting in the field, including a timber harvesting ban (Cabinet decision) which is having a huge impact across the industry.
- The consumption of timber is also lower due to a decrease in construction works since COVID began.
- Since COVID, we have also continued to see how timber is being rapidly replaced in the city area by the imported construction materials such as iron, steel and aluminum.

COVID-19 has also affected the activities within the project;

- The harvesting ban is also delaying harvesting of the trial sites within our project and all the related activities than the hinge on this.
- Not able to travel into or within Nepal
- Limits interaction for enterprise interviews and between project team members
- Has delays some of our intended activities to capitalise on the identified issues, opportunities and new enterprise models outlined above.

Reflection

The design of the project is flexible enough to allow us to follow opportunities as they are identified and prioritised, but the delays due to COVID-19 have slowed our progress. Obviously we will have more time to implement these priority interventions if the project finish date is extended to mid 2024 instead of mid 2023.

Part of the assessment of the key priorities from the insights of the enterprise interviews should not only look at which ones are most important to the industry and Nepal's government but also put a lens across them to assess what role our project can realistically play in addressing them., i.e. how can the activities during the remaining tenure of the project improve the timber trade in Kavre and Sindhu districts as well as in Nepal.

Once we have agreed on a shorter list of priorities, then we can discuss next steps in more detail including resources, responsibilities, timelines etc., and how these dovetails into the other parts of the project, particularly the objectives and activities around the;

- Policy Lab
- Insights from CFUG and community survey work
- Portable sawmill trials with the fieldwork
- Nurseries models from private and public sector point of view

The great benefit that we have as a project team is that the enterprises, we interviewed along the value chain were not only very open and honest in sharing information, but they also seemed genuinely interested in partnering with us to explore opportunities to improve the development of the industry. This situation in itself should not be underestimated, and it provides a unique opportunity for this research project to provide some real and sustained impact across the whole of Nepal's timber industry. We look forward to feedback from the rest of the project team and the project reviewers.

Activity 3.2 Analyse and facilitate better regulatory systems for sale of timber and other forest products from private and community forests

Activities

Since the inception of the project Swoyambhu Man Amatya was involved in Agroforestry (private forestry one of the sub activity of activity 1.2). Under this sub-activity thinning exercises were carried out in Alnus forests located in DhunKharka. Alnus seedlings were planted on private land in Dhunkharka. Similar thinning activities were carried out in Patula pine located in Chaubas. Sites were selected in various locations of Kavre and Sindhupachok to encourage private forestry in agroforestry model.

These activities were carried out until February 2020. In one meeting at Forest Action, I was then asked to take up activity 2.3 (analyse and facilitate better regulatory systems for sale of timber and other forest products from private and community forests).

Under this activity a workshop had to be conducted basically to collect information on the present regulatory system on timber trade and how these regulatory systems could be improved.

But because of COVID-19, workshop could not be hold. I am still looking forward to have this workshop conducted and complete the assignment.

Achievements:

I have developed a framework proposal for this study and had prepared a literature review part. It was intensively reviewed by EnLift colleagues and final report was posted in Basecamp on 28 June 2020.

Current status: Forest action has made an agreement with me, as a consultant, to complete activity 3.2 with effect from 01 February 2020. The duration of the consultancy period was till December 2020. Of the four activities mentioned in the consultancy agreement two activities are still pending (Activity 3: A small high level policy workshop to examine policies into action and Activity 4: Preliminary report drafting, sharing of the report and finalization of the report "How can forestry regulations be improved to support sale of timber and NTFPs from small scale enterprises" for publication). Because of COVID-19, convening workshop was not possible and still looking for favorable time.

Activity 3.3 Facilitate local forest-based enterprises that address social disadvantage

TRANS-OBJECTIVE POLICY RESEARCH.

Activity 1.4 Institutionalising science-informed silviculture policy in community forestry

Shifting Policy context:

Building on the success of the first phase around silvicultural demonstrations, critical understanding of community dynamics and a policy lab innovation to influence policy, the second phase of the project aims to "enhance forest management practices in community forests and private land to improve livelihoods, social equity and environmental impact". One of the key pathways envisaged is through "improved forest policy, planning and governance". A dedicated research question has been used to guide the analysis: How can research-policy interface be strengthened for equitable and effective community and private forestry governance in Nepal?

