

REDD-plus Himalayas: Developing and Using Experience in Implementing REDD-plus in the Himalayas

Proceedings of the Project Inception Workshop



Hosted by
Indian Council of Forestry Research and Education, Dehradun
and
International Centre for Integrated Mountain Development



ICIMOD



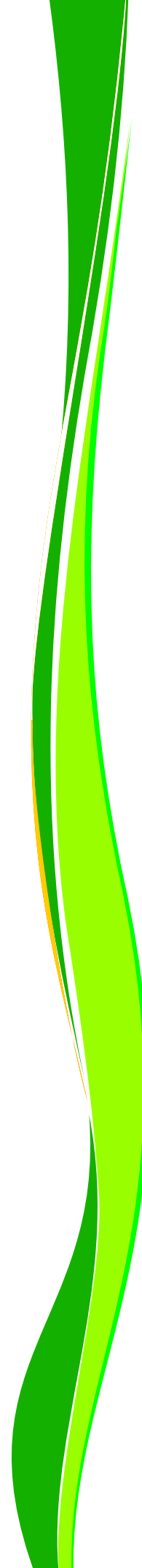
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REDD-plus Himalayas: Developing and Using Experience in Implementing REDD-plus in the Himalayas

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**28–29th January, 2016
Aizawl, Mizoram, India**

**Hosted by
Indian Council of Forestry Research and Education (ICFRE)
Dehradun, India
and
International Centre for Integrated Mountain Development (ICIMOD)
Kathmandu, Nepal**



Indian Council of Forestry Research and Education (ICFRE)
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2016

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महानिदेशक
भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद्
डाकघर न्यू फॉरेस्ट, देहरादून
(आईएसओ 9001:2008 प्रमाणित संस्था)

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FOREWORD

The Himalaya region is a biological hotspot & one that is facing rapid deforestation & forest degradation. Reducing Emissions from Deforestation and Forest Degradation in developing countries (REDD) along with conservation and sustainable management of forests and enhancement of forest carbon stocks, collectively referred as “REDD-plus” is a potential approach for climate change mitigation with significant co-benefits.

Himalayan countries are taking serious steps to engage in REDD+ programs where a large population is dependent on forest resources, but their capacity to meet various standards for participation is constrained. There are large data gaps and many nations have no capacity to address international standards required for REDD+. There is a need to standardize data sets requirements at a regional scale. India has a mature and well developed national Forest Monitoring system and small LDCs like Nepal and Bhutan can gain from the Indian expertise. The government of India is drafting the national REDD strategy and requires capacity building and trainings for developing the MRV standard.

The REDD+ Himalaya project with active collaboration of ICIMOD of Nepal has been initiated with the overall goal to build the REDD+ capacity in the four neighboring countries to develop & implement National REDD Strategy through conservation & sustainable use of natural sinks. Conservation & sustainable use of forests through REDD+ programs is an effective mitigation & adaptation measure. The project will assist in the capacity development of REDD focal points in Nepal, Myanmar, India (North Eastern Region) and Bhutan to develop & implement REDD projects through establishing a south-south platform that will focus on trainings, technology sharing and knowledge dissemination. Pilot REDD+ projects are also to be established in each country for all stakeholders.

To kick start the project activities, ICFRE in collaboration with ICIMOD organized a project inception workshop in Aizawl (Mizoram) on 28-29 Jan 2016. This is a beginning of the Project in the North Eastern part of the country which is rich in its forest resources and communities have close linkages with forest resources. ICFRE is pleased to bring out the proceedings of this workshop and is grateful to ICIMOD, GIZ and the Norwegian Ministry of Foreign Affairs for providing assistance to host this inception workshop. We look forward for their continued cooperation with ICFRE on REDD+ programmes in future also.


(Dr. Ashwani Kumar)



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INDIAN COUNCIL OF FORESTRY RESEARCH AND EDUCATION

(An Autonomous body of the Ministry of Environment, Forest and Climate Change, Government of India)

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PREFACE

Forests have always been integral part of global climate change negotiations as they provide a large mitigation opportunity at lower cost along with other significant co-benefits. Paris Climate Conference intended to achieve universal agreement on climate, with the aim of keeping global temperature well below 2°C. Forests play a vital role in achieving this target. REDD-plus remains a critical instrument under the UN Framework Convention on Climate Change (UNFCCC). The recently adopted Paris agreement also recognized this as 'policy approaches and positive incentives for reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks' as one of the important article of the Paris agreement.

