REDD+-Readiness-in-Nepal

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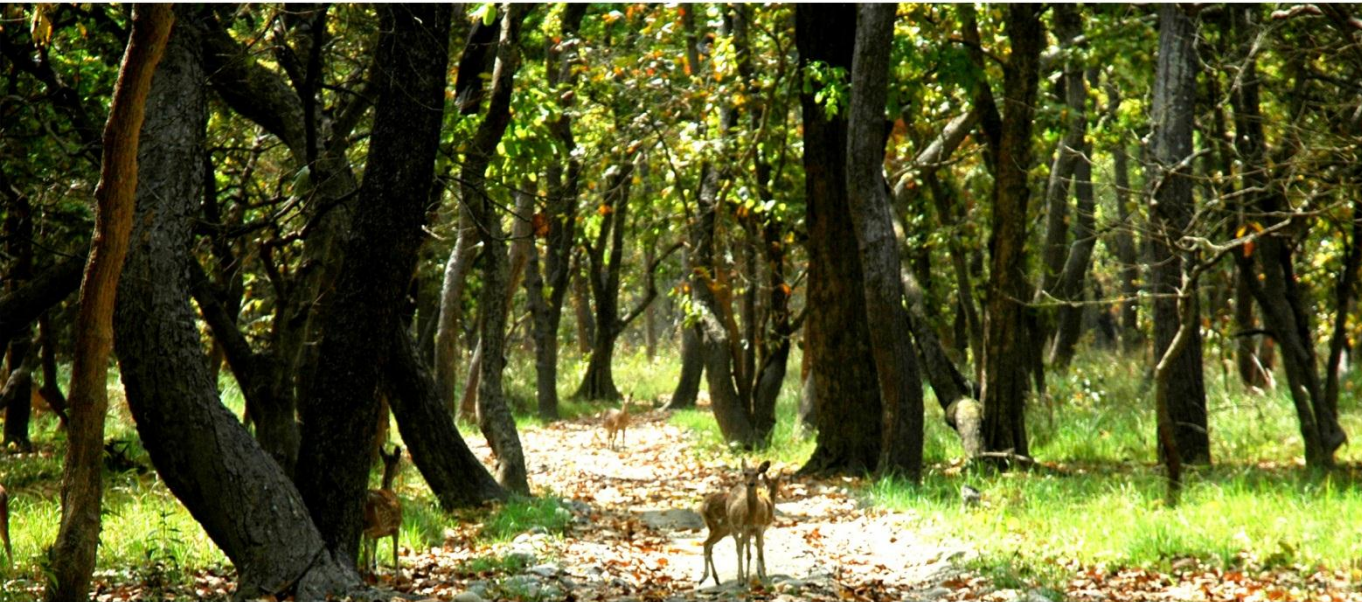**Some of the authors of this publication are also working on these related projects:**

Capacity Building of Academia and CFUGs on Climate Change, Carbon Financing and REDD+ View project

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REDD + Readiness in Nepal

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REDD+ Readiness in Nepal

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Foreword

Forests do have potentiality to offer multiple services including climate regulation. Excessive exploitation of forests to expand agriculture and meet demand for wood products have contributed substantial amount of Green House Gas (GHG) emission to the environment. It was realized that unless the current rate of forest conversion are reduced and degradation of forests reversed, the GHG emission from forests will exceed its sequestration potentiality. It is a well understood fact that forests have lost globally in general and in particular to developing countries. Acknowledging the carbon sink potentiality of forests, global community has realized to save the remaining natural forests, particularly in the developing countries. However, there was a need of global mechanism to incentivize developing countries to let trees standing in the forests instead of felling them now for revenue generation. This led to evolve a concept of Reducing Emissions from Deforestation and forest degradation (REDD) as a mitigation action to reduce climate change risk under the United Nation's Framework Convention on Climate Change (UNFCCC).

In the early stage the conferences of Parties (CoP) in UNFCCC was concerned to halt deforestation activities in the developing countries. At later stage, it was realized that degradation activities also need to be arrested as well as degraded forests needs restored for enhancement of carbon stocks. After a series of global discourse, the sixteenth CoP held in Cancun on 2010 finally decided to include five activities related to carbon emissions/removals from forests after which REDD evolved as REDD+. Thus, REDD+ has evolved to take advantage of multiple benefits of forests including climate regulation and sustainable development.

REDD+ development is comprised of three phases - preparation, demonstration and implementation. In the first phase, countries have to prepare a national REDD+ strategy, action plans, and improve technical capability to implement REDD+. In the second phase countries can pilot REDD+ activities at sub-national or Project level to test her readiness for institutional and technical capability to implement REDD+ at national level. If aforementioned two phases are completed successfully then countries can be eligible to implement it at national level. However, countries have choice for earlier two phases either to proceed in sequence or overlap them to some extent. Since, Nepal has decided to go for second choice; readiness phase and demonstration phase are advancing simultaneously here.

Countries have been receiving financial and technical support for phase one and two from different bi-lateral and multi-lateral funding agencies. United Nations REDD+ program and the World Bank's Forest Carbon Partnership Facility (FCPF) program are two major funding sources that are available for developing countries. Nepal is one of the active participants of FCPF since 2008. The REDD+ readiness journey (phase one) started in Nepal with financial support from the readiness fund under the FCPF hosted in the World Bank. The phase one is almost at final stage now and phase two has already started to secure funding from the carbon fund under the FCPF program. Besides, Nepal is also receiving financial support from bilateral development partners (Hariyo Ban and Mutli stakeholder Forestry Program) as well as targeted support from UN-REDD, as when needed basis, to complement the FCPF in phase one and two.

Youth Alliance for Environment (YAE), a CSO partner of REDD implementation Centre, has been working for capacity building in REDD+ targeting to University students and local REDD+ resource persons for Community forest users in Nepal since 2011. I am pleased to acknowledge their commendable work in this venture. I would also like to thank YAE for publishing this book titled *"REDD+ readiness in Nepal"*. I am very much confident that readers will find this book very useful to understand the current status of REDD+ development in the country and recognize the major issues and challenges for implementation.

Thank You.

(Resham Bdr. Dangi)

Chief

Foreword

Following the United Nations Framework Convention on Climate Change (UNFCCC)-- an incentive mechanism proposed for the developing countries emerged as Reducing Emission from Deforestation and Forest Degradation (REDD) which later turned into REDD+. From there onwards, there has been intense debate on REDD+ mechanism till now but unfortunately, and is yet to enter into implementation. Under such context, developing nations accentuated for the immediate implementation of REDD+ in the recent Conference of Parties (COP) as well. Apart from this, during a decade long history, the developing nations have been doing a lot of readiness activities throughout the world under the facilitation of UN REDD program and Forest Carbon Partnership Facility (FCPF). Nepal became the member of FCPF since 2008 and its (Readiness Preparation Proposal (R-PP) also got approved. Hence, Nepal is getting support for the REDD+ readiness program. REDD implementation center under the ministry of Forest and Soil Conservation (MoFSC) has already developed the Strategic Environmental and Social Assessment (SESA) and REDD+ strategy is under finalization process. Besides, various readiness activities are being implemented by CSOs and I/NGOs.

Youth Alliance for Environment (YAE) has joined hand with the Government of Nepal, CSOs and I/NGOs on facilitating REDD+ readiness activities in Nepal. Since 2011, YAE in coordination with WWF Nepal and Ministry for Foreign Affairs of Finland has been implementing REDD+ Capacity Building Program for academia and community based forest management groups. This book *REDD+ Readiness in Nepal* is being published under the same program.

This book will provide in-depth and updated information regarding the REDD+ readiness activities in Nepal. It also covers views and lessons learnt from CSOs/IPOs,I/NGOs working on REDD+. Also, the government's readiness status from various capacity building programs to pilot projects in Nepal are vividly reflected in this book. Similarly, we have incorporated information about

documents such as SESA and ERPIN along with technical knowledge of LiDAR for REDD+ RL and MRV.

Finally, I would like to offer my sincere gratitude to all authors for their valuable articles and reviewer and editor for their time and technical inputs. Without their support, we would not have been able to bring this book forward. Also, I would like to thank WWF Nepal and Ministry for Foreign Affairs of Finland for their continuous support to YAE.

Sanot Adhikari
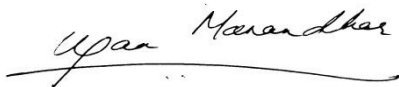Chairperson
Youth Alliance for Environment

Foreword

REDD+ has been an ongoing discussions under the UNFCCC for quite some time. But new discussions and ideas are exposed to bureaucrats, negotiators and I/NGOS first hand but limitedly reaches the younger generation especially students who also need to understand these concepts so that they can be a part of research and implementation given they have the interests in the field.

WWF Nepal with the full support of the Ministry for Foreign Affairs, Finland and WWF Finland and WWF US have taken a step forward to train and capacitate the younger generation of graduates and undergraduates students to better understand the theories and practicalities of REDD+. The younger generation have had been informed on the UNFCCC process and decisions taken.

This book that compiles various issues regarding REDD+ which will help the younger generation, policy makers, academicians, practitioners and stakeholders get an overview on the various issues under REDD+.

WWF Nepal under its Climate Change, Energy and Freshwater Program will continue its outreach program to capacitate the younger generations on new concepts as it develops in the UNFCCC so as to prepare the next generation to better understand the pros and cons of issues as it develops. YAE (Youth Alliance for Environment) has been a strategic partner to take these programs to reach out to the younger generation.

I would also like to thank MFA Finland, WWF Finland and WWF US without whose support, this would not have been possible.

Ugan Manandhar
Deputy Director
WWF Nepal

Acknowledgements

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Status of REDD+ Readiness in Nepal: Learning from R-PP Implementation

Roshani Dangi[1]

Resham B. Dangi

Abstract

This paper seeks to present Nepal's status in REDD+ readiness, and discusses the REDD+ activities that are intended to position the country to participate and receive benefits from all possible international financing mechanisms for forest carbon and other forest related environmental services. The paper examines the status of REDD Preparation Proposal and elaborates the safeguard system, MRV system and Forest Reference Emission level, which are prerequisites for REDD+ implementation. It also converses the three tier institutional arrangements that includes Apex body, REDD Working Group and REDD implementation center that have been established to accomplish goals of the RPP. This paper suggests that the respective agencies need to show proactive attitude towards capacity building for meaningful participation of stakeholders in REDD readiness process. Finally, it concludes by indicating challenges associated with carbon focused REDD program in Nepal and recommends non-market approach as an alternative approach to appreciate multi-functions of forest.

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1. REDD+ in Global Context

The global community has been very much concerned about the unprecedented threats of climate change since the Rio convention in 1992. Since then the developed and developing nations have been looking for an appropriate mechanism that can generate revenue from standing forests without cutting them for marketable commodities. Reducing Emissions from Deforestation and Degradation of Forests (REDD), and more recently as REDD+ that includes carbon conservation, sustainable management of forests and enhancement of carbon stocks seems to be one of the feasible alternatives. The 11th Conference of Parties (COP) of UNFCCC held in Canada discussed the scope of REDD in developing countries, thus, this can be taken as starting point of modern REDD mechanism. Later, its scope was further elaborated in subsequent COPs. The Bali Action Plan from 13th COP in 2007, considered to include forest degradation issue within REDD concept. Then following COPs further discussed and agreed to consider three additional elements-- conservation of forest carbon stocks, enhancement of forest carbon stocks and sustainable management of forests- to make it as REDD+.

It is evident that REDD+ has evolved to reduce current rate of deforestation and forest degradation in developing countries through result based payment mechanism. The payment is available if country can demonstrate verified result in reducing the emission from source (deforestation and degradation of forests), and increase carbon stocks from sustainable management and restoration of the forests. Performance is measured in tons of CO_2 equivalent emission reduced, which will be measured, reported, and verified against the agreed upon Forest Reference Emission Level (FREL).

The REDD+ development stages are divided into three phases- readiness, demonstration, and implementation. The readiness phase includes preparation of national REDD+ strategies, Social and Environmental Safeguards, National Forest Monitoring systems (NFMS) and FREL/ FRL; and design appropriate institutional framework to implement REDD+ activities. There are several windows- such as domestic, bilateral, and multilateral- to

receive financial and technical support to make a country ready for REDD+. In the global scale, there are two major funding sources to support countries in REDD+ readiness process: the World Bank hosted Forest Carbon Partnership Facility (FCPF) and the UN-REDD.

2. Evolution of REDD+ in Nepal

Nepal's journey started after submission of Readiness Plan Idea Note (R-PIN) in July 2008 in response to the World Bank's public notification to express national interest to participate in REDD readiness process. After approval of R-PIN, Ministry of Forests and Soil Conservation (MoFSC) established a REDD Forestry and Climate Change cell to prepare Readiness Preparation Proposal (R-PP), which is prerequisite document to access FCPF funding. Nepal submitted draft R-PP on 19th April 2010, which was later revised to accommodate reviewer's comment and submitted final version in October 2010.

The R-PP has envisioned that by 2013 and beyond "greenhouse gas emissions resulting from deforestation and forest degradation will be significantly reduced by forest conservation and enhancement, by addressing the livelihoods concerns of poor and socially marginalized forest dependent people, and by establishing effective policy, regulatory and institutional structures for sustainable development of Nepal's forests under the forthcoming new constitutional framework" (GoN, 2011). To achieve this goal, the R-PP has provided a detailed roadmap for development and implementation for REDD+ readiness (R-PP Assessment Plan, 2010).

3. Status of R-PP Implementation

Thus far, two key national documents- Social and Environmental Safeguard Assessment (SESA), and MRV System- have been finalized. Two other important reports - National REDD+ strategy and FREL- are almost in the final stage. Nepal is one of the few countries in Asia Pacific Region that has well referenced document on SESA and Environmental Social Management Framework (ESMF), which is prerequisite for REDD+ readiness assessment for

FCPF funded countries. SESA evaluates the environmental and social impact of strategy options recommended to reduce drivers of deforestation and degradation of forests in Nepal.

ESMF has been developed to efficiently manage the negative and positive social and environmental impacts stemming from the implementation of programs/project activities recommended in the strategy option paper. This framework is important because it questions how to enhance social and environmental benefits of REDD+ programs/projects and explores means to mitigate adverse impact rooted to those programs/projects. It also inquires the institutional arrangement for the implementation procedure and methodology as well as screening process for implementation of suggested REDD+ projects/programs.

The proposed MRV system for Nepal adopts nested approach to enable for early participation in the demonstration phase. Therefore, it allows room for adapting innovative approach for continuous improvement of the proposed MRV system and to enhance capacity of the relevant entities to implement it. The MRV report recommends wall-to-wall mapping approach based on Landsat images classified with a limited number of classes using a hybrid approach that combines automated image segmentation with visual interpretation with a minimum mapping unit of 5 hectares, to be repeated at every reporting time (e.g. 2 years), and with a specific protocol for accuracy assessment (REDD Cell, 2014).

The MRV report also suggests that Landsat image (30 m resolution) would be a potential source for monitoring national forest cover and forest cover change over time. It has been envisioned that the result can be validated by using Rapid Eye images of 5m resolution (currently being used by DFRS for Forest inventory) for close monitoring of deforestation hotspots and management interventions in forests for REDD+. However, Rapid Eye is expensive so there is advantage in using Landsat because it is free to all suggested reference points used for developing national FRL (Forest Reference Level).

The draft FRL report suggests that Nepal should adopt stepwise approach based on four guiding principles- completeness, consistency, comparability, and accuracy. The FRL methodology has followed the consultative approach to agree on political questions, such as definition of forests, reference period, carbon pools, and GHGs to be included. It has adopted the same definition for forests that have been used by periodic national forest inventory reports in Nepal; which aligns with FAO definition. Regarding Carbon Pools, only two pools- the above ground tree and non-tree biomass and below ground biomass (roots) – have been included in the assessment. Out of three GHGs associated (Carbon dioxide, Methane, Nitrous oxide) with the land use change emissions only CO_2 has been considered due to lack of reliable documentation on annual loss of carbon pools from forest fire. Since, minimum of three reference time points are needed to draw reference baseline; the FRL has chosen 1990, 2000 and 2010 based on the available field inventory data and Landsat images (REDD-Cell, 2014).

An outline framework structure for National REDD strategy was finalized on July 2012 with intensive consultation at Regional and Central level. A detail national REDD strategy document is under preparation following the existing outline framework with slight modification on chapter contents as per the new knowledge and learning acquired from the analytical studies and recent outcomes of international processes. To support national REDD strategy formulation process; few analytical studies have been commissioned by the REDD- Cell such as total economic value of forests, political economy of land use change, modeling to forecast future rates of deforestation and forest degradation, and study on forest carbon tenure. These studies are adding value to identify concrete strategic options to address the drivers of deforestation and degradation of forests in the national REDD strategy.

Besides FCPF, Nepal is also collaborating with UN-REDD since 2009 to support REDD readiness activities, particularly to fill the gaps where FCPF support is either inadequate or absent. UN-REDD has been providing technical and

financial support as per demand of the country. Though funding amount is small, it is very helpful in bridging gaps in readiness process.

4. Institutional Arrangement

Government of Nepal has established three-tiered institutional mechanism consisting of an Apex body, REDD working Group and REDD cell. The Apex Body is chaired by the minister of MoFSC and its members include Secretaries of nine Ministries, member of the National Planning Commission, and representatives of civil society organizations, Indigenous Peoples and private sector representatives which are associated with   member Ministries. The primary responsibility of the Apex Body is to ensure coordination and monitoring for the planning and implementation of REDD activities across various sectors. This entity ensures the inclusiveness by including representation from private and public sector, and civil society organizations. This unit endorses all the policies and measures related to REDD+ readiness and its implementation.

The second tier entity is REDD Working Group (RWG), and is chaired by the Secretary of MoFSC. It regularly meets to resolve issues related to R-PP implementation. Currently, the RWG includes nine members representing government, indigenous peoples, community forest user's group, private sector, and development partners. In the R-PP preparation phase, this entity was involved on institutional and advisory support to the REDD-cell. Now it is functioning as an advisory and coordination entity to support REDD cell in R-PP implementation.