Over the past two plus years of project implementation, the team has analysed and engaged with the policy challenges, drawing on the field experience in the two project districts of Kavre and Sindhu.

Forest Policy 2075 envisages that community forestry will be supported to benefit from emerging markets through more enterprise-oriented management. Forest Sector Strategy (2015-2025) also embraces outcomes:

a. promote community based and private forest enterprises for livelihoods improvement and wealth creation, especially for the poorest of the poor;
b. increase the role of private sector to encourage investment in cultivating forestry crops including service delivery and forest-based enterprises and ecotourism.

The Strategy also aims to increase private forests areas from 54,900 ha in 2015 to 200,000 ha in 2025, while increasing the area under community forests from 1.7 million ha to 2.3 million ha during the same period. On institutional aspect, the Strategy emphasises promoting community-based forestry and strengthening the use rights of the community and the capacity of the community in forest management, conservation, and utilisation.

As community forestry moves through turbulent political changes, questions around forest rights, governance and institutional authorities came to surface once again. The debate reached the peak when a new Forest Bill was brought in 2018, with less transparent process of drafting at the beginning compared to the previous practices. Over one-and-a-half-year process, the Bill was open to public debate with community and wider civil society groups being able to share their concerns to policy makers, including the parliamentarians. EnLIFT policy teams also participated in a variety of public debates and consultations with policy makers[i4].

[4] See media opinion piece by Hemant Ojha published by Seto Pati online 27 Phalgun 2075. How can Nepal's community forestry be adapted to new federal system? https://en.setopati.com/view/141655

The past two years also heralded a fierce debate around 'Scientific Forest Management'. Since then, government issues Scientific Forest Management (SFM) guidelines in 2071 a widespread program of SFM has been implemented by the Department of Forests and District Forest Offices as 'government program'. Adoption of intensive technical procedures of forest management under this initiative has been seen as a means to undermine the rights of local communities (Khatri 2020). Federation of Community Forestry Users, Nepal (FECOFUN) has opposed this initiative and presented an alternative of 'Sustainable Forest Management'. The debate has too often been polarized between two different languages, although there is a lot of overlap in terms of content. The debate is more fundamentally about who controls resources rather than which technology or method to use for managing the forests[5]. This issue drew an attention of Prime Minster who constituted a high-level Commission to investigate the issue, together with associated felling of trees across the country. The Commission has submitted the report recommending scrapping of the SFM guidelines.

EnLiFT 2 policy analysis and engagement

EnLIFT 2 policy team has engaged with the unfolding policy processes through its beginning, albeit to varying degrees and using diverse methods and tools of engagement (See Ojha et al 2021 for details). Linked research question 8, one of the priorities of the team has been to explore, experiment and innovate tools of effective engagement. EnLiFT team is adopting multi-pronged strategy of policy engagement has brought some positive impacts – such as countering the regressive provision of the initial drafts of Forest Bill 2018. This happened through partnership with community leaders, engagement with parliamentarians and dialogues with forest officials.