Hindu Kush Himalayan (HKH) countries are preparing strategies for implementing REDD-plus, and are simultaneously developing relevant capacities at different levels so that REDD-plus can be implemented effectively and efficiently with minimal adverse impacts. Indian Council of Forestry Research and Education (ICFRE), Dehradun, in collaboration with International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal is implementing the Tran-boundary REDD+ Himalaya capacity building programme with special focus on North eastern part of the country.

Beginning of this partnership was initiated during COP 21 in Paris where ICFRE and ICIMOD, jointly organized a side event under the theme "Getting ready for 2020 REDD: What are Himalayan countries doing?" Representatives of partner countries contributed and shared their experiences in implementing REDD+ in their respective countries.

Immediately after this event to kick start programme activities in India, ICFRE organized a Project inception workshop in Aizawl (Mizoram) on 28-29 January 2016. Under this project Mizoram has been chosen a candidate state for pilot REDD+ Project in Northeast India along with a capacity building programme for the stakeholders in the NE region of India.

I am happy to present the proceedings of the inception workshop and congratulate Officers and staff of the Biodiversity and Climate Change division of the ICFRE Hqs. for bringing the proceedings of the workshop in a timely manner.

(Dr. G.S. Goraya)

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REDD-plus and Genesis of Project

The sixteenth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) held at Cancun in November 2010 included REDD-plus into the international climate regime and adopted Decision1/CP.16 under the name “The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention” (UNFCCC, 2010). Decision 1/CP. 16 encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities, as deemed appropriate by each Party and in accordance with their respective capabilities and national circumstances:

- a. Reducing emissions from deforestation;
- b. Reducing emissions from forest degradation;
- c. Conservation of forest carbon stocks;
- d. Sustainable management of forests;
- e. Enhancement of forest carbon stocks.

In “Decision1/CP.16”, it was decided that the activities undertaken by Parties should be implemented in phases, beginning with the development of national strategies or action plans, policies and measures, and capacity-building, followed by the implementation of national policies and measures, and national strategies or action plans that could involve further capacity-building, technology development and transfer and results-based demonstration activities, and evolving into results-based actions that should be fully measured, reported and verified.

The Himalayan region is a biodiversity hotspot and is facing rapid deforestation and forest degradation. All the Himalayan countries are taking serious steps to engage in REDD-plus programmes where a large population is dependent on forest resources, but their capacity to meet various standards for participation is constrained. There are large data gaps and many nations have no capacity to address international standards required for REDD-plus. There is a need to standardize data sets requirements at a regional scale. Small least developed countries like Nepal and Bhutan can gain from the Indian expertise.

The overall goal of **REDD-plus Himalayas: Developing and using experience in implementing REDD-plus in the Himalayas project** is to build the capacity of the REDD-plus focal points in four countries for development and implementation of National REDD-plus strategy and action plans, through conservation and sustainable use of natural sinks. Conservation and sustainable use of forests through REDD-plus programme is an effective mitigation and adaptation measure. The project will assist in the capacity development of REDD-plus focal points in Nepal, Myanmar, India (North Eastern region) and Bhutan for development and implementation of REDD-plus projects through establishing a south-south platform that will focus on trainings, technology sharing and knowledge dissemination. Pilot REDD-plus projects will also be established in each country including all stakeholders. This regional scale REDD-plus project meets the goal that “Transboundary landscapes are better conserved and managed for sustaining ecosystem goods and services to improve livelihoods and enhance ecological integrity, economic development, and socio-cultural resilience to environmental changes”.

Objectives of the Project:

- a. **Methods:** Development of methods for calculating, modelling and forecasting carbon storage.
- b. **Readiness:** Developing instruments in preparation for regional REDD-plus readiness.
- c. **Regional learning platform:** In working towards harmonization in the region, an exchange of experience and mutual learning on good REDD-plus implementation practices is established as South–South cooperation. The platform especially deals with standards for calculating reference levels (RLs) and reference emission levels (REL) and the design of systems for measuring, reporting and verification (MRV), including social and environmental aspects (regional).