The third tier is the REDD cell, which is recently upgraded as REDD implementation Center under MoFSC. This center is independent entity comprised of four sections: Planning and budgeting, GIS and Remote sensing, Climate Change adaptation, and Finance/Administration. The first section is responsible for developing policy, plans and budget, second section is responsible for FREL and MRV, third section is mainstreaming forestry

program to climate change adaptation, and the Finance/Administration section is responsible for financial management and office management.

In addition to aforementioned three tiered institutions, two informal multi-stakeholder forums are in place which includes representatives from the private sector, civil society, media, government organizations, community-based organizations, I/NGOs, donors, academia, research organizations, and development partners. These forums are very helpful in raising awareness of the stakeholders and providing feedback to the GoN in REDD+ readiness process.

5. Thoughts on Scope of REDD+

The proposed REDD+ activities in Nepal are intended to position the country to participate and receive benefits from all possible international financing mechanisms for forest carbon and other forest related environmental services, which is fast emerging mechanism in the climate change context. While the size of global market demand of forest carbon and its financing mechanism is still not clear, it is gradually evolving through international process. Therefore, it is anticipated that the country needs to establish a minimum level of policy, institutions and technical capability to ensure that drivers of deforestation and forest degradation can be detected and prevented to arrest current rate of forest loss. Since, many drivers (both direct and underlying) are beyond the scope of Forestry sector, an innovative institution with full and effective operating mechanism is pre-requisite to ensure multi-sectoral coordination for successful implementation of emission reduction program. A robust safeguard information system and grievance readdress mechanism needs to be in place to manage people's high level of apprehension to rights over resources.

The value and justification of the REDD+ program would therefore dependent on (i) the success of the specific program components to address drivers of deforestation and forest degradation (ii) the price for verified emissions reductions in the market or other PES (payment for environmental services) system that comes into effect, (iii) the effectiveness of the program to

motivate forest dependent community either to reduce their consumption or increase supply of wood biomass, and (iv) successful reform or regulated development in other sectors that are accelerating drivers of forest loss.

The prevailing national policy environment does not really support to make a reliable projection for accurate value of carbon emissions reductions from forests within the accepted confidence limit. There are many challenges, but still there is hope that drivers of deforestation and forest degradation in low land area can be reduced; and mid-hills and high mountain forests can be further restored in future. In mid-hills and high mountains where community based management system is very successful in restoring the degraded forests and reducing deforestation, REDD+ can be a no-regret benefits. However, it is challenging in Terai and inner-Terai valleys where cost of avoiding deforestation and degradation is very high due to high economic rents from alternative land uses and illegal logging.

6. Lessons Learned from Nepal

Nepal has been earnest to ensure transparency and ownership of stakeholders on the process of developing FRL, MRV, SESA, and national REDD strategy. Informal forums have also been established to enhance the participation and ownership of stakeholders in the REDD readiness process. Despite all success, Nepal still needs further effort and investment to improve the capacity of stakeholders, at all levels, for meaningful participation in REDD+ program development and implementation in future.

There has been concerns among experts that carbon focused REDD+ program may not be advantageous for Nepal due to extensive forest fragmentation, high dependency on forests for subsistence, weak governance and low institutional capacity. Hence, the better approach would be to bundle REDD+ program with other non-carbon benefits such as environmental services and livelihoods improvements. In this context, it may be helpful to consider non-market mechanism for REDD+ to appreciate multifunction of forests in Nepal.

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Present Status and the Way Forward in Designing and Implementation of the First Subnational REDD+ Project of Nepal

Dr Yadav Prasad Kandel[1]

Abstract

Nepal made significant progress on overall REDD+ process until April 2014 when government of Nepal presented Emission Reduction Program Idea Notes for 12 districts of the Terai Arc Landscape at the 9th Carbon Fund meeting at Brussels, which was accepted for the Carbon Fund pipeline. However, the progress has been slow afterwards as the process of drafting Emissions Reduction Program Document for the area has not yet started. This suggests the REDD+ process in Nepal has now entered into new phase which could be termed as; "politics and power struggle" phase.

Key words: REDD+, Forest-carbon, ER-PIN, ER-PD

1. Introduction

Reducing emissions from deforestation and forest degradation, and sustainable management of forest, conservation of forests and enhancement of forest carbon stocks (REDD+) is considered as the appropriate mechanism that could reduce greenhouse gas emissions substantially and help climate change mitigation. The REDD+ was first introduced at the Thirteenth Session of the Conference of the Parties (COP 13), 2007 in Bali which evolved from the

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concept of reducing carbon emissions through avoided deforestation (RED) proposed at the COP 11, 2005 in Montreal. This has further advanced and is expected to be implemented under the United Nations Framework Convention on Climate Change (UNFCCC) by 2020. REDD+ as the new climate change policy under the UNFCCC has great potential of reducing emissions as the design of the REDD+ ensures active involvement of both developed and developing countries, unlike the Kyoto Protocol.

 REDD+ is considered as an effective policy to address environmental problems and encourage enhancement of forest carbon stocks by allocating an economic value to standing forests in the international climate regime. Most of the developed and developing countries believe that REDD+ could contribute significantly to global climate change mitigation efforts. However, REDD+ being a highly technical and rapidly evolving subject, developing countries need support to develop national frameworks and negotiate effective modalities and processes within the agreement under the (UNFCCC).

Nationally driven three phased processes for the further development of a REDD+ mechanism for developing countries agreed in Cancun Agreements during COP 16 in Mexico are:

1) Development of national strategies or action plans and capacity building
2) Implementation of national strategies or action plans that could involve REDD+ pilot projects
3) Results-based REDD+ with financing likely to include both market and non-market mechanisms

At COP 17 in Durban, South Africa, additional progress was made on REDD+, including guidance on systems for providing information on how safeguards are addressed and respected, and modalities relating to forest reference emission levels and forest reference levels. There was no further development on REDD+ at COP 20 in Lima. There was no agreement on much awaited Safeguard Information System and on Bolivia's proposal on "Joint Mitigation-Adaptation" mechanism, which is considered as the non-market REDD approach. Furthermore, there was no discussion on methodological aspects for non-carbon benefits of the REDD+ in Lima. With all these developments,

we can see that full architectural design of the REDD+ has not yet finalized internationally. It has still been evolving and we can expect a final version only in about one year time when COP 21 takes place in Paris.

REDD+ has the potential to ensure economic, environmental, and social benefits in developing countries if its implementation is supported by broader sustainable development strategies at the national level. In Nepal, first two years of the REDD+ (2008 - 2010) were very smooth. All the stakeholders were very enthusiastic about the REDD+ and therefore R-PP was developed with active involvement and full participation from all stakeholders and it was approved by the Participant Committee (PC) of Forest Carbon Partnership Facility (FCPF) in 2010 at the first attempt. When implementation of the R-PP started, slowly minor differences in overall approach among the major stakeholders started to emerge, which were not substantive and unmanageable. However, we must honestly accept that the implementation of the R-PP has not progressed as we all expected. The result is that most of the proposed activities were not implemented in the stipulated time and the project had to be extended for 18 months until June 2015. This clearly shows there were some problems in implementation of the R-PP activities. We cannot completely rule out that there were not conflicting interests among the major actors or stakeholders that slowed the implementation process of the R-PP activities.

As Brockhaus and Gregoria (2014) suggested, co-operation among the stakeholders was dominant during the early stages of national REDD+ policy debates in Nepal. When, government of Nepal decided to prepare the Emission Reduction Program Idea Notes (ER-PIN) for the 12 districts of the Terai Arc Landscape (TAL) for submission to the Carbon Fund, there were also some conflicting views among major stakeholders. During the ER-PIN drafting process, conflicting interests and views especially in the institutional mechanisms, intervention approaches and benefit sharing mechanism were clearly observed among the major actors/stakeholders. ER-PIN drafting committee and the government worked hard to convince other stakeholders

that this was only just an idea notes and we can resolve all other issues during the design phase of the Emission Reduction Program Document (ER-PD). All major stakeholders were convinced supported the submission of the ER-PIN to the Carbon Fund However, it was interesting to observe that most of the senior government officers were against the submission of the ER-PIN during last hours. This again shows that, there were some conflicting interests among the major stakeholders regarding the ER-PIN and the REDD+ as a whole. However, leadership at the Ministry of Forests and Soil Conservation (MoFSC) took firm decision to submit the ER-PIN which was submitted to the 9th Carbon Fund Meeting at Brussels in April 2014. Nepal's ER-PIN was not only accepted by the Carbon Fund Meeting but was also appreciated from all participants and donors for its quality, vision, and approaches proposed.

After the success of the ER-PIN at Brussels, the process has been slow. Government has formed a drafting committee in July 2014 but its meeting has not yet called on. Some stakeholders have even raised questions regarding the structure of the committee itself. The Letter of Intent (LoI) for selling and purchasing emission reductions from the proposed REDD+ project between the government of Nepal and the World Bank has not yet been signed. Certain level of conflicts among the stakeholders is indeed helpful for the REDD+ decision-making process (Brockhaus and Gregoria, 2014; Brockhaus and Angelsen, 2012). In this context, Nepal still can do much better in overall REDD+ process that will ultimately provide performance based payments to the local communities as well as help climate change mitigation. In this article, overall REDD+ process in Nepal is analyzed in the context of 4Is of the REDD+. Some suggestions on how we should move forward to develop the ER-PD and implement the emission reduction programs of the 1st sub national REDD+ project in the TAL are also provided.

2. Evolution of the REDD+ under the 4Is of the REDD+ Process

Any public policy and governance including forest governance is basically a political process influenced by a variety of interests, beliefs and discursive practices of different actors which ultimately help frame policy discourses

(Jasanoff, 2009; Forsyth, 2003). REDD+ as an international policy has evolved through similar process and has undergone significant changes from its original form. Four I's: **Institutions**, **Interests**, **Ideas,** and **Information** play vital role in any kind of changes that takes place in public policy framing. The four I's that contributed changes in the REDD+ policy framing either internationally or nationally have been described by Brockhaus and Angelsen (2012) or presented in Figure 1.
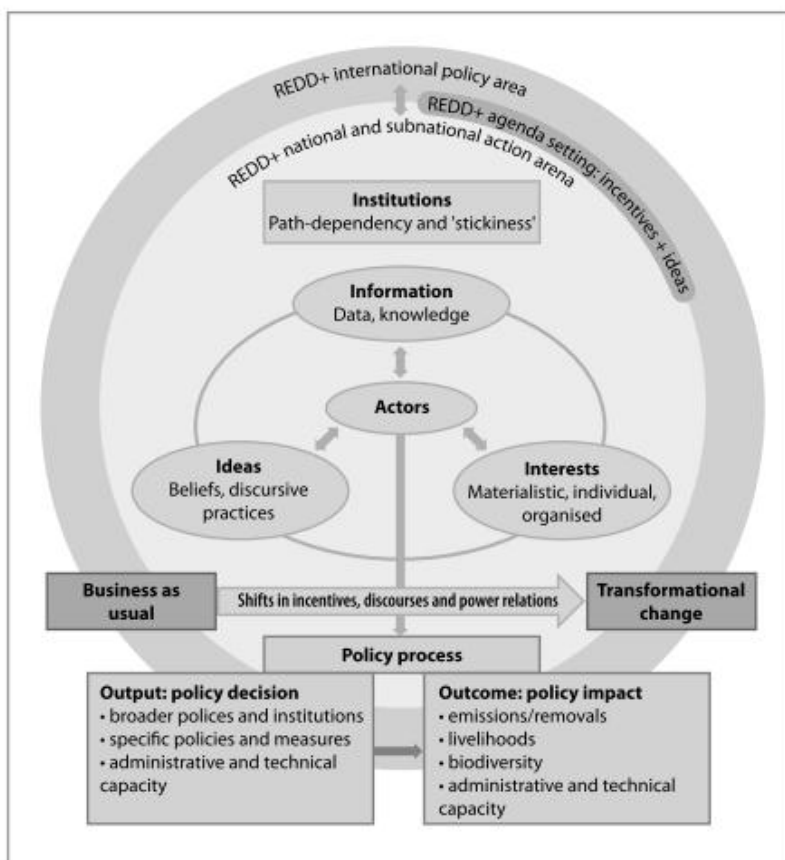

Figure 1: 4Is of the REDD+ process (Reproduced from Brockhaus and Angelsen, 2012)

REDD+ process has been now proposed as the major climate change policy under the UNFCCC. "Stabilization of greenhouse gas concentrations in the

atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" is the ultimate objective of the UNFCCC (Article 2, UNFCCC, 1992). Initially, this was also the principal objective of the REDD+ when it was included in the climate change policy under the convention. Now, many other objectives of the REDD+ have been added in the proposed international REDD+ architecture. Some of these include conservation of biodiversity, reducing poverty, enhancing local livelihood, better governance, and social inclusion. Similarly, original concepts of various aspects of REDD+ have been changed. For example, the initial policy of 'result based payments' is not the only option and other approaches are also included in the discussions. National approach of REDD+ was the major criteria when the idea was initiated. Now, sub national or even project level approach or nested approach is accepted for the REDD+. It was mainly expected that funding for the REDD+ projects would come from the carbon market. This is not the case to date. Major funding is flowing mainly from international aid and the national budgets of REDD+ countries. It clearly demonstrates that there has been evolution on all aspects of the REDD+ process from its original idea and concepts as explained by Angelsen and McNeill (2012). All these changes are the results of the actions of different actors or **institutions** having different **interests**, who were able to influence the discussions with their **ideas** based on the **information** they have regarding the REDD+ approach.

The evolving process of REDD+ is similar in both international and national policy arena. In all REDD+ countries including Nepal, REDD+ process has gone through various stages and countries are working hard to get the maximum benefits form the process. There is good opportunity for Nepal to get performance based payments from its first sub national REDD+ project in the 12 districts of the TAL, which has already been accepted to be included into the pipeline of the Carbon Fund. There are various international and national **actors (institutions**) in the REDD+ process of Nepal having different **interest**. They try to influence the REDD+ discussions with their **ideas** (beliefs and discursive practices and approaches), which are supported by the **information**

they have on the REDD+ process as an international climate change policy that will be implemented under the national policy arena.

3. Nepal's ER-PIN for its First Subnational REDD+ Project

Nepal's ER-PIN for its first subnational REDD+ project constituting 12 districts of the TAL (Figure 2) has already been accepted from the 9th Carbon Fund Meeting at Brussels in April 2014. The ER-PIN is now into the pipeline of the Carbon Fund. The ER-PIN is only an idea note of various aspects of the proposed REDD+ project. In the ER-PIN, Nepal's vision in all aspects of the REDD+ process are provided. However, all these are just ideas which were discussed and accepted at the time of ER-PIN development process and should not be taken as the final plans of activities. During the development of ER-PD, these ideas can be slightly changed or modified according to the progress on the REDD+ process in international policy arena or changed context of REDD+ process in national level. Identification of drivers of deforestation and forest degradation in the project area and propose intervention strategies to address the drivers are the two most important parts of the ER-PIN. These two parts are briefly discussed in this section.
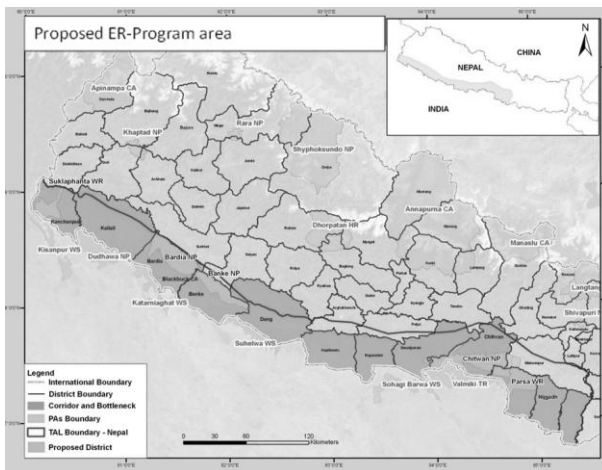
Figure 2: Proposed emission reduction program area

3.1. Drivers of deforestation and forest degradation in the project area

Nepal's Readiness Preparation Proposal submitted to the World Bank and accepted by the Carbon Fund in September 2010 (MoFSC, 2010) identified nine direct or proximate drivers of deforestation and forest degradation and several underlying causes for the country. Most of these drivers and underlying causes are also applicable for the proposed Emission Reduction (ER) program area of the TAL. However, for ER program, we have to identify the major drivers that could be addressed to reduce emissions from deforestation and forest degradation. In this context, the ER-PIN for the TAL identified four major drivers that should be addressed to receive the performance-based payments for the emissions reduction credits (MoFSC, 2014).

DIRECT or PROXIMATE CAUSES

Unsustainable and illegal harvest of timber products	Over-grazing	Forest Fires	Illegal conversion/ settlement

Weak resource management	Poverty and lack of alternative livelihoods	Landlessness and excess demand for timber	Rapidly increasing population	Lack of alternative energy sources

UNDERLYING CAUSES

Figure 3: Major drivers of deforestation and forest degradation and its underlying causes in the TAL (Reproduced from the presentation of the ER-PIN at Brussels)

3.2. Proposed intervention strategies to address the drivers of deforestation and forest degradation

Five different intervention strategies are proposed (Table 1) to address drivers of deforestation and forest degradation in the ER program area. It is expected that by implementation of proposed strategies in the area, emissions of 14 million tons of CO_2 e can be reduced as compared to the projected emissions in business as usual scenario in five years. The expected emissions reductions would be about 43 million tons of CO_2 e in ten years and 73 million tons of CO2 e in fifteen years when the intervention strategies continued and improved in later phases of the program (Table 2).