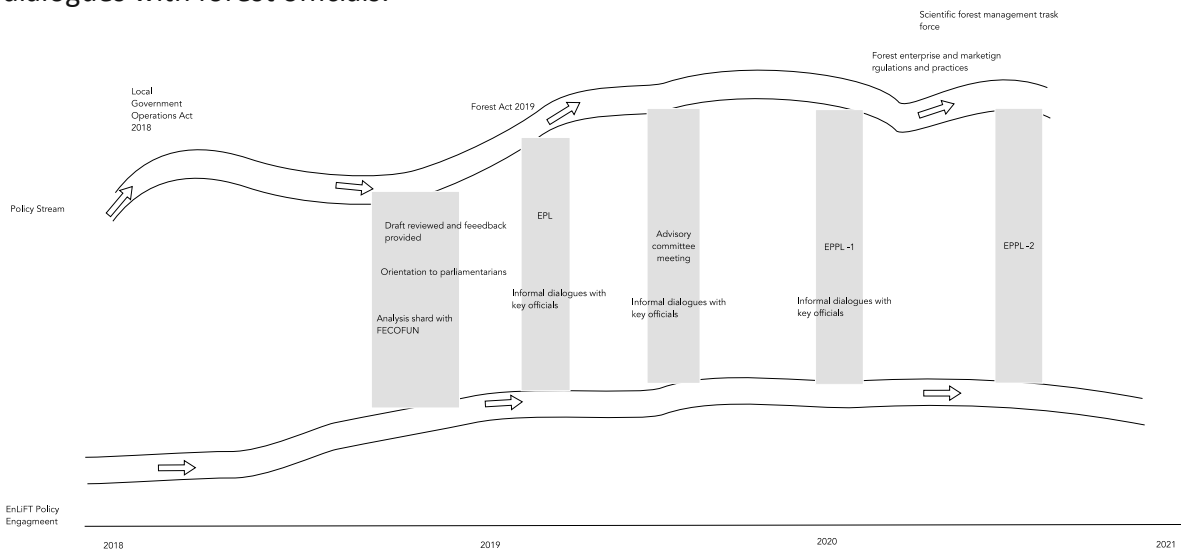


Fig 1. Policy stream and EnLiFT Engagement

[5] Ojha, 2020; Nepal Needs to shift from scientific forest management to democratic forest governance; Onlinekhabar, 22 July 2020; https://english.onlinekhabar.com/nepal-needs-to-shift-from-scientific-forest-management-to-democratic-forest-governance.html

Development of EPPL (EnLiFT Policy and Practice Lab) was an important effective step, in this phase (see Fig 1). EPPL was designed to complement the previous version of EPL (EnLiFT Policy Lab) which was targeted at national policy actors (Ojha et al 2019). The first EPPL was organised on 27 January 2076, Monday with aim of exploring and identifying ways to enable active, sustainable and equitable silvicultural and forest management technologies.

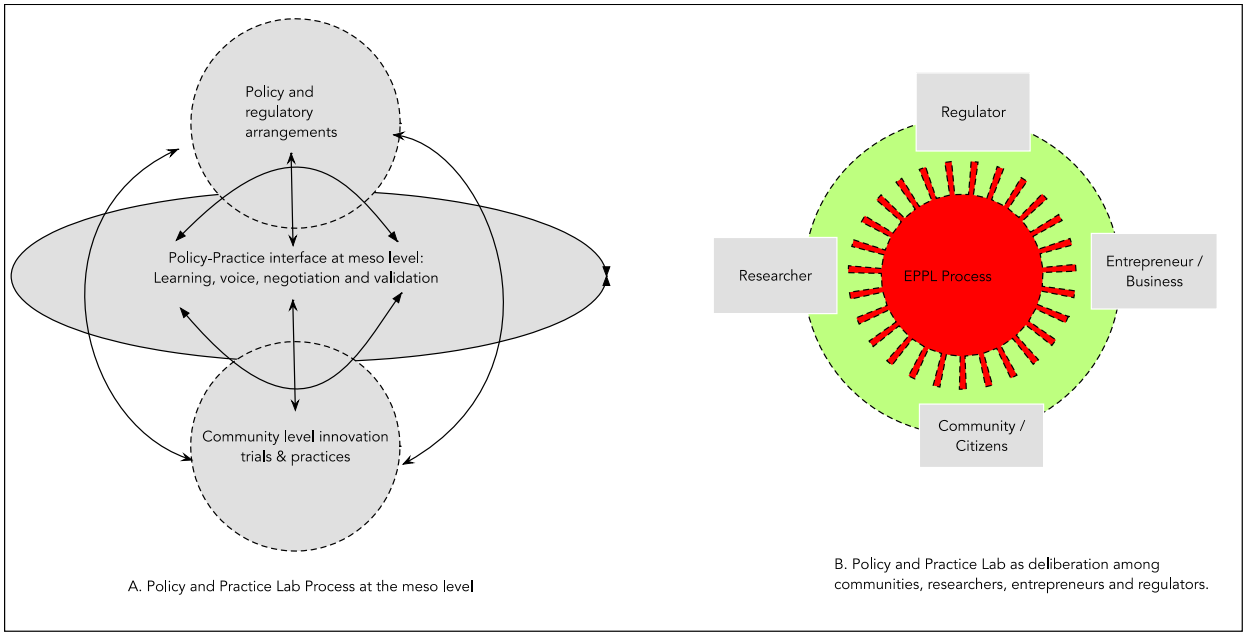


Fig 2. The meso level dialogical process of EPPL. In the figure, the left segment (A) schematically shows the meso level location of EPPL – where practice and policy meet and where research groups bring evidence and reflections to enrich the dialogue between practice and policy. The right hand side component (B) shows that EPPL involves a dialogue among four categories of actors – community/citizens, entrepreneurs, regulators and researchers. The addition of entrepreneurs is deliberate – given the community forestry is lagging behind in getting benefits from the market and the role of entrepreneurs is also essential part of community forestry development.

Another EPPL was organized virtually in the time of the COVId-19 pandemic in Nepal. It was entitled "Timber Harvest and Trade Issues: scope for District/local level Initiation" and was organized on 15th October, 2020. The main objective of this EPPL was to use EnLiFT research findings to stimulate discussions among local policy and practice actors on what can be done locally and what needs to be brought to the national policy level.

Besides EPL/EPPL, the EnLiFT team has engaged continually with the policy, using both an opportunistic as well as proactive approach. A community of expert group is created with support from the project to review the rationale of community forestry int eh changing context. The report is under preparation (Sharma et al 2021). This report covers 7 different themes.

Several knowledge outputs have been produced on the policy theme across three objectives:

1. Design and testing of EnliFT Policy and Practice Lab (Ojha et al 2021 DRAFT) Output 19 (https://enliftnepal.org/wp-content/uploads/2021/02/EnLiFT-Policy-and-Practice-Lab-EPPL-Report-Timber-Marketing.pdf; https://enliftnepal.org/wp-content/uploads/2021/02/EnLiFT-Practice-and-Policy-Lab-EPPL-Lab-Report-Silviculutre.pdf)
2. Review and analysis of Forest Bill 2019 and contribution to the 2019 Forest Act (Banjade et al 2019) (https://enliftnepal.org/wp-content/uploads/2021/02/EPL-Forest-Bill.pdf)
3. Analysis of local government and community forestry interface (Banjade et al 2019) (https://enliftnepal.org/wp-content/uploads/2021/02/Report-on-Regulatory-Analysis_Developing-a-Partnership-Framework-for-CF-and-LG.pdf)
4. Initiation of wider discussion on reframing community forestry in changing contexts (Sharma et al) (https://enliftnepal.org/wp-content/uploads/2021/02/Reframing-CF.pdf)
5. Critical understanding and analysis of policy and regulatory barriers to market oriented and effective use of community and private forestry products (Paudel et al and Amatya et al 2021) Output 50 (https://enliftnepal.org/wp-content/uploads/2021/02/Regulatory-challenges-relating-to-the-sale-of-timber-and-other-forest-products-from-private-and-community-forests-in-Nepal.pdf; https://enliftnepal.org/wp-content/uploads/2021/02/Issues-and-challenges-in-establishing-small-scale-forest-enterprises.pdf)
6. A reflective report on policy engagement (Ojha et al 2021 DRAFT)

Outputs 2,3,4 & 6 are working papers soon to be uploaded

With EnLIFT contribution, AEFM approach is being seen as a third way in the debate between those who are for or against Scientific Forest Management. Active silvicultural demonstrations have been accepted by all parties as useful.

Notwithstanding these efforts, community and private forestry have met with increasing levels of regulatory restrictions in practice. We see that in various ways federalism is adding challenges (if not risks) to community forestry. On the wider science-policy interface, it looks paradoxical that spaces for critical analysis and debate have actually declined, despite deepening trends in democracy (at least constitutionally). Processes like EPL and EPPL require more structured system of learning, action research and analysis based on the lessons from 2020, there is an opportunity to consolidate those methods and improve the effectiveness and outcomes of policy engagement.

COMMUNICATIONS AND SOCIAL MEDIA.