From the Table 2, we see that by implementing various intervention strategies proposed in the ER-PIN,14 million tons CO_2 equivalent of emissions can be reduced that will be emitted to the atmosphere because of deforestation and forest degradation in case of business as usual scenario in the 12 districts of the TAL. Under the REDD+, if we implement the interventio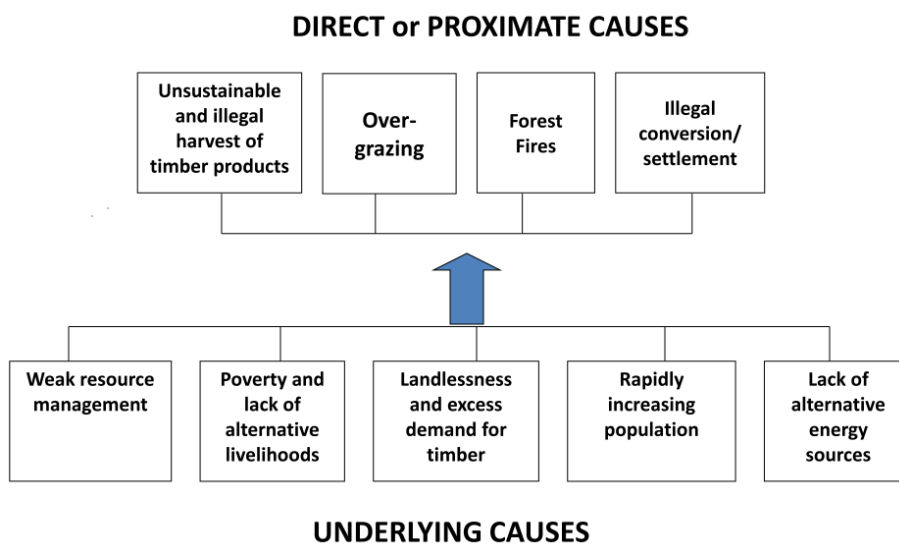n strategies proposed in the ER-PIN and reduced the emissions as proposed, the World Bank will purchase emissions reduced. Money that would be received from "carbon trading" depends on the rate of carbon emissions reduced (US$/unit of emission reductions, which is one ton of CO_2 e) agreed between the government of Nepal and the World Bank at the time of Emission Reduction Payment Agreement (ERPA). For example, if the rate agreed is US$ 5/ton of CO_2 e, total money that will be received from selling of 14 million tons of emissions reductions will be US$ 70 million. When, Nepal's ER-PIN was accepted by the Carbon Fund in its 9th meeting at Brussels in April, 2014, almost all media in Nepal highlighted the news and mentioned that Nepal entered into the international carbon market and the country would get US$ 70 million by selling the carbon in five years. However, acceptance of the ER-PIN by the Carbon Fund meeting does not automatically guarantee that Nepal would get benefits from the REDD+. This was just the first step, which was well received from the Carbon Fund meeting participants and all donors. However, to get the ultimate benefits from the proposed REDD+ project, Nepal need to

develop the ER-PD and implement ER programs successfully in the field. This is not an easy task, there are many challenges ahead, which can be dealt appropriately, and Nepal can get its performance-based payments for the emission reductions if all the stakeholders work together for the benefit of the country.

Table 1: Proposed intervention strategies and Risk/benefit analysis (Source: ER-PIN for the TAL)

Intervention	Emission reductions potential	Non-carbon benefits	Sustainability against drivers	Risk
Improved forest management practices –SMF	Moderate(large areas with moderate gains/ha) but increasing over long-term	High (local empowerment, better access to resources, biodiversity conservation and ecosystem services)	Moderate to high (improved access and improved supply over long-term)	Low (demonstrated models with high feasibility of expansion; no regrets)
Accelerated installation of biogas plants and Improved Cook Stoves	Moderate (building off extensive experience and demonstrated benefits)	High (improved health, contained livestock reduces grazing pressure, improved soil fertility,	High (effectively replaces need for fuel wood harvest)	Low (demonstrated models with clear benefits)

		biodiversity benefits from reduced pressure on forests)		
Land use planning to reduce conversion	Low to moderate (changes will take time but will have additive impacts)	Moderate (integrated governance, more sustainable and legal settlement alternatives	Moderate (will mitigate impacts, but drivers expected to persist)	Medium (no regrets; however, feasibility not proven)
Expanded plantations/nurseries focused on degraded lands	Low to moderate (requires additional work to determine extent of available lands)	Low to moderate (job and economic opportunities, ecosystem services)	Moderate to high (intervention will go directly to increasing supply)	Low
Diversify livelihood opportunities	Low (indirect, long-term benefits for emission reductions)	High (improved and more sustainable economic circumstances)	High	Low

Table 2: Estimated emissions reductions from ER program interventions (Source: ER-PIN for the TAL)

Intervention	Cumulative emissions reductions as compared to the projected emissions in business as usual scenario (millions of tons CO_2e)		
	5 years	10 years	15 years
Improved forest management -SMF	9.9	29.2	49.0
Installed biogas plants	0.9	3.4	6.5
Improved cook stoves	0.3	1.1	2.0
Land use planning	2.8	8.3	13.9
Private forestry/tree nurseries	0.1	0.7	1.4
Total	14.0	42.7	72.8

4. From ER-PIN to ER-PD and performance-based payments: challenges ahead

Nepal is one of thirty six countries who have signed Participation Agreement to participate in the Readiness Fund under the FCPF until 2013 (FCPF, 2014). Nepal is also one of the 11 countries (Figure 4) whose ER-PINs have been included in the pipeline of the Carbon Fund of the FCPF. FCPF website (http://www.forestcarbonpartnership.org/carbon-fund-0) says, "Countries that have made significant progress in their REDD+ readiness endeavors may be selected to participate in the Carbon Fund, through which the FCPF will pilot incentive payments for REDD+ policies and measures in approximately five developing countries. Such performance-based payments will play an

essential part in valuing forests while they are standing than when they are cut". That means, at least 11 countries (the number of countries can be increased as couple of countries are presenting their ER-PINs in coming Carbon Fund meetings) will be competing for the first phase of performance-based payments under the Carbon Fund from which only about five or six countries will be selected.

Figure 4: Countries whose ER-PINs are included in the Carbon Fund pipeline (Source: FCPF website)

There are six direct steps between the submission of the ER-PIN to the Carbon Fund and the actual commencement of implementation of the ER program for the performance based payments (Figure 5). Furthermore, after implementation of the programs, the final payments will be made only after verification of the actual emission reductions as reported. That means, even any country reaches to the implementation phase of the ER programs; it does not guarantee that performance base payments will be made automatically. If due to some reasons, the implementation of the proposed programs fail to achieve expected emission reduction payments will not be made. The steps 2-7 shown in Figure 5 clearly indicate that lot of works need to be completed before the ER programs are implemented in the field. There are also other

three steps that need to be completed before the ER-PD can be submitted to the Carbon Fund. Firstly, only the REDD+ country that has completed the implementation of readiness activities and submitted the 'Readiness Package' that is endorsed from the FCPF participants can submit the ER-PD. In addition, the World Bank and the ER Program Due Diligence of the Readiness package must be verified to submit the ER-PD. Once the ER-PD is evaluated and selected, negotiations for Emission Reductions Payment Agreement (ERPA) can be started. Negotiation process for ERPA takes at least six months. When the ERPA is signed, implementation of the ER programs is the responsibility of the REDD+ country. After implementation phase is completed, third party verification is necessary for the final performance- based payments for the emission reductions credits.
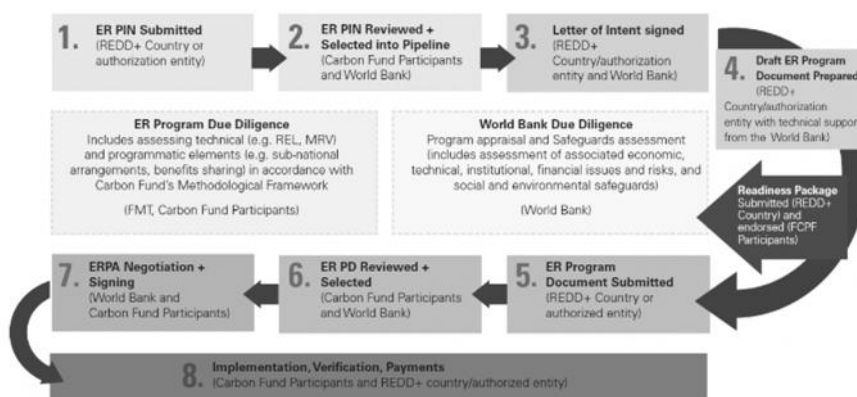
Figure 5: Processing steps from ER-PIN submission to final performance-based payments (Reproduced from FCPF website: https://www.forestcarbonpartnership.org/carbon-fund-0)

5. Nepal's Progress on REDD+: Where We Stand Now? And the Way Forward

Implementation of R-PP has not yet completed even after the 12 months of extended period of 18 months of the project. Remaining six months of the

extended period of the readiness grant is critical for the government. Only US$ 2,112,000 of the readiness grant of US$ 3,4 00,000 was disbursed until October 17, 2014. Government need to spend remaining US$ 1,288,000 and complete the implementation of the readiness activities by June 30, 2015. Preparing readiness package and submit it to the World Bank is another important task of the government. Some of the countries of the 11 REDD+ countries whose ER-PINs are in the Carbon Fund pipeline have not only spent all the readiness grant but also received additional fund for implementation of readiness activities. In this situation, we can say that the progress on the R-PP in Nepal has not been very impressive. However, Nepal prepared and submitted ER-PIN for its first sub-national REDD+ project in the 12 districts of the TAL. It is expected that R-PP will be completed in six months and Readiness Package will be prepared and submitted to the World Bank. This is necessary but not sufficient to move forward for the next phase of the REDD+ in Nepal.

It is critical to prepare ER-PD to move ahead and implement ER programs in the 12 districts of the TAL to receive the performance-based payments for the emission reduction credits. As FCPF will accept only about 5 ER-PD for the implementation, the ER-PD we develop should not only be good but also be comparatively better to the ER-PDs of other REDD+ countries that will be submitted to the FCPF. Overall, Nepal has made good progress on the REDD+ process so far. However, after very successful presentation of the ER-PIN at Brussels in April 2014, the process has not moved forward. If this status quo situation remains for another couple of months, Nepal could miss the great opportunity of being one of the first countries to implement the ER programs and seek performance-based payments from its 1st sub national REDD+ project under the FCPF's Carbon Fund.

Some immediate steps need to be taken especially from the government side to move forward from where we stand now for the successful completion of the readiness phase and begin the implementation phase of the REDD+ in Nepal. These are briefly discussed here:

- Government should first ensure the remaining readiness activities be completed on time and remaining readiness grant is spent to get the maximum benefits. Submission of the readiness package to the World Bank is critical to move to the implementation phase.

- Government should take firm decisions and start working on the next steps of the ER-PD development process for the proposed ER program area. It is critical as successful implementation of REDD+ depends on the active participation and meaningful involvement of all the stakeholders.

- It would be good to revise the structure of the ERPD drafting committee by the REDD Working Group meeting to include relevant stakeholders and ensure the team officially meets to begin work. It is very important that all stakeholders have some consensus regarding the structure of the team to expedite the ER-PD drafting process. Furthermore, the current team formed by the government is large. It is good to have representation from all stakeholders in the team, but there should be a smaller core ER-PD writing team within the larger team. Delegation of full authority including financial authority to the ERPD drafting committee headed by one of the under-secretaries of the REDD Implementation Centre is critical to make the team functional. This will ensure timely meetings and rapid progress on the ER-PD development process.

- Development of ER-PD is not an easy task. It requires developing appropriate interventions to be implemented in the field and other innovative ideas proposed in the ER-PIN. For example: one intervention idea of the ER-PIN was "to transfer some forest area under the government management to the collaborative or community forest management regimes." Now in the ER-PD, we should propose how much and which forests from which districts will be handed over as the collaborative or community forests in next five years (1st phase of the ER-program). For this, we need to do a lot of homework with discussions with forest department, district forest offices, local

communities and other concerned stakeholders. May be this might need some changes in the present policy, or bylaws and so on. Similarly, we need to develop plans for other intervention ideas proposed in the ER-PIN as we write the ERPD.

- Several reforms in the policy might be necessary in order to provide an enabling environment to implement the ERPD. Similarly, safeguard measures and RL and MRV as well as institutional mechanism and other issues must be clearly illustrated in the ER- PD. For example: in the ER-PIN, we have proposed that in a span of five-years, about 12,000 hectares of private forestry will be developed in 12 districts of the project area. To achieve this target, we need to take some radical steps in our present policies to promote and support the private sector, so that the private sector could invest confidently in the forestry sector. We need to have initial interactions and series of discussions on these and other similar issues with the concerned stakeholders.

The points mentioned above are just some of the many issues that need to be resolved for the development of a good and implementable ER-PD in the ER program area.

6. Conclusions

REDD+ is an international policy that is not only guided by the climate change issues, but also by the international politics, economics, and businesses. During the implementation of the R-PP and ER-PIN development process, the relationships started deteriorating among the stakeholders because of diverse interests and different expectations from the REDD+ process. This is natural and normal in any kind of policy development in any country and therefore should not be taken negatively. This is sometime helpful to achieve transformational changes in the country. Development and progress of REDD+ process in Nepal should be taken in this way. All the stakeholders should sit together, discuss issues democratically, and move ahead country's benefit.

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LiDAR-Assisted Multi-source Program (LAMP) for REDD+

Reference Level and MRV in Nepal

Basanta Raj Gautam [1]
Anup Raj Joshi [2]

1. Introduction

LiDAR (Light Detecting and Ranging) is an active remote sensing technology which provides precise 3D information of the terrain and vegetation. LiDAR pulse density from 0.5 to 2 returns per square meter is sufficient for forest inventory applications in general cases. It is also possible to assess vegetation height and density directly from LiDAR data. Accurate and high-resolution mapping of biomass and carbon density requires tree level field sample plot data and biomass models to calibrate statistical models based on LiDAR pulse data properties (Gautam *et al.,* 2013; Gautam *et al.,* 2010).

LiDAR-Assisted Multi-source Program (LAMP) is one of the newest methodologies to accurately estimate forest biomass/carbon in the context of REDD+. LAMP integrates LiDAR data with satellite imagery, and field data for estimating forest biomass and carbon stocks. Therefore, it complies with the requirements of REDD+ Reference Level (RL) and Measuring, Reporting and Verification (MRV). In LAMP method, the LiDAR returns are captured by scanning systematic strips or random blocks. Various weight functions can be used to select the right method for laser scanning. The weight can be based on a land use or forest type. Forest types with high internal variability are given

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higher weight. The bias aroused by weighting is removed in the estimation process by inverse weighting of the corresponding estimates.

2. Study area

The study area (Figure 1)) spreads across 20,300 km^2 in the Terai Arc Landscape (TAL). TAL is situated along the foothills of the Himalayas in the southernmost part of Nepal, ranging from the lowlands of Terai region up to the southern slopes of the Himalayas in Siwaliks region. The average altitude in the study area varies from about 150 up to over 2200 metres. The area is influenced by tropical and subtropical climate.

About half of the study area is covered by subtropical, mainly deciduous forests. The dominating forest type is sal (**Shorea robusta**) with smaller proportions of moist evergreen forest, dry deciduous forest, khair-sisoo (**Acacia catechu/Dalbergia sissoo**) and subtropical pine (**Pinus roxburghii**
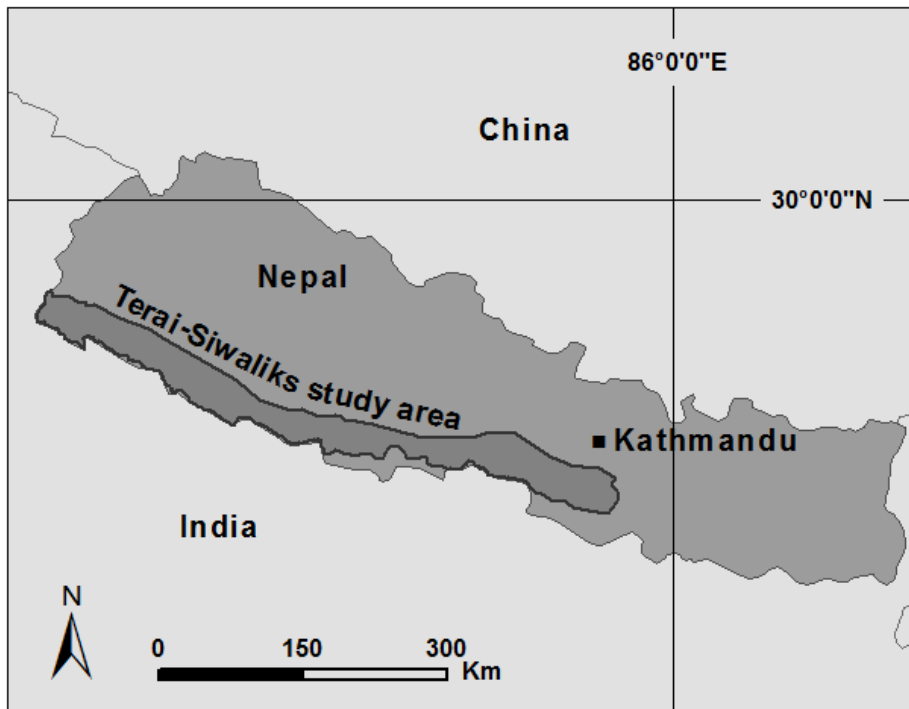

Figure 1: Location of the study area.

3. Materials and methods

3.1 LiDAR data collection and processing

LiDAR data was acquired from about 5% of the study area (1000 km²) in 20 rectangular sample blocks of 5km×10km size. A forest type map of 30m resolution (Joshi *et al.,* 2003) was used for LiDAR block sampling. Probability proportional-to-size sampling (Särndal *et al.,* 1992) was used to select the areas for LiDAR data collection. To do so, the entire study area was divided into a grid of 5 km×10 km blocks. To produce a LiDAR sample that reflects the full range of variation in biomass over the study area and that represents not only the most common forest types but also the rare ones, different weights were assigned to different vegetation types. The probability of a block to be chosen in the sampling was proportional to the weight of the block. For each block the area of the different vegetation types within the block was calculated from the vegetation map, and sampling weights were assigned. The airborne laser scanning (ALS) campaign was carried out in March/April 2011. All blocks were scanned in full coverage from 2200m average height above ground using a local helicopter equipped with a Leica ALS50-II lidar-scanner device.

ALS raw data were received from the vendor classified into three categories: ground returns, vegetation returns, and errors. This classification was visually verified. Further pre-processing included the calculation of a Digital Terrain Model (DTM) from the ground returns, the removal of overlaps from the raw data, and the conversion of height coordinates for vegetation returns from absolute elevation into distance-to-ground using the DTM ground model. From the pre-processed LiDAR data, several LiDAR features were calculated for building the LiDAR-to-AGB model. The features have been taken from Junttila *et al.* (2010) and are an extended and modified version of those published by Næsset (2002). They include: 1) different height percentiles for the first-pulse and last-pulse returns, 2) mean height of first-pulse returns

above 5 meters (high-vegetation returns), 3) standard deviation for first-pulse returns, 4) ratio between first-pulse returns from below 1 meter and all first-pulse returns, and 5) ratio between last-pulse returns from below 1 meter and all last-pulse returns.