Introduction:

EnLiFT2 project adopts different ways of communicating its research findings with its audiences. The use of social media is one of the strategies adopted by this project. This document highlights set of guidelines for usage of various social media tools for EnLiFT2. Social media in this project context refers to various platforms including facebook, twitter, LinkedIn, youtube, and instagram where details and information regarding project events including workshops, trainings, meetings, field activities, and publications is shared. The project however uses basecamp for internal project communications, while social media is used for sharing to wider audiences.

Unlike basecamp, the project will be using the social media platforms as a learning and feedback mechanism which is expected to help in the monitoring and evaluation of various activities implemented in the field. Ultimately, through reflective sharing and learning, social media is expected to enhance the capacity building of stakeholders, specifically of local communities on inclusive community forestry planning, active and equitable forest management, and pro-poor forest-based enterprise. This note provides brief description and update on the communications and social media platforms of EnLiFT2.

Activities

Basecamp:

Basecamp, a project management platform familiar to most EnLiFT2 Project members, replaced Freedcamp due to some problems experienced by several project members in using latter. Basecamp has been used as a sharing platform for internal project related activities and documents. The project members in Australia and Nepal have been given access to the platform, wherein the members have been sharing periodic plans, updates and details on their respective project activities since the inception of the project. In addition to all project activities, communications, work planning, and event organising, basecamp has been a useful platform for sharing and seeking feedback on research products including manuscript and report preparations. So far, there 22 users including project team members currently using basecamp for project communications.

Social media:

The use of social media platforms has been promoted within the project team and partner organizations as well as to wider audiences. The project team members will introduce the various social media platforms to the participants, CFUGs users, and government staffs, local representatives including others to subscribe and follow the project homepage. In addition, there is also a plan to conduct a rapid survey on the preferred social media channels by the audiences during field visits. A communications officer at ForestAction is primarily responsible to manage and update posts, interact or replying to the individuals' queries, coordinating with staffs to receive updates on activities and success stories for sharing. In addition, individual project members have also been sharing updates through various platforms. Most recently, AssProf Paul Willis, CEO of the Media Engagement

Services[6], will be supporting the project team members for coming few months on enhancing the visibility of our activities to target audiences.

EnLiFT2 has been using the following social media platforms to share the project activities and information.

Facebook: Facebook has been popularly used for sharing the field activities including trainings, meetings, workshops, and any important observations relevant to the EnLiFT2 project. The communications officer at ForestAction largely updates the information, wherein the field members too have been uploading photos and details periodically. The followers have gradually grown over the past few months and some of them have been providing positive feedback on the posts. Members of the project communications have been closely following the followers, shares and likes for every updates made in the facebook. https://www.facebook.com/EnliftN/

Instagram: The project has its own Instagram page where various activities related to forest management, interactions, survey among others are shared. Instagram is the youngest among the social media platforms used for sharing of project activities. https://www.instagram.com/enliftnepal/

Twitter: Twitter has been one of the popular sharing platforms of EnLiFT2. Most of the sharing made in the twitter match with the facebook postings. This is in due consideration that the audiences of the two platforms vary and the mode of its usage differ in some ways. Photos of activities, trainings, and any project related events is shared along with captions that offers our audiences on regular project updates.https://twitter.com/EnliftN

LinkedIn: Considering the vast user base of LinkedIn, EnLiFT2 project has a separate homepage to share its project activities. Though the sharing in LinkedIn does not widely vary with that of other social media outlets, this platform has been primarily used to share research related activities. These include surveys, publications, establishment of research plots among others. Concise description of the sharing is made along with providing links to the project webpage. https://www.linkedin.com/company/enliftnepal

Youtube: Unlike other social media platforms, youtube has been mainly used to share videos of project related activities. EnLiFT2 has a dedicated youtube page where thematic videos will be uploaded as they are prepared throughout the project period. The links, and most cases the entire video, is shared through other existing social media of EnLiFT2. Stakeholders of EnLiFT2 including local CFUG members, government officials, and local government representatives are also informed about the existence of the project's youtube page and are encouraged to watch during the project team visits to the field. The introductory video of the project has already been uploaded in shared, while other thematic videos are in progress and will be uploaded soon. (https://www.youtube.com/channel/UCJqShK8h3aIFwjPzVF-2pnA)

[6] https://www.mediaengagementservices.com.au

Monitoring and evaluation

Monitoring and evaluation of the project sharing made via social media is a very crucial step in order to have better understanding of the audiences, improve content and achieving the project goal. EnLiFT2 project aims to conduct a periodic monitoring and evaluation of the social media platforms with the help of relevant statistics and track them over certain time against the content and engagement to determine the project outreach.