A Sparse Bayesian method was used to develop a LiDAR-to-AGB model. A regression model was generated based on the relationship between LiDAR metrics (height and density distribution) and field measurement based biomass training data. It has been shown that Sparse Bayesian methods offer a flexible and robust tool for regressing LiDAR pulse histograms with forest parameters. While performing comparably to traditional regression methods, they are computationally more efficient and allow better flexibility than step-wise regression (Junttila *et al.*, 2008; Junttila *et al.,* 2010).

3.2 Field data collection for LiDAR model calibration and validation

Sample plots for LiDAR model calibration

Field plots for model calibration were sampled using systematic cluster sampling during March and May 2011. Each designed LiDAR block contained six clusters of eight sample plots each (Figure 2). The distance between cluster centre was 3333m in West-East and 2500m in North-South direction. Within the clusters, the sample plots were aligned in two parallel columns in North-South direction, with 4 plots per column (Figure 2). The distance between plots was 300m in West-East direction, and 300 and 150m in North-South direction in Terai and Siwaliks, respectively. The smaller North-South distance for Siwaliks was chosen because of the large variations in altitude in the mountainous region. The plots were of fixed circular shape with 12.62 meters radius, equivalent to an area of 500m².
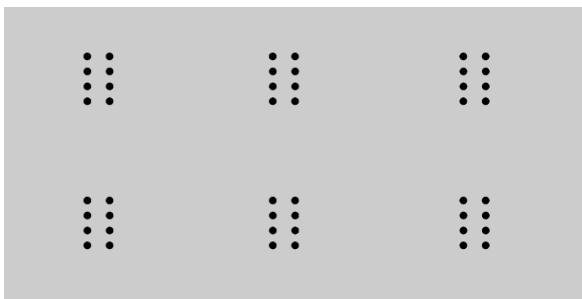
Figure 2: LiDAR block with six clusters of 8 field plots each.

Plot centre coordinates were recorded using differential GPS with ProMark 3 and MobileMapper CX devices, and corrected in post-processing mode (GNSS Solutions software and MobileMapper Office software). It is important to collect as accurate data as possible from the field. Highly accurate data means high compensations in REDD+ scheme due to a better reliability of the assessed amount of measured carbon stocks in forests. A total of 792 sample plots that were located in forest with at least 10% canopy cover were measured in the field. The measurements at tree-level included all living trees and shrubs above 5cm diameter within the plot area.

The tree-level data was divided into 23 different tree species groups (Sharma & Pukkala, 1990). For each field sample plot following attributes were derived from the tree-level measurements, by species group and totals: Stem count (number/ha), mean diameter at breast height weighted by basal area (cm), basal area (m²/ha), mean tree height weighted by basal area (m), stem volume (m³/ha), and above-ground biomass (tons/ha). While mean diameter at breast height (dbh) and mean basal area were a direct output of the field measurements, mean tree height, mean volume and mean biomass were estimated using species group-specific functions and coefficients (Sharma & Pukkala, 1990).

Tree height was measured in the field only for a subset of trees per plot applying the following sample tree selection criteria. Every 5th tallied tree was selected as a height sample tree. Additionally, if any tree species (that was tallied) was not represented in a sample tree after the first step, additional

sample trees were selected for each species. These sample trees were selected one for each species, as a median tree of that species, on that particular plot. Heights for tally trees (without measured height) were estimated by using plot and species group-specific height-diameter curves, for which the parameters were estimated using non-linear mixed-effect models. Mixed-effects models are an appropriate tool for modelling the relationship between tree height and field-measured tree diameter because the explanatory variables are clustered and thus spatially correlated (compare Eerikäinen, 2003; Calama & Montero, 2004; Mehtätalo, 2004; Nothdurft *et al.*, 2006; Sharma & Parton, 2007). For the mixed-effect modeling, we used height-diameter relationships based on power, Korf and Näslund functions, depending on the species group.

Sample plots for LiDAR model validation

An independent dataset of 46 larger field plots within the area of two LiDAR blocks was collected in March 2013 to validate results of the model: one representing typical Terai Sal and associated forests, and another one representing Siwaliks Sal and dry deciduous forest types. The plot design was based on weighted random sampling using LiDAR canopy-height information from existing LiDAR data to capture the full heterogeneity of the forest. The inverse of the LiDAR height frequency was used as sampling weight to achieve a uniform height distribution for the sampling plots. Field measurements were taken from 48 plots, while 2 plots were inaccessible. For 48 plots, a fixed circular plot with outer radius of 30 meters was used, equivalent to an area of 2826 m^2. Apart from tree height and diameter, also the distance to plot centre was measured for each tree. Plot-level volume and biomass for these plots were modelled based on the same methods described in the previous section, i.e. allometric equations of Sharma & Pukkala (1990) were applied to calculate biomass.

3.3 Satellite imagery

Landsat5 and Landsat7 satellite images with minimum cloud cover from the leaf-on time period (October-February) were acquired from the U.S. Geological Survey website (http:\glovis.usgs.gov), for years 1999, 2002, 2006, 2009 and 2011. The satellite images were co-register to ensure that the same scenes from different time periods overlapped precisely. Radiometric calibrations and atmospheric corrections were done on each image, using ImgTools software (Souza & Siqueira, 2013), to remove noises from the digital sensors in the satellite system or due to interaction of light with atmospheric gases (aerosols). The corrected images were used for forest structural classification.

3.4 Forest classification

The pixel reflectance values in satellite imagery are often a mixture coming from more than one source. For example, one 30m x 30m Landsat pixel might represent reflectance from both vegetation and bare soil. ImgTools software uses spectral mixture analysis algorithm, to decompose reflections from the green (photosynthesis) vegetation (GV), Non-photosynthesis (senescent/dead) vegetation (NPV), bare Soil (S), and shade normalized GV (GVs). It also generates a composite index called Normalized Difference Fractional Index (NDFI). These values are used by the software to identify natural breaks and build threshold values to identify intact, degraded and non-forest areas, to generate forest structural map of entire study area. The four major forest types, Sal forest, Sal dominated mixed forest, other mixed forest and riverine forest (Joshi *et al.,* 2003) were overlaid on the forest structural map, to generate forest types and conditions map for each time period.

3.5 Generating activity data

A time series analysis was done, to track changes from one structural class to another for 4 time periods between 1999 and 2011, to generate activity data for RL calculations (Joshi *et al.* 2014)
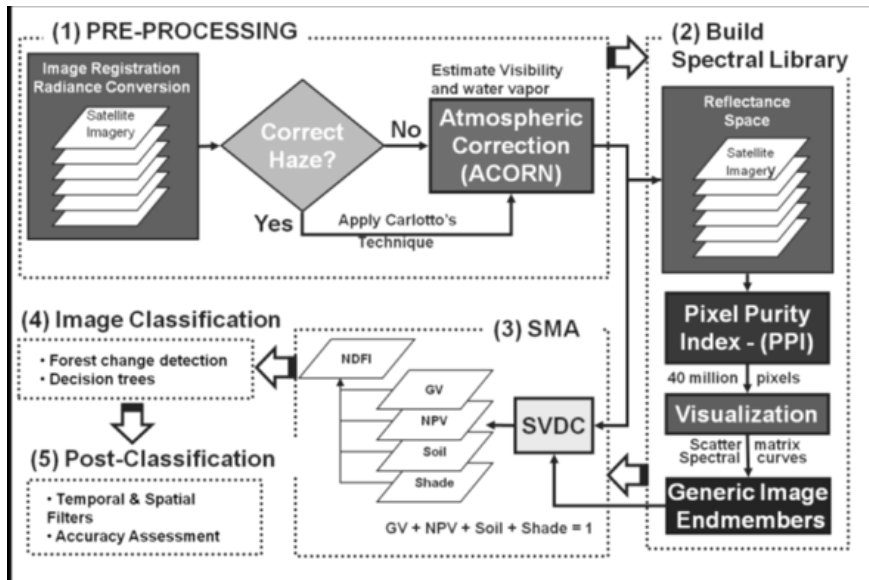
Figure 3: Basic image processing steps in ImgTools (taken from Souza & Siqueira, 2013 with permission)

4. Results

4.1. LiDAR-to-AGB model

The linear model that was used to estimate above-ground biomass within the lidar blocks. The model estimated biomass showed very high correlation with ground-truth biomass when validated against an independent set of 46 field plots with 30m radius ($2827m^2$). The relative RMSE was 0.19 (19%), and the achieved coefficient of determination (R^2) 0.90. No significant bias was present (relative bias 0.016). Full validation results are shown in Figure 4 and Table 1.
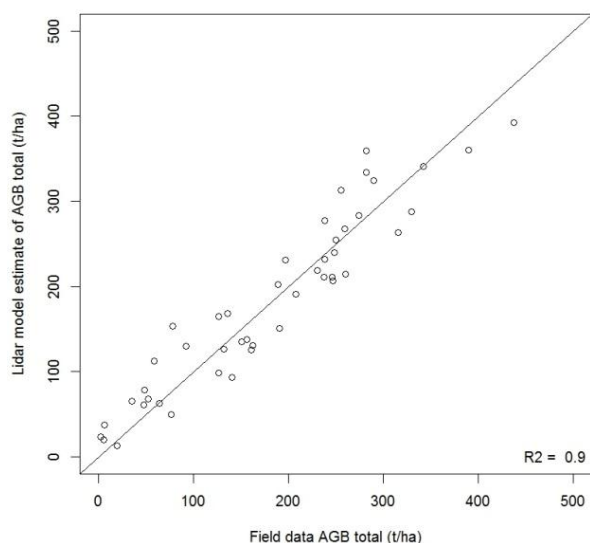
Figure 4: Scatterogram showing aboveground biomass (AGB) from independent field data against the estimates of the linear model from LiDAR data. (Source: REDD-cell, 2014)

Table 1: Statistics for the LiDAR (Phase 2) estimates of aboveground biomass validated against independent field data.

Total AGB (t/ha)	LiDAR (Phase 1)
Standard deviation of estimates	103.1
Mean of reference plots	180.4
SD of reference plots	108.5
RMSE	34.5
Relative RMSE (%)	19.1
Bias	2.9
Relative bias (%)	1.6
R^2	0.9

Mean of estimates	183.3

(Source: REDD-cell, 2014)

4.2 Historical Reference Level calculation

The RL is calculated by multiplying activity data with emission factors ($RL =Activity\ data \times Emission\ factors$) (Joshi *et al.* 2014). Activity Data (AD) was generated from time series analysis for four time period between 1999 and 2011. The Emission Factors (EF) was computed from LiDAR-to-biomass models for each forest type and condition. Because LiDAR-based estimates are very accurate, providing a coefficient of determination R^2 of 0.9 (Figure 4), they can be used to produce "surrogate field plots". One thousand surrogate plots per forest type and condition were used to accurately estimate of EF's for each forest type and their conditions ('intact' and 'degraded').

The RL analysis shows that during the 12-year period between 1999 and 2011 total of 52,245,991 tons CO_2 (tCO_2e) was emitted from the forest sector in the TAL, an average emission of 4,353,833 tons CO_2e per year (Table 2). In the period 2006-2011, emissions averaged 6,879,686 tCO_2e per year, an increase of 58% over the 12-year average, and in the period 2009-2011, emissions increased even more dramatically, averaging 11,412,396 tCO2e per year or 162% higher than the 12-year average (REDD-cell, 2014).

Table 2: Forest-related CO_2 emissions in TAL between 1999 and 2011 (Source: REDD-cell, 2014)

Period	CO_2 Emissions (tCO_2e)		
	Above-ground	Below-ground	Total
1999-2002	13,136,430	2,627,286	15,763,716
2002-2006	1,736,537	347,307	2,083,845
2006-2009	9,644,698	1,928,940	11,573,637
2009-2011	19,020,661	3,804,132	22,824,793
Total 12-yr	**43,538,325**	**8,707,665**	**52,245,991**
Average annual	**3,628,193.79**	**725,639**	**4,353,833**
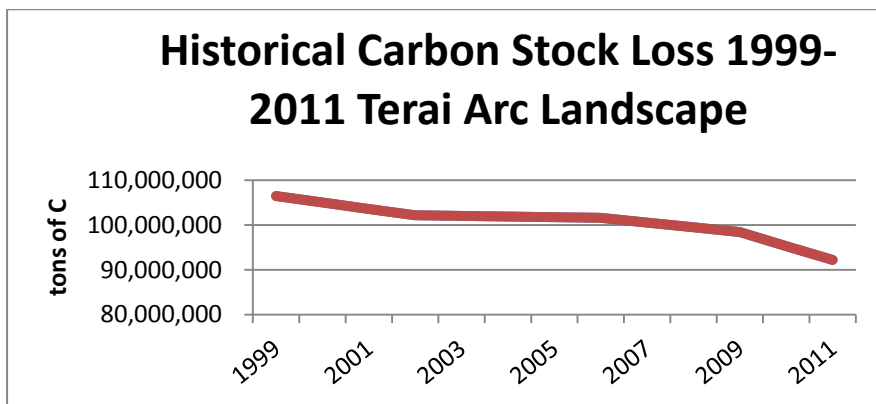
Figure 5: Historical Carbon stock loss between 1999 and 2011. (Source: REDD-cell, 2014)

4.3 Future Reference Level (RL) and Measuring, Reporting and Verification (MRV)

Once a LAMP analysis has been completed, future RLs can be calculated by repeating the same analysis over a more recent set of data. No new LiDAR or field campaigns are necessary for RL adjustment. When the initial data set of field plots, LiDAR sampling, and Landsat imagery are contemporaneous, the same models will apply in the future. For this reason, future MRV and RL adjustment are desktop exercises with recent satellite imagery, to which the same regression models can be applied.

5. Conclusions

The application of LAMP in TAL in Nepal demonstrates that historical deforestation and forest degradation rates can be generated retro-prospectively, even in the countries lacking regular forest monitoring data, to develop a creditable RL that is reliable and transparent. The results presented in this article provide highly accurate estimates of historical carbon emissions for the 12 districts and will enable stakeholders in Nepal to better target interventions to curb deforestation and forest degradation. The RL provides a

stark view of an alarming trend of increasing deforestation and forest degradation in the TAL, particularly in recent years, and this understanding can provide a strong foundation for mobilizing appropriate and effective actions to halt and reverse this trend and for monitoring the success of these actions in the future.

The method (field measurements from sample locations, LiDAR data from sample areas, and wall-to-wall freely available satellite imagery) used in TAL is suitable for biomass inventory in other parts of Nepal as well. It can be considered as a compromise between an extremely cost-intensive wall-to-wall LiDAR data collection for the entire study area which would provide very accurate biomass estimates, and a conventional method without the use of LiDAR with comparably low estimation accuracies and uncertain repetitively.

LAMP has numerous benefits in a country like Nepal. The cost of future monitoring can significantly be reduced using this model-based approach. Once the initial LiDAR and field campaign have been completed, there is no further need for future LiDAR or field campaigns, apart from field campaigns conducted for validation purposes and for collecting other types of forest information. MRV can be conducted frequently – typically on an annual basis – whenever new satellite imagery becomes available. Many different types of satellite imagery can be used in the LAMP method. With LAMP, the RLs have very narrow confidence intervals because the estimation methods used in them are unbiased. This property maximizes the REDD+ credit obtained, since it is always calculated on the basis of the lower 95 per cent confidence level;

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Strategic Environmental and Social Assessment Report of REDD Strategy Nepal[1]

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Reducing Emissions from Deforestation and Forest Degradation (REDD) is evolving as a means to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. REDD+ goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. REDD is also seen as delivering 'co-benefits' such as biodiversity conservation and poverty alleviation. REDD is being promoted strongly by the World Bank and UN as a means to set up the bases for the carbon market and the legal and governance frameworks of countries receiving REDD payments. Activities can be undertaken by national or local governments, NGOs, the private sector, or any combination of these.

The World Bank's Forest Carbon Partnership Facility (FCPF) is assisting Nepal with financial and technical support to develop and apply strategies to address the drivers of deforestation and forest degradation.

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[1] This is "an executive summary:" of the Strategic Environmental and Social Assessment (SESA) report prepared for the REDD+ Strategy which is being prepared for Nepal in 2014. Authors request to refer to the main report for the detail on the content. Email for correspondence ajaymathema1@gmail.com.

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Nepal is one of the countries participating in the FCPF REDD+ Readiness Fund and is currently implementing the REDD+ Readiness Programme. As a part of this process, in September 2013, the REDD Forestry and Climate Change Cell (REDD Cell) of the Government of Nepal's Ministry of Forest and Soil Conservation (MFSC) engaged a consultancy consortium to undertake a Strategic Environmental and Social Assessment (SESA) of the REDD+ Strategy and develop an Environmental and Social Management Framework (ESMF). The consortium members are the International Centre for Environmental Management (ICEM), the International Institute for Environment and Development (IIED), the School of Environmental Science and Management (SchEMS), affiliated to Pokhara University.

The overall objective of the SESA as

"to identify opportunities to mitigate environmental and socioeconomic risks during under the implementation of a REDD+ mechanism in Nepal. The SESA may also identify where REDD+ can improve development activities and other environmental measures adopted to combat climate change".

To achieve the objectives a number of activities were undertaken – sequenced in several phases. Some activities were conducted in parallel as they supported each other.

Phase1: Inception and initial steps *(October – November 2013)*

- Stakeholder analysis and develop stakeholder engagement strategy
- Consultations with CSO-IPO Alliance
- Preparation of REDD+ Strategy Options Review
- Preparation of scoping notes for baseline contributory theme papers
- Theme Paper 1: Analysis of the socio-environmental dimension of the forest sector
- Initiate GIS-based thematic mapping of forest-dependent communities and disadvantaged groups that use forest resources at the district level.
- Theme Paper 2: Review of legislation, regulatory and policy regime
- Theme Paper 3: Analysis climate change issue and review possible links with NAPA/LAPA

- – Theme Paper 4: Analysis of institutional needs and capacities for REDD+ implementation
- – Prepare outline for ESMF
  - First national multi-stakeholder workshop
  - Scoping workshop: identify key issues to focus SESA investigations
  - Consultation on strategy options at national level
  - District-level ground truthing (in Chitwan, Makawanpur & Bara districts) and consultations, and regional workshop
  - Brainstorming on potential social and environmental impacts

Phase 2: Detailed enquiry and analysis *(December 2013 – mid January 2014)*

- Assessment of impacts: deepening, widening and writing
- Continued consultations
- Preparation of theme papers

Phase 3: Develop first drafts of SESA and ESMF *(mid-January – mid March 2014)*

Phase 4: Review of draft SESA and ESMF *(April-June 2014)*

- Second national multi-stakeholder workshop

Phase 5: Finalisation of SESA and ESMF *(July 2014)*

The report first presents a brief ***history of forest management*** in Nepal, discussing early codes of forest management and the evolution of leasehold and community forestry. It then discusses the environmental situation in the forestry sector –and related climate change issues, and then the social situation. Further sections elaborate the legislative, regulatory and policy regime and review relevant institutional structures and capacities.

The report describes the nature and distribution of ***forest types*** in Nepal which reflect Nepal's unique geographical position, altitudinal and climatic variation, and its physiographic landscapes. They include: tropical forest, subtropical

broad-leaved forest, subtropical pine forest, lower temperate broad-leaved forest, lower temperate mixed broad-leaved forest, upper temperate broad-leaved forest, upper temperate mixed broad-leaved forest, temperate coniferous forest, sub-alpine forest and alpine scrub. Various types of forest management regimes are also discussed: government-managed, protected, community, leasehold, collaborative, religious and private forests.

Nepalese people are ***highly dependent on forests and forest products*** - to fulfil energy demands and for timber for construction and maintenance of houses and buildings. Terai forests are more vulnerable than others to degradation and deforestation partly to meet the demand for such products. The main reasons for the conversion of forest areas are encroachment for resettlement/agriculture, and acquisition of forest area for infrastructure development including road expansion. The direct and indirect impacts of infrastructure projects are outlined. Illegal forest conversion and harvesting of forest products is a considerable problem, but most of it is not evident in official forest statistics as it is not accounted for in forest area loss or forest cover loss.

Key environmental issues include: land degradation and soil erosion, loss of biodiversity and ecosystems, water pollution and river sedimentation, chemical use in agriculture, and indoor air pollution from fuel wood. Nepal has been ranked as the fourth most vulnerable country to climate change worldwide and already feels the impacts in various sectors central to peoples' livelihoods and the national economy.

The report outlines the reality of ***climate change vulnerability*** and impacts in Nepal, and highlights some of the important linkages, issues and potential trade-offs when considering strategic options to achieve REDD+. Three key elements are addressed: (a) the main economic, social and environmental impacts of climate change, adaptation needs and strategies to enhance resilience; (b) the extent of land use change and forest-related activities as drivers of climate change or influencers of vulnerability, and the underlying causes of deforestation and forest degradation; and (c) vulnerability of forests

to the effects of climate change, both directly (changing environmental conditions based on available modelling) and indirectly (human-induced pressures).

A **brief social profile** of Nepal is provided. Following this the relationship **of forest dependent communities and disadvantaged groups** (such as poor, indigenous people (IPs), dalits and women) to forests - from ethnic, historical, cultural and economic perspectives is reviewed. Their attachments to forests are analysed in terms of livelihoods and poverty, and rights, access and use of forest resources. The SESA maps and describes forest dwelling indigenous people; discusses formal and informal institutions for forest management; addresses forest-related conflict issues that arise between various actors, and considers the contribution of the forestry sector to the social development of communities. Furthermore, a brief analysis of the **social outcomes of REDD+ pilot projects** is provided, together with a summary of **the views, concerns and recommendations of forest dependent communities and disadvantaged groups** regarding the REDD+ programme collected during SESA team's field visit.

Many enabling policies are in place in Nepal, but some of the policies needed to implement the strategic options effectively are lacking. The report describes the **legislative, regulatory, and policy regime** in relation to forest resources management, land use, forest-based enterprises, etc. It reviews relevant acts, regulations and government policies regarding forest resource use, and in relation to traditional use and rights to forest resources. It also analyses constitutional provisions and ILO 169 on indigenous and tribal populations, relevant stakeholder understandings and their implications for REDD+ programs in Nepal**.** Recommendations for policy reform/development are made based on the analysis.

REDD+ implementation activities to date are reviewed – and their institutional dimensions, and **institutions at national and district levels** which are likely to play a role in REDD+ and ESMF implementation – with

commentary on responsibilities, institutional arrangement, functioning, staffing, skills and capacity:

National – Ministries (plus subsidiary departments) responsible for forestry, environment, agriculture, roads, energy and local government (in terms of roles in coordination, technical support and training).
District – DDC, DFO, District Education Office, DADO, DSCO, DWCO (in terms of screening and monitoring REDD+ projects or activities).
Local – VDC, User groups, ward citizen forums (in terms of monitoring REDD+ projects or activities)

Strategic options for REDD+ in Nepal

The SESA report presents an outline of REDD+ strategy options as a basis for the SESA to screen and assess possible environmental and social impacts, and issues related to REDD+ programmes in Nepal. Since the REDD+ strategy has not yet been developed, the options presented are derived primarily from a number of key documents, as advised and provided by the REDD Cell.

Ministry of Forests and Soil Conservation. Nepal's REDD Readiness Preparation Proposal (R-PP), 2010-2013. (2010). Revised report addressing issues from PC6 resolution, submitted October 2010. Government of Nepal.
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Some additional suggestions and information obtained during stakeholder consultations have been used to structure the recommended strategic options.

In summary, the 14 strategic options developed for the SESA are:

SO1   Land tenure, carbon rights and benefit sharing;

SO2   Community-based forest management (formal and customary);

SO3   Promotion of private forestry;

SO4   Government managed forests for conservation of biodiversity and maintenance   of
 fragile ecosystems and land;

SO5   Conservation of biodiversity and ecosystem services outside Protected Areas;

SO6   Payment for ecosystem services;

SO7   Agriculture productivity and food security for small and marginal farmers;

SO8   Energy access and efficiency;

SO9   Environmentally-friendly infrastructure planning, construction and maintenance;

SO10   Forest and non-forest enterprises;

SO11   Law enforcement;

SO12   Good governance and anti-corruption;

SO13   Land use planning for each of the physiographic regions; and

SO14   Institutional architecture.

Each option is sub-divided into various sub-options. The choice of options recognises that addressing policy problems such as REDD+ requires not only an understanding of the more visual and objective issues (c.f. proximate causes), but also the complexity of actors and their interactions (c.f. underlying causes).

Assessment of environmental, social and institutional impacts of REDD+ strategic Options

Analysis of the strategic options listed above shows that, if implemented, they will be likely to lead to a range of environmental and social impacts. Some will be positive in line with the aims of the objectives of the options; others are likely to be negative, and some of the latter will be perverse unintended negative impacts of well-intentioned objectives. These impacts are summarised in Tables ES1 (environmental) and ES2 (social) and are discussed in detail. Additional tables are presented that show how cumulative impacts arising from particular options or sub-options will be compounded, and Appendices 8.1 – 8.14 and 9.1 – 9.14 provide, respectively, a detailed analysis of the environmental and social impacts for each strategic option.

Table ES1: Summary of environmental impacts of implementing the strategic options for REDD+

Positive impacts	Negative impacts

• Improved conservation of biodiversity & fragile ecosystems
• Improved ecosystem services
• More sustainable forest , natural resources, land & environmental management
• Reduced deforestation /
	• Forest loss/degradation from improved access to forest
	• Forest loss and degradation from agricultural intensification, due to:
	  • Encroachment (intensification may lead to agricultural expansion);
	  • Providing agricultural inputs (e.g. leaf litter, organic mulch, fodder).
	• Loss of forest and deforestation by

illegal logging
- Increased tree planting
- Improved forest quality
- Reduced biomass extraction / increased biomass
- Enhanced biodiversity
- Improved traditional forest management practices
- Reduced pollution (fertilizers, pesticides, household smoke/CO)
- Reduced methane emissions
- Alternative energy sources
- Improved soil fertility / productivity / water retention
- Reduced land degradation / restored degraded lands
- Reduced soil erosion, landslides, flooding
- Maintenance of watersheds / aquifers
- Enhanced scenic value / sense of place
- Decreased carbon emissions / increased carbon sequestration/maintain carbon stocks
- Removal of alien/invasive species
- Reduced grazing pressure
- Creation of micro-habitats
- Reduced environmental risks/ hazards / disasters (including fire)

promotion of energy efficiency
- Habitat loss and fragmentation/biodiversity loss due to forest management practices
- Decline of biodiversity in compensatory plantation
- Habitat fragmentation by infrastructure development
- Slope destabilization, soil erosion, landslides due to agricultural intensification and infrastructure development
- Loss of ecosystem services
- Solid waste from tourism industries
- Chemical pollution from agricultural intensification

Table ES2: Summary of social impacts of implementing the strategic options for REDD+

Positive impacts	Negative impacts
Improved Rights and Access • Improved rights & access to land / forests • Increased supply of , access to, & value of forest products • Improved benefit-sharing • Improved market access / surplus products for markets • Better access to forest products / NTFP Improved Livelihood and Poverty Reduction • Improved health • Poverty reduction • Investment in alternative livelihoods • Improved livelihoods, income, economic opportunities, enterprise development • Increased employment • Potential for cooperatives • Improved food security Social Inclusion and Gender Empowerment	Social Exclusion and Displacement • Exclusion of landless, poor & marginalised eviction, loss of land/property • Social exclusion • Exclusion/devaluation of women • Exclusion/elimination of cultural / spiritual values & traditional practices • Ignoring/displacing traditional/ indigenous knowledge • Small farmers & local enterprises out-competed, displaced Leading to Inequity • Inequity in benefit-sharing (loss of) • Elite capture (of resources, benefits, access, etc) • Inequitable/loss of access to forest

- Empowerment
- Increased voice for women / powerless
- Social inclusion (gender balance)
- Reduced workload/drudgery (women)
- Gender friendly technology introduced
- Reduced social gaps

Increased Participation, Knowledge and Ownership

- Maintain/strengthened cultural norms/services
- Increased knowledge / capacity for forest management
- Increased use of local, indigenous/ & traditional knowledge & practices
- Increased participation / ownership
- Environmental & social awareness
- Strengthened local organisations

Enhanced Accountability
- Reduced corruption / bribery
- Reduced conflict
- Reduced illegal activities

resources/products
- Increased costs (transaction, labour, time)
- Land grabbing

Loss of Livelihood
- Reduced food production
- Loss of/ limited access to, employment
- Loss of livelihoods, income, economic opportunities

Loss of Authority/Autonomy and Induced Risk and Dependency
- Loss of user/traditional rights, or access to forest products & resources
- Health risks
- Lack of awareness / information
- Not accessible to poor, marginalised (can't afford)
- Dependence on external inputs
- Monopolies setting prices (eg timber)
- Token participation
- Politicisation of community decisions

	Social Conflict and Violence
	- Violence against women - Conflict - Human-wildlife conflict

All of the potential impacts identified all of the strategic options will be cumulative since they are generic in nature and do not apply to individual projects. The significance and extent of such impacts will depend on the volume of activities and projects implemented under each option. And some impacts are likely to be exacerbated over time by increasing demands and pressures as a result of population increase - particularly those concerned with livelihoods. Beyond this, impacts are not a matter of simple cause-and effect. They are subject to cascading primary, secondly, tertiary and subsequent impacts. This generates a complex web of interacting linkages which need to be understood by policy makers and decision-takers. Developing a picture of such linkages is a complex process and takes considerable time to brainstorm. Figures 5.3.1 and 5.3.2 are provided as examples of such impact linkage diagrams developed by the team for one of the strategic options – Option 10: promoting forest and non-forest enterprises.

In the event that a REDD+ strategy is either not concluded or cannot be implemented, then current forest management practices will continue – although they will obviously be subject to any non-REDD+ related changes that may be introduced – but which cannot be predicted by the SESA team. In these circumstances, the likelihood is that the forest-related environmental and social issues and trends described by the SESA will persist. The extent and severity of some of the negative trends and issues discussed are likely to increase, particularly as population growth places more pressure on forests to sustain livelihoods, and as general development continues in other sectors which interact closely with forestry (agriculture, energy, infrastructure, etc.)

The implementation of all strategic options (SOs) will give rise to some positive institutional outcomes as well raising or exacerbating a number of institutional concerns. The range of issues are summarised in Table ES3 and listed in detail for each of the 14 SOs in Appendices 10.1 – 10.14.

Table ES3: Summary of key institutional issues resulting from implementing strategic options for REDD+

Positive issues	Negative issues
• Need for compensation	• Conflicts, elite capture
• Commitment and investment	• Lack of reliable data to assess performance in reducing emissions and on livelihoods
• Improved forest (and other) governance, administration & coordination (including cross-sector)	• Insensitivity to gender & social inclusion – women marginalised and their rights, role/contribution unrecognised
• Strengthened CFUGs	
• Monitoring & enforcement of harvesting of 'allowable cut'.	• Diversion of social/women's local funds for infrastructure
• Increased transparency & accountability (eg in decision-making), & reduced corruption	• Politicising of decisions
	• Misuse of grievance systems
• Formal financial institutions established & strengthened	• Marginalised people under-represented
• Security of tenure	• Displacement of customary practices
• Improved social inclusion	
• National & local institutions established and/or strengthened	• Tokenism regarding participation
	• Over-regulation
• Administration improved	• Investment impeded
• Enhanced capacity (all levels) & knowledge	• Slow EIA system delays project approval
• Strengthened grievance mechanisms	• Difficulties in monitoring some impacts
• Empowerment of local institutions	• Increased corruption
• Improved communication	• Weak government/institutional capacity

- Increased awareness/understanding of issues & links
- Potential for improved laws, policies, regulations and statutes, and harmonisation
- Potential for improved organisation of private sector
- Enterprise and local industry development
- Potential to improve coordination and cross-sectoral interaction
- Development of local industries & markets, & improved access to them
- Strengthened private sector capacity
- Contribution to national economy
- Strengthened participatory planning
- Potential to promote farmers associations, cooperatives, service delivery
- Job creation
- Environmental & social impact assessment measures implement
- Research stimulated
- Extension centres strengthened
- Technology enhancement
- Loan and credit schemes made easy
- Increased government revenue
- Community-level by-laws

- Weak coordination
- Bureaucratic complexities & inefficiencies
- Limited extension coverage
- Non-participatory decision-making
- Lack of consensus, e.g. on benefit-sharing
- Potential that powerless and poorest are punished whilst the powerful are not
- Large transaction costs
- Unregulated marketing (e.g. chemical fertilizers)
- Policy conflicts & gaps

introduced
- Transboundary coordination (e.g.
  with China)

Conclusions

Given their importance, the conclusions are given here in full,

General

1. It is difficult to conceive that a REDD+ strategy on its own can bring about the changes in governance and social behaviour that will be necessary to guarantee that activities and projects are undertaken effectively, efficiently or equitability. REDD+ will need to be integrated with much broader legislative and policy reform, general awareness-raising, attitude changes and strengthened institutional capacity.
2. Overall, REDD+ is a positive concept, but when strategic options are examined in detail, there are likely to be both environmental and social implications (positive and negative) – with potential for unexpected perverse feedback if options are not implemented effectively, efficiently and equitably.
3. In considering the kinds of activities and projects that may arise in implementing the REDD+ strategy, two key issues are important: geographical coverage, and types of projects– which are discussed in section 3.2 of the draft ESMF:
   - *Geographical coverage.* It is assumed that the REDD+ strategy will provide definition of the scale of REDD+ implementation at sub-national and national levels. The area of REDD+ implementation will need be large enough to ensure that leakage (displacement of emitting activities elsewhere) can be contained. This means that the nature of drivers need to be addressed, and thus the activities to mitigate against them (ie REDD+ projects), on a large landscape

scale (eg watershed)[1]. In such landscapes there will be a diversity of resources as well as different actors, interests and rights.

- The type of projects.
  - Some projects will aim to enhance readiness at national and subnational levels, e.g. capacity building; generation/provision of information; measurement, reporting and verification (MRV); and implementing safeguards. These activities are likely to engage CSOs/IPOs at different levels, including academia and research institutions as well as government. The overall objective is to establish a conductive environment for REDD+ implementation.
  - Some projects will aim to reduce emissions (see Table 3.2.1 in ESMF for examples) – mostly technological interventions in activities such as conservation agriculture, efficiency in production of biomass energy, sustainable forest management - combined with the development of local level capacity (eg developing organizational skills, support to access inputs, adding value to products, helping access to credit, markets etc.).

Thus, apart from this SESA of the overall REDD+ strategy, further smaller scale SESAs may be needed to address issues at subnational level once Nepal has

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[1] In Nepal, pilot projects have been implemented in various watersheds. For example, in 2009-2012, ICIMOD, ANSAB and FECOFUN implemented a pilot project entitled *'Design and setting up of a governance and payment system for Nepal's Community Forest Management under Reduced Emission from Deforestation and Degradation (REDD)'*. This covered 10,00 ha including Kayarkhola watershed in Chitwan district, Charnawati watershed in Dolakha district, and Ludhikhola watershed in Gorkha district (see section *** n the SESA report).

defined the priority areas (and extent/acreage) where interventions should focus.

Environmental

1. Forest loss. With a REDD+ strategy in place, we should be looking at equitable access to forest resources (including for disadvantaged groups). This will improve social equity in the forestry sector, and could ensure positive participation of people in undertaking of forestry as well as REDD+ activities. But a possible side is that such increased access may lead to further forest degradation, exacerbated even more by increased population pressure. There is also potential for agricultural intensification to contribute towards forest loss and degradation, both in terms of encroachment as a result of agricultural expansion and the unsustainable extraction of forest-based agricultural inputs.

2. Climate change will undoubtedly have an impact on forests – general models predict higher temperatures in the lower altitudes and drier conditions throughout the country- impact on distribution, composition and productivity, etc.) – over time. But models are very general and no precise predictions regarding this can be made in this SESA.

3. With REDD+, dependency on forests as such will not change, but the types and amounts of forest products used will change. For example, promoting biogas will reduce fuel wood collection, but could increase cattle populations (dung is the main ingredient for biogas production) which need fodder from forests and fuel wood to cook animal feed (takes more fuel wood energy than human food) - so this will increase pressure of CFUG Executive Committees to raise the allowable off take of fodder from forests and this may breach sustainable yield and the ecological balance and forest degradation will follow.