Social media protocol

Social media protocol for EnLiFT2 has been prepared and adopted. The protocol is primarily targeted to the members of EnLiFT2 project, including those based in Australia and Nepal. The main purpose of the protocol is to provide a guideline for the usage of different social media tools while sharing information on the EnLiFT2 project or related activities. In addition, it will also set the guideline for social media analysis as part of monitoring and evaluation. Further, it also serves as a guiding document on the style of communicating project related messages to the audiences.

Achievements

1. Fully functional social media portals of EnLiFT2 project including Facebook, Instagram, LinkedIn, Twitter, and Youtube.
    - https://www.facebook.com/EnliftN/
    - https://twitter.com/EnliftN
    - https://www.instagram.com/enliftnepal/
    - https://www.linkedin.com/company/enliftnepal
    - https://www.youtube.com/channel/UCJqShK8h3aIFwjPzVF-2pnA
2. An introductory video on EnLiFT2 project prepared and widely shared in the social media (23 subscribe, 1 video, 489 views).
3. Events and photos were shared in Facebook, LinkedIn, Instagram, and Twitter (see annex 1 for the number of hits on various social media portals).
    - Facebook
        - Total Page like: 792 people
        - Total Page Followers: 806
    - LinkedIn
        - Total Page Followers: 55
    - Instagram
        - 12 posts, 39 followers
    - Twitter
        - 13 Followers

Reflections

So far, the number of individuals following, liking, and commenting on our social media portals is increasing. However, the followers are largely those who know ForestAction closely including forestry students, foresters, members of ForestAction, and alike. We are yet to have followers from the local communities and government officials, and beyond.

Likewise, the social media pages have less followers from international research institutes, development organizations, NGOs among others. So, strategies need to be put in place to increase its network and visibility. Mentoring from Mr. Paul Willis in regards to enhancing the visibility and impact of our sharing is expected to improve in the days to come.

COVID-19 Impact

During the COVID-19 pandemic and subsequent lockdowns, there were no field activities due to which sharing was at its minimum. Activities including silviculture interventions, meetings/workshops, and interviews among others was hindered due to travel restrictions. Therefore, sharing in the social media was not regular as expected. However, the team did try to share photos from the field activities conducted in the past. Moreover, during the lockdown, the communications team tried their best to increase the number of followers by sending them follow requests and also by following them. That is believed to have increased the visibility of the social media pages to some extent.

Future strategy

With field activities expected to take a pace in the months to come, EnLiFT2 project will continue sharing photos of events and activities from the field. In addition, monitoring of the sharing and interaction will be recorded in order to measure the impact of EnLiFT2 social media communications. In addition, strategies will be adopted to increase the number of followers of the social media portals of EnLiFT2. These include following the social media pages of individuals and organizations, send requests to people and institutions working in related sectors, monitoring and improving the use of hashtags, maintain regular updates of activities and events.

APPENDIX 1 ENLIFT2 – THE PROJECT TEAM

University of Adelaide, Australia (http://www.agwine.adelaide.edu.au/)

- Dr Ian K Nuberg, Project leader
- Dr Edwin Cedamon, Project coordinator/theme leader – Silviculture interventions
- Dr Douglas Bardsley, Theme leader, Socio-ecological Survey
- Mr Craig Johns, Theme leader, Market Research

University of New South Wales, Australia (https://www.arts.unsw.edu.au/)

- Dr Krishna K Shrestha, Theme leader, Governance and Equitable Community Forestry Planning

University of Canberra, Australia (https://www.canberra.edu.au/)