Social

1. Forestry remains closely associated with the livelihoods of the majority of people; and forestry and agriculture are intimately linked. And this balance will continue well into the future. If implemented effectively, some of the strategic options (eg SO8) have potential to promote workable livelihood alternatives, although there may be some perverse negative environmental impacts (eg from agricultural intensification).

2. REDD+ options aim to provide equitable benefit-sharing which genuinely reaches all eligible community households. If this is implemented effectively and equitable, it will eliminate a range of conflicts that currently exist between classes (haves and have-nots), ethnic groups, men and women, close and distant users, etc.

3. Strategic option 8 (promoting affordable, reliable and sustainable sources of energy and alternative cooking technologies) will reduce workloads and drudgery for women, with positive health impacts and saving their time for other productive purposes. Furthermore, promoting their access to affordable alternative energy technologies will help women to develop enterprises and generate income. This, in turn, will ensures improved family wellbeing through being able to afford better nutrition and medical care, improving family health and access to education for children.

4. Strategic action 4b (preparing a national forestry strategy through multi-stakeholder process) will ensures increased participation and a sense of ownership amongst local communities, facilitating its easier implementation.

5. Strategic option 7 should provide potential to increase both on- and off-farm incomes leading to reduced poverty. But if adequate safeguard measures (e.g. ensuring subsidies for agricultural intensification reach everyone, not just landowners) are not put in place, further exclusion of the landless, forest-dwellers, etc. may result.

6. Enhanced agriculture and livestock productivity (through strategic option 7) supplemented by forest and non-forest based enterprise development (promoted by strategic options 10) and income generating opportunities will lead to improved livelihoods and food security, and raise income levels; thus reducing poverty amongst forest-dependent poor and marginalized groups.

7. The adoption of REDD+ international standards for participation, inclusion and informed decisions (through strategic options 12c) will enhance the empowerment of local communities, particularly women, IPs, dalits and other forest dependent poor and marginalized groups – and this will help to alleviate the negative impacts they frequently endure from being excluded. Furthermore, the establishment and strengthening of (gender-sensitive) mechanisms to address grievances

(strategic option 1d) will ensure an increased voice for the powerless in general, and for women in particular.

8. General health indicators in Nepal are comparatively low in terms of life expectancy, morbidity and the mortality. The increased availability of, and assured access to, forest products (strategic options 1b) should result in reduced workloads, improved livelihoods and food security, leading to improved health.

9. Women, poor, IPs, dalits and marginalised people are generally landless having only usufruct rights to land and forests. When carbon rights and benefits-sharing are tied to land and forest ownership; it can result in the exclusion of these groups, limiting their access to forests and benefits. Hence, alternative mechanisms of providing carbon rights and benefit-sharing (strategic option 1a) are needed so that these groups benefit from the REDD+ programme and do not lose their usufruct rights to land and forests.

10. Violence against women is common in forest management. While preparing the REDD+ strategy, safeguards and mitigation measures against such violence will be necessary.

11. To address the possibility of gender discrimination against women and social exclusion of IPs, dalits, poor and other marginalised groups, the application of the Gender and Social Inclusion (GSI) strategy[1] should be mandatory in REDD+ programmes. GSI training should be required for personnel at all levels, from policy-making to programme formulation, implementation, monitoring and evaluation. Furthermore, GSI orientation should devolve to the community level to eliminate social conflicts that could arise during REDD+ implementation.

Legal and policy matters

From the viewpoint of the REDD+ process, a number of major issues should be addressed in reforming laws and policies:

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[1] MoFSC/GoN. (2007). Forest Sector Gender and Social Inclusion Strategy. Kathmandu: Ministry of Forests and Social Conservation, Government of Nepal.

1. The management of Government-Managed Forests can be improved through promoting community involvement in preparing forests action plans; by separating authority for harvesting and marketing of forests products; and by introducing a fair and market price based payment system for providing forests areas for development activities.
2. To promote the development of leasehold forestry, consideration should be given to eliminating royalty payments and developing a mechanism to enable the sharing of benefits arising out of the use and management of leasehold forestry.
3. Communities can be encouraged to engage in forest and non-forest enterprises that add value by introducing tax rebates and other support facilities.
4. The threshold for cases to be heard by the DFO needs to be increased from the present level of NRs 10,000.
5. A separate oversight mechanism is required within the forests administration system to take disciplinary action against those found to be engaged in irregular or illegal activities. The forests law can be invoked to prosecute those charged with offences.
6. Laws beyond those concerned with the forestry sector need to be reviewed thoroughly with a view to ensuring harmony and consistency with the Forests Laws (e.g. The Local Self-Governance Act, 1999; the Mines and Minerals Act, 1985; Public Roads Act of 1974; Water Resources Act of 1967).
7. The forest laws need to be reviewed and clarified, addressing issues such as land tenure, recognition and definition of carbon rights; ownership of carbon rights in the case of forests other than private forests; sharing of benefits arising out of carbon trading; and distant users of forests.

Institutional matters

Effective coordination across institutions engaged in REDD+ will be critical for the successful implementation of the REDD+ Strategy, and particularly for implementing the ESMF.

1. During the preparation of the actual REDD+ Strategy, it is assumed that structures its implementation and coordination, and for coordination across all concerned bodies at international, national and local levels, will be proposed. As part of such structures, in the ESMF, it is recommended to establish a formal Assessment and Monitoring Unit within MoFSC (we suggest within the proposed REDD+ Coordinating Division) to coordinate all environmental and social assessment and monitoring process related to REDD+, with additional arrangements at district and local levels. Coordination of these mechanisms should be with MoFSC so that they are closely aligned with all other coordination procedures for overall REDD+ implementation.

2. There will need to be close liaison and cooperation with other line ministries, agencies and bodies (based on future programmes/projects) that have particular expertise and responsibilities relevant to ESMF implementation, particularly MoSTE as regards formal approval of EIA reports (see ESMF).

    a. Formal coordination is needed between MoFSC and MoSTE (which has responsibility for implementing the environmental assessment legislation, and is also the focal body of UNFCCC for Nepal) Such coordination is require on environment issues and projects for the effective implementation of ESMF-REDD+.

    b. We recommend that the currently dormant Climate change Section under MoFSC should be made active in order to contribute to climate change aspects of REDD implementation.

    c. We also recommend that a coordinating mechanism should be established (with representatives from MoFSC (particularly the proposed AMU), MoSTE, other relevant line agencies as well as experts. This national level mechanism would be tasked to align work on environmental and social issues related to REDD+ implementation.

3. The AMU and other ministries/departments, districts and local bodies will need considerable training, budget resources and time to undertake their functions – these are elaborated in the ESMF.

Recommendations

The limitations of this SESA are described in section 2.2.2. It has been undertaken in the absence of an actual REDD+ strategy and dislocated from

the process of developing that strategy. Expressions of interest by consultants to undertake the task of developing the strategy were invited in January. The process is expected to commence in May 2014, after this SESA has been completed.

In SESA, best practice is that it is would be undertaken by being fully integrated with the process of developing A REDD+ strategy. Where such integration is not possible, the next best option is to conduct the SESA in parallel, but ensuring that the two processes are undertaken with maximum synchronisation, sharing of steps (e.g. joint consultations) where feasible, very regular communication between the SESA and strategy teams, etc. Failing this, a sub-optimal option is to undertake a SESA after a strategy has been completed, but this will have much less opportunity to support and influence (in a positive way) strategy development than the previous two options. But this SESA was conducted prior to strategy development – an undesirable option - and this generated considerable technical and operational challenges, not least of which was the question "what could be assessed in the circumstances".

In the circumstance, the SESA team constructed 14 possible strategic options (but which it believes are logical and well-founded) based on an analysis of the R-PP and several other document (see Chapter 4) against which to undertake an assessment. Despite the drawbacks of being undertaken in the vacuum of 'no strategy', the range of positive and negative environmental and social issues identified by the SESA signal what would be likely to arise if particular (and already mooted) strategic options were to be carried forward into the actual strategy.

The limitations have also meant that the team has only been able to undertake limited consultations at regional, district and local levels, and some tasks important tasks have not been possible (eg convening focus group sessions, expert workshops, and developing linkage diagrams to indicate how cumulative impacts are likely to arise for each strategic option).

Developing an ESMF (presented in a sister volume) has been inhibited by the absence of an actual REDD+ strategy and lack of clarity on the institutional structure that will be established to implement it – into which ESMF structures and modalities will need to fit (eg (assessment & monitoring bodies, capacity building, establishing training and awareness-raising activities, and defining costs).

In all these circumstances we conclude that this SESA represents a first, but important step, in assessing the impacts of the forthcoming REDD+ strategy. It provides a solid analysis of the baseline conditions (environmental; climate; social; legislative, regulatory and policy regime, and institutional situation relevant to REDD+) and a solid analysis of environmental and social impacts likely to associated with REDD+ in Nepal.

But this SESA is not adequate as it stands. Further work will be necessary, linked to the development of the actual REDD+ strategy to provide a reliable platform of analysis and recommendations to support the strategy. It should identify where and how positive impacts can be enhanced, how risks and negative impacts can be minimised, and how cumulative impacts can be diminished. We recommend that it include the following components - to be undertaken over a year from the completion of the current SESA work.

Further analytic work should be conducted building on the SESA work. A ***comprehensive and thorough consultation programme*** in targeted districts is required, including engaging stakeholders (particularly forest users, CSOs and IPs) and local government throughout the country in discussions on the draft SESA documents and to ensure their views and information is documented and reflected in the final SESA report and linked technical papers. This will ensure that the SESA results are shaped and owned by local government officers and stakeholders. Without effective stakeholder participation, the SESA, ESMF and the REDD+ strategy which draws from it will have little credibility and influence with those to be involved in its implementation.

An initial component of further analytical work should be to develop *linkage diagrams* for each strategic option to illustrate how primary impacts can lead to secondary and tertiary ones, feeding back and compounding cumulative impacts. This is the best way to illustrate to decision-makers and stakeholders the complex web of positive or negative impacts that may be generated by each option – that will not be obvious from tables, lists and narrative text. The team has been able to develop an example for strategic option 10 (see section 5.3). Each diagram requires considerable brainstorming based on the assessment tables presented in this SEA. And such linkage diagrams should be subjected to expert and stakeholder inputs to both improve and verify them as well as to build understanding and consensus.

An *integration plan* should be developed to ensure that further SESA work is fully integrated with the REDD+ strategy development process – to align steps, thinking, analysis, consultations and team exchange to ensure maximum mutual support.

It was evident during the SESA work that CSO and IPOs did not understand the purpose, role or nature of the SESA. There was consistent confusion that the SESA was actually the process of strategy development. Thus it will be important to include an element of *capacity-building for CSO and IPOs* on SESA in further work – through both awareness-raising activities and directly engaging them in SESA discussions and analysis. This will also serve to build trust and consensus and smooth the path of the strategy itself.

A *small fund for REDD+ stakeholders* should be included in the budget for further SESA work to enable three or four representative organisations to engage directly in the SESA process and to take advantage of their contacts and knowledge-base at local level. This fund would be used to enable stakeholders to support the SESA team's consultations by undertaking SESA-related deep consultations in a few districts with more isolated communities and reporting back on their findings. This work could be undertaken with separate funding that the REDD Cell has earmarked for Civil Society Organisations/Indigenous Peoples Alliance working with the sector. The REDD

Cell and SESA team would consult with the CSO/IP Alliance on the most appropriate CSOs/IPs to conduct the consultation activities.

We recommend the organisation of **public hearings in the five regions** of the country. These hearings should be open interactive events and conducted in regional centres. The SESA draft report from Phase 1 should be translated in full or in part and distributed to local, district and regional officers who should be involved in the hearings. Prior to each public hearing, the report should be disseminated to the relevant stakeholders including the CSO/IPO Alliance. Comments on the report should be requested – to be provided in written format which would then be discussed during the public hearing. The aim should be to reach consensus during each public hearing on pertinent issues to be address/ integrated into an updated SESA report. The hearings should actively involve community leaders and local CSOs/IPs. A record of submissions and key issues and viewpoints should be prepared for each regional hearing.

In order to deepen enquiry and analysis, it is recommended that further SESA work include **three district case studies** (perhaps in Dolakha, Chitwan and Gorkha). These studies should involve stand-alone supporting consultations with stakeholders. The issues and experiences for lessons for national application should be documented.

In support of the above, it is recommended that a **limited number of special technical studies** (up to four) be undertaken on important issues, as agreed with the REDD Cell. A tentative list of candidate such studies include:

- Encroachment and the encroachment strategy drafted by the government and the implications for resettlement policy based on the REDD+ strategy;
- Land tenure issues in Nepal as they relate to REDD+;
- Where best the implementation of REDD+ emission reductions would take place;
- The political/socio-cultural economy encompassing issues of land tenure institutional relations between different social groups, social

cast and gender issues in country, governance, participation and social accountability;

- How best to establish socially inclusive, gender appropriate and equitable benefit sharing mechanism for REDD+;
- A review of Nepal's experience with community forestry;
- Assessing customary practices of managing forest resources at local level and their implication to REDD;
- Propose mechanism to promote payment of ecosystem services from forests in Nepal;
- Develop national data base of basic forest attributes of all forest management regimes (community forests, collaborative forests, national forests, government managed forests, protected forests etc.);
- Institutional and cost-benefit sharing arrangements among various stakeholders.
- The impacts of ER-PIN – as a test of the draft ESMF.

Expert Focus Group sessions should be convened to extend and deepen the impact assessment and incorporate feedback and new perspectives from the stakeholder consultations and address evolving thinking on the REDD+ strategy options – each session focusing on particular themes/issues.

An indicative ESMF is presented in the sister volume to this SESA report. Once it is clear what the institutional arrangements for REDD+ implementation will be, the *ESMF should be reviewed, revised and tailored* to the requirements of those arrangements.

A *final national stakeholder workshop* would be conducted for presentation and discussion of: 1) the draft SESA, ii) results and lessons learned from case studies, iii) results of regional public hearings, iv) CSOs report back on their findings from consultations, v) presentation of results of special studies; and vi) wrapping up of issues and leading into a clear vision of how report is to be finalized

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REDD + Process from Simplicity to Complexity

Bhola Bhattarai[1]

After lot of discussions and arguments, REDD+ structure is leaning towards market-based mechanism. As a result, suspicions have emerged regarding the benefits from REDD. Despite some practice of learning through voluntary market, while analyzing the convention related to climate change and currently prepared Emission Reduction (ER) program, REDD+ process has moved towards complexity from simplicity.

At present, Ministry of Forest and Soil Conservation, Government of Nepal is in the process of preparing Emission Reduction Project Document (ERPD). After preliminary note of proposal /document was approved by the last meeting of Carbon Fund (CF), the detailed preparation of the proposal has started. This task has been initiated as a result of the preparation to sell forest carbon within the boundary of 12 districts of the Terai TAL districts in Nepal to the Carbon Fund /World Bank after carbon-monitoring and assessment. But, will Nepal government manage this process conveniently? This issue has emerged vehemently.

I.   Although the activities conducted till now are based on documentation and capacity enhancement, as emission reduction is related to Carbon selling, there hasn't been adequate discussion about about sellers' and buyers' roles and right's, risk and accountability.

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II. How will this process assimilate the FPIC process of local Forest Management Groups working at 12 districts in the Terai, their networks, indigenous groups, unions and organizations, Dalits and marginalized communities?

III. Government of Nepal lacks long term forest policy. Enough comments are being made on the forest policy recently approved by the government. Due to the provision that leads to conflicting situation, there is no environment to implement the policy immediately. In this context, the question on REDD+ successful implementation has remained unanswered.

IV. Preparation phase of REDD+ has been delayed. Nepal's REDD+ activities are mostly controlled by Government technocrats and limited NGO people's (informal) decisions without stakeholder's access, control and effective participation. REDD+ strategy formulation process includes more opinions of those consultants involved in preparation of the document or their companies rather than REDD+ working Group's.

Lack of capacity development and common understanding

Another complex aspect at this hour is the aspect of capacity development. While the government is preparing comprehensive plan for 12 districts, even information about REDD+ has not reached the local level. The amount that has to be spent on capacity enhancement at preparation phase has not been spent. The government has violated citizen's right to information even by not spending the amount of money obtained through Forest Carbon Partnership Facility (FCPF). In the rest of the duration of preparation phase, if capacity enhancement is not achieved, the local communities will be deprived of their right to information.

When REDD+ process started, Nepal's civil society assisted in this program based on following key aspects of understanding.

- REDD+ could be a medium for governance reform of Nepal's forest area by ending the confusion about forest right, clarifying obscurity about bonus distribution, and ensuring the involvement of multi stakeholder in the governance of forest.

- Reforming technical-oriented forest governance structure and improving forest administration by integrating anthropological and sociological knowledge, skill, outlook and experience in forest administration,

- In order to make forest's overall decision process transparent and accountable, building and mobilizing the platform to represent and make decisions by multi stakeholder's agency.

- Despite six years of discussion on REDD+ has begun, no positive steps have been made about above-mentioned issues. The governance structure initiated from REDD+ working group formation has been transformed into only nominal work group at present.

- The governance structure initiated from REDD working group has been transformed into only nominal work group at present. High level REDD apex body set by the government has not been formed yet. The meeting of working group has not taken place. When the meeting is conducted, it is limited only to a formality. There is no representation from civil society in the working group. The government nominates the representatives from 1-2 organizations and states that they are from civil society. Nobody knows who has sent the representative, to whom they are accountable and how long they can work. Now again, it has been heard that the government has selected a person as a representative of civil society by forming a committee for Emission Reduction program.

Challenges of Carbon Emission Reduction Programme

Following challenges have emerged to implement Carbon Emission Reduction Programme which the government has attempted to launch.

- Various forest management regimes are there in 12 districts of Terai. Due to the legal complexity, obscurity in ownership, unclear provision of benefit sharing/distribution and so on, of the regimes with different objectives and capacity, it is not easy to implement this program.
- This program is not easy to implement due to integrated plan formulation and lack of coordination among different agencies.

The points to be considered instantly in the task of carbon Emission Reduction:

Nepal has to do following works immediately to accelerate Emission Reduction program effectively:

- First of all, before signing on letter of intent about being involved in this process, detailed discussion and the consent of stakeholders are necessary. This proposal is not approved by Apex body for REDD development in Nepal.
- Ministry of Forest has to review immediately the list of stakeholder agency and restructure the different institutional arrangements for this mission.
- There should be provision to form the committee including stakeholder for comprehensive plan formulation, and to receive the representative only on the recommendation of stakeholder's concerned agency after reforming the formed committee.
- Action plan formulation should be prepared only in the involvement of stakeholders. And, broader social mobilization is required in the related areas prior to formulating the plan.
- It is essential to prepare and mobilize trainers and technicians at local level through capacity building/enhancement program.
- Prior to these tasks, REDD working group has to be reformed and involvement of the network based on the area and non-government organizations and technicians should be ensured.

- Prior to detailed plan formulation and Emission Reduction Project Agreement (ERPA), deep analysis is required. Agreement should not be made till the existence of the provision that contradicts with national laws.

- As enough benefits are not possible in Nepal's carbon storage from the price of per ton dollar 5, it is necessary to be prepared for negotiation before price decision.

- Immediately, Nepal government has to develop permanent REDD+ structure in the ministry to move ahead the REDD+ process. Regulating the structure independently in future should be envisioned.

- It is advisable to develop the agency as REDD+ promotion centre or Forest Carbon promotion centre and to assign essential responsibility.

- Another important aspect to succeed ER program is capacity enhancement of the relevant stakeholders in that particular region. For this, Government should focus for capacity building to government, local communities and other stakeholders on REDD+.

- Harmonized with global REDD negotiation, where Nepal is advocating for Fund based mechanism and in country promoting WB captured market based mechanism, so where is our National stand?

Role of Civil Society:

While looking at the role of civil society and NGOs involved in Nepal's REDD+ process, three types of civil society are found. They are:

1. Anti -REDD civil society: This group argues that REDD+ is not beneficial to the poor and the marginalized forest dependent communities. They do not get any benefits. Rather, their traditional right is also confiscated. It is because REDD+ is market based mechanism. At present, this group's voice has not been strong.

2. REDD for change: The group that argues 'REDD for change' has been very strong. This group has received enough support from international NGOs. They are active in the publicity of REDD+ to village levels. Nepal

government has also provided enough opportunity of involvement and representation to this group.

3. Reformed REDD: The next group raises voices for wide reform at the present structure and working procedure of REDD+. The government and external agencies do not seem positive towards this group at some situations. This group has been raising voices for reviewing existing structure of REDD+, ensuring the right to information, building transparent and accountable mechanism etc.

The government should enable itself to harmonize above mentioned voices of various civil societies. Proper mechanism need to be prepared and put into effect to make the representative accountable, who remains in government authority but cannot perform the role of civil society. Similarly, a coordinating mechanism should be built for the civil societies of different views and their voices and roles should be duly considered and respected. This aside, a priority should be provided to the participation of the workers' organizations and their members related to forest, who have been neglected in REDD+ process till date.

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Key Interventions and Learning from Grassroots Capacity Building in REDD+ Project in Nepal[1]

Bishnu Hari Poudyal[2]

1. Introduction

Climate Change has been one of the serious global concerns for all of the political and development leaders /scientists. Among the major response to address the effects and impacts of climate change, Reducing Emissions from Deforestation and Forest Degradation including Conservation and Sustainable Management of Forests and Enhancement of Forest Carbon Stocks (REDD+) has been proposed as collaborative action between developed and developing countries. REDD+ is considered as an important part of a climate change mitigation strategy under the United Nations Framework Convention on Climate Change (UNFCCC). It aims to create an opportunity for financial value for the carbon stored in forests, offering incentives for tropical developing countries, particularly forest managers/owners to reduce greenhouse gas (GHG) emissions resulting from forest lands and to increase absorption of atmospheric carbon by managing forest sustainably and conserving them.

REDD+ has received a considerable attention through series of negotiation since the year 2006 when a British Economist Prof. Stern reported forests as a

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[1] This article is highly benefitted from the earlier publications " Grassroots Capacity Building for REDD+: Lessons from Nepal by Luintel et.al. in Journal of Forests and Livelihoods, 2013, Forest Action, Kathmandu Nepal and the "Grassroots capacity development for REDD+: Approaches and key lessons from Nepal" by Roy et.al 2014. Author want to acknowledge their contributions and support

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major source of CO_2 emissions and cheap, quick, win-win and significant way to reduce carbon emissions (Angelsen 2008). REDD+ was seen as a mechanism with potential to achieve critical developmental goals (Economist 2010b).

Many people believe that REDD+ not only promotes investment in low-carbon paths to sustainable development but also generates fund to fight against persistent problems of deforestation, biodiversity loss and poverty in the developing countries. Therefore, REDD+ has been receiving great attention in the climate negotiations and a range of policies and institutional arrangements are now being discussed in making it practical and effective. However, REDD+ cannot be considered as the complete solution of this global problem and also very challenging to implement in real ground.

In this context, the meaningful engagement and effective participation of developing countries and forest managing communities in international climate negotiations, national REDD+ policy formulation and local institutional processes of forest management have implications in the future global climate regime, national forest management strategy, local forest ecosystem condition and poverty reduction among forest-dependent poor. The institutional and technical capacity of the REDD+ actors is critical in ensuring effective and successful implementation of REDD+. However, the challenge is how such communities can get involved in REDD+ policy process and its successful implementation. In this context, the ability of the local communities to understand the scientific and economic rationale, institutional architecture, likely trade-offs and synergy between Community Forest (CF) management and REDD+ and potential threats to their interests are critical. This would ensure their effective participation not only in forest management but also in forest and REDD+ policy process towards ensuring effective, efficient and equitable REDD+ outcomes (Roy et.al 2014).

Recognizing this, RECOFTC - The Center for People and Forests initiated a regional project on Grassroots Capacity Building for REDD+ in Asia since November 2009 with the financial assistance of the Norwegian Agency for

Development Cooperation (NORAD), including Nepal as one of the five focal countries, along with Indonesia, Lao PDR, Myanmar and Viet Nam. The main goal of the project is to strengthen capacity of the grassroots forest stakeholders for successful implementation of REDD+ and, therefore, contribute to local socio-economic development. To achieve the goal, the project identified and addressed key knowledge gaps among grassroots stakeholders so that they are able to participate actively in the policy and planning process of REDD+

The project has done extensive capacity development activities in 18 districts of the country spread over all ecological and development regions of Nepal. The grassroots project has partnered with the Federation of Community Forestry Users Nepal [FECOFUN], the Himalayan Grassroots Women's Natural Resources Management Association [HIMAWANTI] and Forest Action to implement REDD+ capacity development activities in Nepal. The major focus of the project includes development and timely revision of REDD+ awareness and training materials, organizing awareness raising and capacity building activities on the basic concept of REDD+, as well as documentation and sharing of REDD+ issues.

This article primarily draws on the process and learning of REDD+ capacity building activities implemented from 2009 to date in Nepal. With a brief description of key initiatives taken, this paper aims to highlight some critical lessons from this NORAD- funded project that show both opportunities and challenges of REDD+ capacity building program in Nepal. Some important insights gained so far from the project experience and implications for the future program of REDD+ in Nepal is also mentioned at the end of the paper.

2. Key Interventions of the project

To achieve the goal, the project identified and addressed key knowledge gaps among grassroots stakeholders so that they are able to participate actively in the policy and planning process of REDD+. The details of the project interventions are:

Understanding the Context and the Issues

The project started with an effort to understand the context and capacity of forestry stakeholders. Specifically, through an extensive consultative process, a capacity building need assessment (CBNA) was carried out. On the basis of competency standards developed to gauge then level of fundamental knowledge and understanding of REDD+ among national, sub-national and grassroots stakeholders. The grassroots stakeholders generally lack conceptual understanding of REDD+ despite their demonstrated efforts in revitalizing degraded forests. Even service providers at meso and national level were not aware of REDD+, including its political, social, institutional, economic, ecological and methodological aspects.

Based on the findings of CBNA, comprehensive capacity building package developed drawing on the strengths of various learning methods and addresses the unique needs of targeted stakeholders for national to local level. The package provided a space for collaboration and partnership at different levels. A cascade approach to deliver training was identified as the main strategy for capacity building, while other non-training strategies such as networking, issue based discussions, national level dialogue, scientific research, publication of information, education and communication (IEC) materials, media mobilization, mass gathering and consultative meetings were also adopted.

Planning Project Activities

A series of meetings with project partners and collaborators were organized, leading to a detailed implementation and monitoring plan of the project. Project sites were identified on the basis of geographical coverage, deforestation trend, socio-economic conditions of forest managing communities and the interest of partners to collaborate. Partnerships and collaborations with different organizations were identified as a key strategy for the project implementation. Most of the activities were planned in the form of cascade training and awareness raising events at different levels. Since

there was interest from a wider level of communities, strategies were developed to bring and engage participants from beyond conventional forestry stakeholders during the trainings. To collect feedback from resource persons, facilitators, participants and participating institutions to identify effectiveness of input, output and outcomes of training, a comprehensive monitoring plan was prepared.

Preparation of Information, Education and Communication (IEC) Materials

A range of IEC materials were prepared, reviewed, tested and published in partnership and collaboration with a wide range of institutions, including REDD Forestry and Climate Change Cell, FECOFUN, HIMAWANTI, NEFIN, Forest Action Nepal, ICIMOD and ANSAB. The partnership and collaboration among institutions created synergy and ensured good quality IEC materials. Particularly , two training manuals—one for a five-day national and sub-national-level training and another for a two day community-level training—information fliers, booklets and posters were published at the initial stage.

Most of the issues identified during the CBNA process and in different discussion forums were covered at different levels in these materials. The training manual focused on sensitization and general awareness of informational, institutional, social and economic aspects of REDD+. Some of the issues covered in the training manuals were the concept and context of climate change, the role of forests in climate change mitigation and adaptation, the concept and requirements for REDD+, Nepal's engagement in REDD+, opportunities and challenges of REDD+, forest management regimes of Nepal, causes of deforestation and forest degradation, and implications of REDD+ for forest conservation and livelihoods.
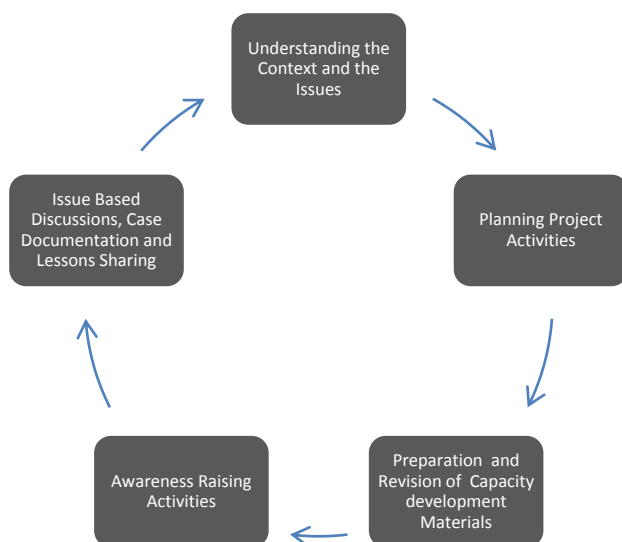
Figure 1: Capacity Building Interventions Cycle

Awareness Raising Activities

Being a relatively new and an abstract concept, many stakeholders were interested to know about the subject, and, therefore, general awareness raising activities became a priority. By mobilizing a variety of existing communication channels, wide ranges of audiences were targeted. Series of orientation and training events were organized to capacitate journalists and media workers at national and regional levels, which were followed by broadcasting a number of radio programmes and publication of fact-based articles on REDD+ and climate change in print media. Similarly, to respect local initiatives and make the programme more effective at local level, street plays were performed; and cultural programmes were organized by mobilizing local organizations with new sets of information. Capacity Building Activities were primarily based on training at national (3-5 days), sub-national (3-5 days) and local (1 day) level. A cascade approach was strictly followed to deliver training.
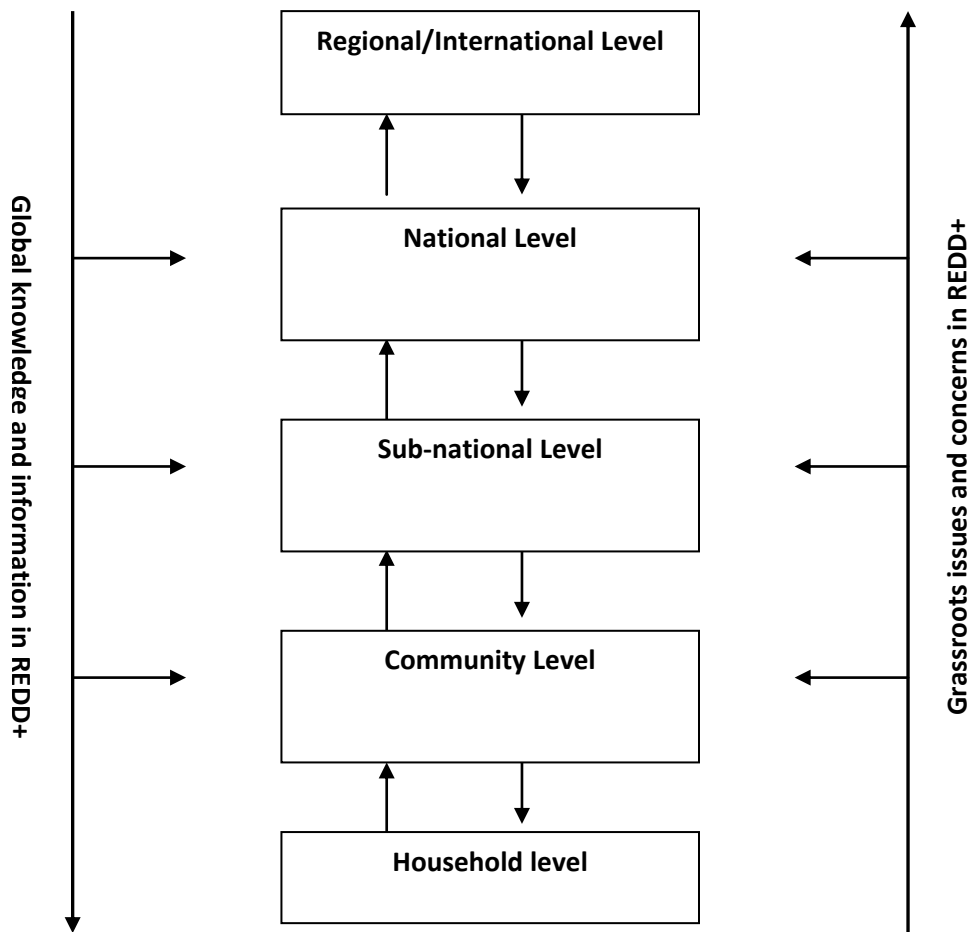
Figure 2: Cascading approach of capacity development program

REDD+ capacity building outreach

The project has followed a cascade model of capacity development, starting with national and sub-national level training of trainers (ToT) program, followed by training programs at district and community level, engaging trained resource persons from ToT programs. Besides, the project has also organized dedicated training programs for women stakeholders in order to strengthen gender mainstreaming in REDD+ capacity development, and also the refresher training programs to keep target stakeholders updated with latest developments on climate change and REDD+. Adopting such an approach, the REDD+ capacity building program has reached to more than twenty-six thousands individual at all national, sub-national and grassroots levels in Nepal until end of 2013. Ninety percent outreached at Grassroots level. On an average of the total trained stakeholders, about 44 percent are women at all levels whereas nearly 53 percent trained women at national level.

Figure 3: Outreach at different level

- National level
- Sub-national level
- Grassroots level
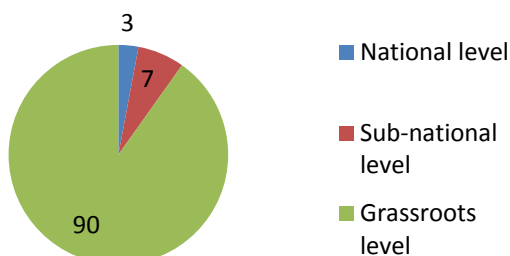
Issue Based Discussions, Case Documentation and Lessons Sharing

Different REDD+ related issues were identified during interactions in the training. Some of those issues were brought to the national and sub-national-level stakeholders' attention for further discussion, clarification and action. Sustainable Management of Forests and REDD+, Drivers of Deforestation and Degradations, REDD+ and Social Equity, Role of local actors in ensuring REDD+ safeguards were some of the key issues in which discussions were concentrated.

Among those issues, conflicts, internal group governance and forest product utilization were selected for research, documentation and wider sharing. The findings and the conclusions derived from the discussions and/or research have been incorporated in the revision of IEC materials and training. The overall lessons of the project are now being documented and shared with wider audiences such as policymakers, development professionals and academicians within the country and beyond.

Review and Revision of Capacity Building Materials

Bearing in mind that capacity development is an ongoing process and updates in the changing context are very important, prepared capacity development materials were revised. Based on the feedbacks and experience of their use for four years and the recent dynamics of REDD+ in the international level, materials were felt to be revised. Following the government led approach in coordination all the materials primarily the training manuals and posters were planned to revise creating the basket funding approach from other agencies working in the forestry sector. In close consultation with local resource persons, national level trainers, other partners and institutions and in initiation of RECOFTC, Multi-stakeholder forestry program (MSFP), HARIYO BAN Program and FECOFUN also join hands and put the joint efforts to publish the revised materials. All the coordination role was played by the REDD Forestry and Climate Change Cell. Now, the revised versions are being adopted by almost all the stakeholders while delivering capacity development activities in the field.