- Dr Hemant Ojha, Theme leader, Policy analysis

ForestAction Nepal, Nepal (http://www.forestaction.org/)

- Dr Naya S Paudel, In-country Project Coordinator
- Dr Mani Ram Banjade, CF planning, Local Government-Community Forestry relation
- Dr Sujata Tamang – Gender equality and justice
- Dr Kiran Paudyal, Market research and enterprise
- Mr Rahul Karki, Knowledge Management/Project Manager
- Mr Madan Bashyal, Silviculture Interventions
- Mr Shyam Bhandari, Field manager
- Shrabya Timsina – Silviculturists
- Sarada Tiwari – Gender equality and social inclusion
- Mr Laxman Kunwar, field officer- Kavre
- Mr Prakash Jaisi, field work – Sindhupalchowk
- Ms. Manita Chaudhary, Finance Officer

Nepal Agroforestry Foundation, Nepal (http://nafnepal.org.np/)

- Dr Bishnu H Pandit, Theme leader, Private forestry and nursery management
- Dr Swoyambhuman Amatya, enterprise policy
- Ms Rupa Chapagain, Private forestry Interventions

Department of Forest and Soil Conservation, Nepal (http://www.dof.gov.np/)

- Mr Hari Pandey – Focal person

Forest Research and Training Center, Nepal (http://www.dfrs.gov.np/index.php)

APPENDIX 3. BROCHURE OF ENLIFT2 CF SILVICULTURE SYSTEMS TRIALS

d. **Control: No treatment is done**

The size of trial plot will be 50mx50m. A 5-meter buffer will be established by clearing all the vegetation. The following parameters are measured.

- Natural regeneration capacity and survival rate- planted and natural
- Fodder production

Hill Sal Forest

Most of the hill Sal forests are stunted and growth has been stagnated. In the past, various trials were carried out by the Australian Aid Funded Projects and the Department of Forest Research and Survey. However, most of them were coppice related treatments following coppice system. These treatments have shown very positive results for up to certain age on steep slopes but quality of timber produced, i.e. canker-free, cannot be guaranteed. There is a huge demand from communities to provide alternative treatments to manage their stunted Sal forests. The original site for the treatment is planned in Sunkoshi Municipality however; it depends on meeting the required criteria.

The trials for Sal management are not decided yet but would probably be a mixture of coppice and high forest system. There is a plan to trial establishment and or management of forests by promoting natural and artificial regeneration but all depends on site quality. Hence, to understand the site quality- a quick site characterisation survey will be a required preliminary work. This will involve measuring forest characteristics – species composition, dominant tree height and forest productivity (timber, non-timber and perceived hydrological and biodiversity values) and assessing site characteristics including soil depth, parent material, soil N,P,K and pH, soil texture, rainfall, and aspect. Design of the silviculture trials for mid-hills Sal will be based on the site characterisation survey.

Schedule of Knowledge Generation and Management

Most of the Pine trial plots will be installed by December 2019 and Sal trial plots in 2020. Follow-up treatments and measurement will be continued until 2023. The technical group will review the progress periodically. The research findings will be shared during the workshops as well as through research articles. Summary will be produced in Nepali language and discussed with communities for scaling-up and out.

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Community Forest Silviculture Trials on Pine Plantation

Background

The silviculture treatments selected for trials in EnLiFT2 (Enhancing livelihoods from improved forest management in Nepal) follows the learnings from the silviculture trials and other related studies of its predecessor, the EnLiFT1 Project (Enhancing livelihood from agroforestry and community forestry in Nepal). The key learning of EnLiFT1 is that the number of regenerations of pine is directly related with the crown opening. For example, uniform seed tree system or otherwise called by some recent practitioners as shelterwood system has recorded more than 200,000 seedlings per hectare while selection system has recorded 50,000 seedlings per ha (Cedamon et al. 2017). Lack of regeneration of broadleaf species was observed in the trial plots.

The aspirations of forest users in managing mixed species forest, prominent in forestry literature and debate on community forestry Nepal is the driver for the selection of silviculture treatments for trials. There is also an apparent need by forest users for continual forest cover for material provisions and ecological services like biodiversity and water.

With the objectives to enhance active and equitable forest management practices in community forests, the EnLiFT2 project plans to establish silviculture trials in selected community forests where government forest officers and technicians, and forest users will learn together and scale-out the lessons learnt.

The community forest silviculture trials experiments and demonstrates transforming Pinus patula and Pinus roxburghii to multi-age and mixed species forest. Four experimental treatments are planned representing varying level of canopy opening and tree stocking in different configurations. These treatments will allow evaluation of silviculture regimes that will facilitate transformation of monoculture pine forest to mixed-species (at least 25% broadleaved) and multi-age forest.

In broadleaved species, trial plots are established on stagnated hill Sal forests to increase the productivity. Similarly, trial plots are established to promote fodder production from Quercus Forest.

Research questions

1. What is the effect of different silviculture systems on the growth and survival of seedlings - planted and natural regeneration?
2. What is the effect of different silviculture systems on the stand development pattern of mix broadleaf and pine?
3. What are the harvesting and reforestation cost, and revenue differentials between the different silviculture systems?
4. What is the forest structure and composition of the trial plots 4 years after silviculture treatments?
5. What is effect of different silviculture systems on soil erosion and run-off using small-scale plots?
6. What are the perceived effects of different silviculture systems in terms of economic, ecological and social values and how the perception changed over four years?

Description of silviculture treatments

1. Treatments for Pines

For P. patula, the trials are established in Banepa, Chaubas and Dandapakhar while for P. roxburghii are in Banepa and Chautara. Four different treatments are carried out in 1 ha plot for each treatment on Pinus patula and Pinus roxburghii plantations.

- Treatment 1: Control – no management
- Treatment 2: Shelterwood – retaining 16-20 mother trees per hectare
- Treatment 3: Strip seed tree – seed tree strips with 4 seed trees per 2000 m2, uncut strips to be harvested at the time of thinning of seed tree strips.
- Treatment 4: Dispersed variable retention – this treatment will develop two age classes of future stand. Dominant trees at spacing of 10m x 10m will be retained as seed source and to maintain forest cover. These trees will be retained for the next rotation. The remaining trees will also provide a bio geoclimatic condition that may favour the growth of shade-tolerant broadleaf species.

To develop mix-species composition-at least 25% broadleaved, natural regeneration of both broadleaved and pine species are promoted which are complimented by plantation of desired and suitable species to establish regeneration with spacing of 3m x 3m. The experimental lay-out is randomised complete block design where the 4 treatments are randomly assigned to plots in each block (community forests). The schematic lay-out of the four treatments is shown in Figure 1.

Figure 1. Schematic diagram of stand after Silviculture treatments (The dots on the uniform seed tree system and disperse variable retention system represent the 'target leave trees', the yellow on the strips see tree system represents the strip to be harvested with four seed trees represented by 4 dots, while the grey strip represents the area to strip of forest to be retained (not harvested).

2. Treatments for Broad Leaved

Fodder Trail

Trials for Fodder Enhancement are carried out in Dhungkharka of Kavrepalanchowk. Tending operations of existing stagnated old fodder trees of maximum 5-10 meters heights were carried out during the EnLiFT I. The operation included removal of lower and congested branches, removal of mosses and other parasites etc. The treatment also included marking of potential seed trees which are kept for next 10 years uncut. Through observation and discussion with communities, it is concluded that this treatment had positive impact in increasing fodder yield, however seeding is yet to be seen through mother trees. It is also realised that more treatment are necessary in this regard. A total of four treatments are carried out in this site.

a. **Improvement Felling and Enrichment Planting**

All over matured trees are removed and enrichment planting of wildlings is done to maintain a distance of at least 5 meters. Trees other than fodder are selectively removed. Once young established, the rest are removed gradually.

b. **Tending Operation**

As done in EnLiFT I, several operations including removal of lower and unproductive branches, removal of mosses and parasites and preserving of potential seed trees at a distance of 10-15 meters are carried out.

c. **Coppicing**

All the stems are clear cut to allow coppice from their stumps. In later years, coppice will be treated to maintain its reasonable number. If coppices are not sufficient, seedlings of Quercus are planted in the following years.