Key Lessons of capacity Building Interventions

1. **Partnership and Collaboration is very important but challenging**

   Capacity building interventions were implemented in partnership and collaboration with different organizations at all levels to create ownership and increase participation. These have been crucial for legitimacy, credibility, effectiveness and efficiency of interventions, which resulted in greater absorption of delivered message by the target groups. These also provided an environment conducive to diversify the participation in the programme, facilitate communication and share responsibilities between different stakeholders, all of which are crucial for managing local forests and controlling deforestation and forest degradation. Particularly at the national level, relatively expected outcomes were achieved. These collaborative initiations have proved instrumental to add the value to the training and

   > Hom Gurung, FECOFUN, Nawalparasi district shares '*…partnership with FECOFUN is an effective way of integrating global knowledge of climate change and REDD+ into the local context and build understanding accordingly that can be disseminated at grassroots level quickly. The approaches and strategies, we are adopting, can help to reach the thousands of households in a single attempt because they are the real custodian and manager of the forest since many generations…*'
   >
   > Source: Field Survey, 2013

   consultations in terms of their effectiveness at grassroots levels, and working together for the emerging issues and concern of the climate change and REDD+. Despite overall positive experience in partnerships and collaborations, some challenges and issues were observed at districts and community levels. This is perhaps because of the fact that the organizational culture of collaboration and partnership for a certain project is yet to sink down to local level. Grassroots organizations perhaps were not able to properly identify their own strengths at the beginning of the project and, therefore, missed opportunities to fully capitalize on those during project implementation. Defining accountability structure, sharing resources, ensuring synergy and planning greater learning remained challenging at the beginning. The

organizations that had greater resources, administrative control, and skills and knowledge of forestry tend to have greater power and control in partnership and, therefore, at times, were not welcomed by other collaborators, which limited collaboration to a mere formality. Partnerships and collaborations were forged hastily without adequate planning and understanding the expectations from partnership, it took longer time and more efforts in creating a shared vision and building trust among collaborators, resulting in trade-off in intended outcomes.

2. **Development of IEC materials in a simple language and development of grassroots Facilitators is very important to sustain the capacity Building Interventions**

Capacity building interventions were planned considering institutionalization and sustainability, and therefore, development of REDD+ facilitators and IEC materials were the primary focus. In this regard, selecting and equipping facilitators with appropriate and adequate knowledge, skills and motivation have been crucial. Both institutional background and individual interest and commitment were considered equally important while selecting participants. Despite difficulties associated with selecting appropriate participants, institutionally and culturally suitable, practical and informal ways, such as participatory development of criteria in advance, consultation with the concerned institutions/individuals have been proved useful.

As REDD+ is a new, abstract and emerging concept, production of evidence-based, concise and relevant IEC materials in local language has been crucial for efficiently informing local participants. Many terminologies and concepts used in REDD+ and climate change are still difficult to translate into local languages, which hinders the learning efficiency. The format of the material (text, diagram, picture, audio, etc.) has also been equally important to make the complex message simple and easy to understand.

The pictorial materials that logically present the message have been effective in making capacity building interventions successful. Pooling different expertise in developing, reviewing and testing materials added great value. It has been noticed that a good mix of concepts and examples from international, national and local levels are effective in communicating with people at different levels.

3. Capacity Building Interventions are the ways to reinforce learning

Capacity building interventions were broadly limited to sensitization and training, focusing on imparting knowledge at individual level. Customized and two-way communication that links concepts and evidence between training facilitators and participants has had a crucial role for making these interventions effective. Therefore, greater flexibility was allowed to facilitators to communicate adequately and appropriately. A combination of local and national facilitators has been effective in synergizing learning as they complement each other by bringing local perspectives and examples, and clarifying conceptual issues respectively. Similarly, local facilitators seemed to value an endogenous, incremental and continuous process of institutionalization and learning, while external facilitators tend to bring novel perspectives and inject ideas for breakthrough in institutional and learning processes. However, care should be taken that these perspectives do not conflict with each other and retard the overall learning process.

4. Capturing wider audiences and stakeholders is essential for awareness raising in a relatively new concept like REDD+

With an aim to reach a wider audience with the message on climate change and REDD+, a range of activities such as mobilizing journalists through writing feature articles, broadcasting radio and television programmes, performing cultural programmes and organizing street plays were carried out. Mobilizing mass communication channels for raising awareness has proven to be important to generate support in capacity building activities and local environmental and forestry initiatives. Since most of the journalists generally

engages and interested in political, urban and semi-urban issues, with an aim to gain better professional position, name, fame and resources, it has been challenging to find suitable persons who are interested in environmental, forestry and rural issues.

Also, the gap in relationship between local collaborators and journalists remained a challenge to mobilize media effectively. The disciplinary and sectoral knowledge and focus of forestry stakeholders and media persons also did not match, which limited building of professional relationships. A series of interactive programmes in Radio that incorporate voices and issues of local people were effective in delivering the message. Similarly, broadcasting time and method also mattered a lot for the effectiveness of the message. For instance, artistic presentation such as street drama and cultural programmes was easily taken up and retained for longer.

5. **Maintaining Diversity in capacity building activities and approaches is very important to bring the Synergy for programme effectiveness**

Efforts were put to achieve synergy diversifying capacity building interventions, participation, facilitation, collaboration and partnership. These diversities brought both opportunities and challenges. Different non-conventional forestry stakeholders such as media and the private sector are now interested to contribute to local forest management, climate change adaptation and environmental improvement. The conventional forestry stakeholders are now interested to set up multi-stakeholders forums for collectively addressing deforestation and forest degradation issues by bringing creative and novel ideas from all collaborators.

Diversity in interest, competency and perspective made stakeholders unique and therefore brought conflicts as well. In such cases, synergizing through partnership and collaboration has been challenged. More efforts, transaction costs and energy were needed for synergistic collaboration in such situation.

6. Process monitoring remained key to make interventions more Effective

Proper monitoring has been essential in ensuring the effectiveness of capacity building interventions in terms of learning and behavioral change. The project planned and conducted different levels of monitoring including taking baseline of knowledge, and input for, output of and outcome of capacity building interventions. At times, it has been noticed from the on-going monitoring that some of the capacity building interventions had disempowering effects on the participants. For instance it occurred while the forest managing communities realized that the international standards for REDD+ are complex and difficult to understand. Such confusions generally occurred when abstract and novel concepts were discussed without local examples. However, such effects were short-lived as the facilitators carefully dealt with them. Monitoring has also been found to be important in creating an environment conducive to bringing different views from participants and maintaining healthy discussions and knowledge sharing.

7. Cascading approach has been an effective approach to reach to the large number of audiences as well as bringing back the grassroots issues up to the policy in a short time

As mentioned earlier, the project adopted a cascade approach for REDD+ capacity development. This approach includes 'train-the-trainers' and transfer the knowledge and information using a pool of in-country trainers at sub-national and grassroots level.

This approach is realized as one of the effective approaches in terms of sensitizing grassroots actors in

> Rama Paudel, Local Resource Person from HIMAWANTI, Sarlahi distirct says '… *after REDD+ program implemented in the district, HIMAWANTI team developed confidence to talk to other institutions for joint collaborative efforts. We learnt several things in climate change and REDD+ and forest policies and were supportive to outreach these knowledge and information to the grassroots and community levels…'*
>
> *Source: Field Survey, 2013*

climate change and REDD+ and communicating their issues to national level. Since, this approach enables to interconnect issues and concerns of climate change and REDD+ from national to grassroots level and vice versa, both national and grassroots actors take ownership in REDD+ processes and its implementation. In addition, the approach is found to be more efficient in terms of addressing more targeted audiences i.e. grassroots actors with limited human and financial resources and time.

8. **Project contributed in integration of grassroots wisdom with scientific knowledge**

Grassroots actors, obviously, are the real steward of forest resources, and are more knowledgeable in customary and indigenous system of sustainable management of these resources. However, their level of understanding may not be adequate to understand the global issues such as climate change and REDD+. In this context, training conducted through cascading approach by the civil society networks has been a bridge to minimize the gap between scientific knowledge and grassroots understanding, and create opportunity to integrate both knowledge into common understandings with regards to climate change and REDD+ in Nepal through capacity development initiative, workshops and dialogues. One of the key approaches the project has used is to simplify the climate change and REDD+ knowledge by using various approaches such as bringing out flyers, posters, broadcasting series of radio episodes and using locally appropriate tools such as street plays, drama and songs to convey key message of REDD+ to local communities in their language.

Conclusions and Recommendations

Interventions of the Grassroots Capacity Building in REDD+ project were primarily focused on strengthening knowledge of existing forest governance and management in view of climate change and REDD+ through training, coaching and hands-on support, awareness raising activities, increased

political know-how and generated public support for better forest management so as to contribute to climate change mitigation and adaptation. Capacity building interventions have been generally promoted and institutionalized as a collaborative learning process among a wide range of stakeholders. While partnership and collaboration boosted local institutions' competency in forest management, REDD+ and climate change by bringing their ideas, competencies and resources together, these have been instrumental for legitimacy, credibility, effectiveness, and efficiency of the intervention. Learning from adopting cascade approach in 18 districts of Nepal has proven that it can be taken as an effective and efficient capacity development and awareness process which is complimented with feedback mechanism at all layers of decision and policy making process from grassroots up to national levels. Therefore, we recommend that it would be better to adopt the cascade approach while conducting training and awareness campaign in climate change and REDD+ in remaining districts of Nepal.

Since, there is no 'one size fits all' formula for capacity building interventions for REDD+ grassroots stakeholders, a multi-pronged and multi-scale capacity strengthening strategy that draws on the strengths of various learning methods and addresses unique needs of targeted stakeholders would be effective. Development of facilitators, advocates and IEC materials are proved to be effective to expand and sustain the main ideas of capacity building interventions beyond the temporal and spatial limits of the project.

It is clearly perceived that the integration of grassroots wisdom with scientific knowledge brings common understanding and helps in simplifying the concept of REDD+ and therefore its understanding by the grassroots stakeholders. Hence, the process of this sort of integration has to be encouraged, promoted, and adopted through cascade approach with collaborative effort in future. Similarly, monitoring has also been crucial to focus the limited resources in the intended interventions, timely correction of the unintended effects and maximize the learning. The clearer the linkages between climate change and REDD+ with forest management, community development and local

livelihoods of the grassroots stakeholders, the better would be the support for them in preparing climate friendly development packages.

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Annual Reports of the projects.

Dalit Community and REDD in Nepal: Subaltern, Engagement and Perception

Bishnu Bdr Nepali[1]

Subaltern history of Dalit community

Nepalese society is diverse in class, caste, group and community. Structurally, a society has multiple facets, innovative nature, multicultural aura and traditionalist in general. If the Nepalese society is minutely examined, it can avenue the real situation and statistically concretize the data of Nepalese scenario, where bunch of problems are floating over in deemed and rooted skyscrapers day to day. These problems are the causes of historical, traditional and feudal mind set and lack of farsighted vision of high -class people. Overall, the current Nepalese context is transitional as it is in the process of drafting a new progressive constitution in second time. Many interest groups, indigenous, marginalized groups and Dalits have their separate voices and agendas to imprint in this new constitution. The history and the current situation of Dalits reveal that their lives are very pitiful, sorrowful and unbearable to any people. They are excluded from mainstream development activities, government institutions and various other structures and processes of the nation.

Though Dalits are socio-culturally rich, they are boycotted in society through unfriendly behaviour and deprivation due to unhealthy practices, bias laws and unfavourable community structures. Nepal has been experiencing deeply rooted class and caste system, where the position of Dalit has always been at the lowest level. Since long, Dalits are economically poor, landless, with low life expectancy, deprived from proper education and good health, and ritually

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retarded from societies, communities and the nation. Thus, until and unless state does not provide special rights to Dalits and marginalized communities, the issues of representation, inclusion, equitable development and pursuit of happiness will not turn into reality. In this context, access to natural resources seems significant for overall empowerment of Dalit people.

Access to natural resources recognizes their self-esteem for many people. Besides, it is culturally and psychologically established fact that social status and dignity of people are also determined by access to natural resources. Hence, some people argue that natural resource, for instance land, is a source of social conflict in society, where landlords hold huge chunks of land though they do not plough. Thus, most of the Dalit communities, who are comparatively landless are highly marginalized in structure, participation, public service delivery and decision making processes.

Accordingly, the Dalit and marginalized communities have low level of access to forest resources in terms of representation, decision making, benefit sharing. In hilly districts of the country, Dalit community's access to community forestry (CF) is very low as most of them are excluded from membership of CF and benefit sharing mechanism. They have been neglected since the initial phase of forest handover process by the state to communities. It shows that their tenure right on CF is weak. Elites in communities even do not share important information with Dalit and marginalized communities.

Increases in the concentration of CO_2 and other GHGs in the atmosphere have raised concerns about global warming and climate change. This increase is closely related to human activities particularly to the burning of fossil fuels and forest degradation and deforestation. Yet the success of CF is worth for greenery, provisioning products and better cover for wildlife habitat in Nepal. An important way of combating global warming is to reduce carbon emissions from deforestations and degradations. According to Hunt (2009), one ton of carbon stored in tree is the result of assimilation of 3.67 tons of CO_2 from atmosphere. Recognizing the importance of forests as CO_2 sink, the United Nations Framework Convention on Climate Change (UNFCCC) introduced the

new mechanism of Reducing Emissions from Deforestation and Forest Degradation (REDD) in 2007. Nepal was one of the first 14 countries in the world selected by the World Bank for assistance under the forest carbon partnership facility. The facility helps countries address global climate issues under the REDD principles. Plenty of REDD projects are implementing a cross in Nepal from different issue based organizations such FECOFUN, NEFIN, NAFAN, ACOFUN and Nepal Law Society (NLS) in various modality and different provinces.

The REDD cell under the Ministry of Forest and Soil Conservation is implementing REDD readiness activities in Nepal, where the REDD cell focuses on three tired institutional mechanisms, such as; REDD Multi-sectorial, Multi-stakeholder Coordinating and Monitoring Committee as the apex body, the REDD Working Group at the operational level, and the REDD-Forestry and Climate Change Cell as the coordinating entity. REDD Project in Nepal is targeted to prevent CO_2 emissions, deforestation, forest degradation and fragmentation that are affecting health, hygiene and livelihoods of forest resource based communities.

Engagement in REDD

In Nepal, the condition of Dalits in community-based forest management is poor, with minimum access to and exclusion from forests, although many Dalits have been forest-dependent for centuries. Studies have revealed that poor, disadvantaged people, and especially the Dalit community, are still excluded from many state and non-state programs and mechanisms. The UNDP Human Development Index 2011 reports that the poorest communities are from Dalit community. On the other hand, the socioeconomic condition of Dalits and the Dalit community remains critical in Nepal. The Dalit Alliance for Natural Resources (DANAR-Nepal) has been working to make synergetic output in grassroots level capacity building in climate change, REDD+ and sustainable forest management. DANAR-Nepal is one of very few grassroots networks which have been working on behalf of the socially excluded groups all over the country in climate change, and REDD+.

In the very initial phase of REDD+ in Nepal DANAR engagement was from R-PP, this preliminary, strategic direction document was designed by Nepal Government by contributing identifying the issues of Dalit in REDD+ and local level consultations to inclusive preparation of R-PP documents. Around 2009, there was a REDD+ pilot based project running joint collaboration with ANSAB, FECOFUN and ICIMOD in three watersheds Nepal. Though DANAR was not directly involved in this project, completed assessment in 15 CFUG groups of three piloting areas. Unfortunately, assessment showed that Dalit community were not properly included, weak project governance, misuse of piloting seed money provided by project and Dalit awareness level in REDD+ was so nominal. DANAR is working on capacity building of local communities engagements in REDD+ processes in close coordination and support from various international organizations such NSCFP,WWF,ICIMOD ,MSFP and others more than20 districts of Nepal. Around 450 civil society organizations are being capacitated on REDD+ and climate change issues through this project. Local practices and REDD+ initiatives from sub national level has been covered through mass sensitization and media broadcasting through this project. Likewise, DANAR is a member of REDD civil society alliance of Nepal since 2010 adding contribution to consolidate the voices of civil society in REDD+.

Perspectives on REDD

The Dalit community in Nepal is forests are highly dependent on forests and are highly discriminated group in the society. This paper sets out their position in terms of their vulnerability to climate change impacts, dependence on the forest and ecosystem and interest in scoping REDD opportunities to protect their environment on which they depend for their livelihoods. The Dalit Alliance for Natural Resources in Nepal is a non-for-profit advocacy group supporting social inclusion for forest dwelling communities. Dalit's as represented by DANAR are advocating for rights and social inclusion with respect to community-based forest management in Nepal, which is highly prevalent but inaccessible due to the caste system. DANAR has been

requesting to work with and be included in donor programs specifically focused on REDD+ and developing a REDD+ strategy. Social inclusion would enable Dalit's to participate in international meetings, workshops, and research projects in addition to participating in capacity building with regards to climate adaptation and mitigation.

The UNDP development report 2011 reports that the most vulnerable communities in Nepal are Dalit's, and they are not as capable as others to adapt to climate change, and thus should be given priority in these matters. Particularly, Dalit women should be empowered and provided with the necessary training and support to ensure their livelihoods are secure. REDD+ inherently overlap with local land tenure and national rights frameworks, which come into play when designing and implementing REDD+ programs. Communities have a right under FPIC to be consulted and deserve equal decision-making capabilities regarding their surrounding natural environment. Equal, effective and efficient benefit sharing within REDD payments would reduce the dire poverty of Dalit's, especially as they are forest dependent communities.

REDD+ has the potential to provide additional benefits through reduced poverty and development if designed well. Due to REDD+ program, the livelihood options of the Dalit community is on threat. Therefore, alternative livelihood options in the form of forest based income generation activities should be developed. Furthermore, Nepal's community based forest management has allowed the extraction of coal and timber to make metal pots, which should be resolved. Landless Dalit's voice for land rights has to be addressed in order to secure land and overall reduction on deforestation. DANAR is opinion is that CSO alliance is urgent, and emphasizes a strong role to be given to CSO on climate change and REDD+. DANAR calls for FPIC, ILO 169 and SES safeguards to be implemented effectively in addition to initiatives to improve rights for Dalit's in the new forest act amendment process.

The Forest Act of 1993 does not provide sufficient rights for Dalit's and needs to be improved. DANAR is also raising the voice of Dalit's within a new

constitution that respects their rights and fundamental use of natural resources. Dalit's voice should be heard within the draft prepared by the thematic committee, and to claim their rights and proportional representation in each structure of the REDD+ and its subcommittee. DANAR requests the forestry, REDD and climate change related donor community to support the Dalit community for adaptation and advancement within the REDD mechanism. Enabling fully participative consultation, design and effective payment mechanism within a REDD project and programme would enable Dalit's to gain rights, support themselves and their natural environment from which they depend.

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