2. Introduction

Indian Council of Forestry Research and Education (ICFRE) Dehradun and its Advance Research Centre for Bamboo and Rattan (ARCBR) Aizawl in collaboration with International Centre for Integrated Mountain Development (ICIMOD), Kathmandu (Nepal) have organized a project inception workshop on REDD-plus in Himalayas on 28 & 29 January 2016 at Aizawl (Mizoram) for kick start of the “**REDD-plus Himalayas: Developing and using experience in implementing REDD-plus in the Himalayas project**” in the north eastern state of Mizoram and the REDD-plus capacity building for the officers of North Eastern States of India.

The workshop was attended by officials from North Eastern States, International Centre for Integrated Mountain Development (ICIMOD), German International Cooperation (GIZ), Advanced Research Centre for Bamboo and Rattan (ARCBR), Rain Forest Research Institute (RFRI) and Indian Council of Forestry Research and Education (ICFRE). The workshop schedule is given as Appendix I. The list of participants is listed in Appendix II.

3. Inaugural Session:

Mr. Lalrinmawia Ralte, Minister of Environment & Forests, Government of Mizoram was the Chief Guest and **Mr. L. R. Thanga**, Principal Chief Conservator of Forests, Department of Environment & Forests, Mizoram was the Guest of honour of the inaugural session of the workshop.

Dr. T.P. Singh, Assistant Director General (Biodiversity and Climate Change), ICFRE welcomed all the delegates of the workshop and briefed about the objectives of the workshop as well as the REDD-plus programme to be implemented in the state of Mizoram. The objective of the workshop was to provide basic information on technical aspects related to measurement of forest carbon stocks for developing inventories of forest ecosystems and to enable the participants to better understand technical options of REDD-plus. He extended sincere gratitude to **Mr. L.R. Ralte**, Hon'ble Minister of Environment, Government of Mizoram. He thanked **Mr. L.R. Thanaga**, Principal Chief Conservator of Forests, Mizoram for coordinating the project and providing necessary facilities to conduct the workshop in Aizawl, Mizoram. He highlighted the





importance of REDD-plus in mitigating climate change and providing the incentives to the communities for protecting and maintaining their forests. He further explained the need to identify the drivers of deforestation and forest degradation in Mizoram for effective implementation of the REDD-plus programme. He elaborated on the capacity building of the local communities for the management of forests.

Mr. Kai Windhorst, Chief Technical

Advisor from GIZ in his brief message spoke on the REDD-plus Himalayas project being initiated in the Himalayan states. He further explained about the transboundary project implemented in India along with Bhutan, Nepal and Myanmar.

Dr. Bhaskar Karky, Programme

Officer from ICIMOD spoke on transboundary REDD-plus programme of the ICIMOD. The programme is south-south cooperation where Himalayan nations of India, Nepal, Bhutan and Myanmar will be sharing their REDD-plus experience and expertise.



Dr. N.S. Bisht, Director (International Cooperation), ICFRE apprised the house by highlighting the importance of local communities in the management of

forests. He explained that the local communities are highly dependent on the forest for their livelihood. Safety and Supply Reserve Forests provide the services to the local communities. He also stated that in the state of Mizoram, Riverine forests are also notified to maintain water supply. He further highlighted on the economics of ecosystem services provided by the forests of Mizoram.

Mr. L.R. Ralte, Hon'ble Minister, Environment and Forests, Government of Mizoram in his address said that REDD-plus programmes if implemented properly has a great potential for improving the livelihood of forest dwelling communities. The local communities who have been traditionally conserving their forests can be financially benefited with REDD-plus projects in terms of Payment for Environmental Services, a term which is quite new to India. Capacity building is also needed for forest dwelling communities for economic and social benefit. He thanked ICFRE for choosing state of Mizoram as a candidate state for implementing REDD-plus project.

Mr. L.R. Thanaga, Principal Chief Conservator of Forests, Mizoram informed that with new

government initiatives shifting cultivation area has been reduced from 45,000 ha to 25,000 ha per annum. Through these community actions, carbon emissions from forests and land use are being mitigated in the state of Mizoram. He said REDD-plus initiatives will come a long way in providing financial incentives to the communities for their actions on forests conservation.

At the end of inaugural session, **Dr. R.S.C. Jayraj**, Director, Rain Forest Research Institute (RFRI), Jorhat proposed the Vote of Thanks.

4. Technical Session:

Mr. Rosiama Vanchhong, Additional Principal Chief Conservator of Forests, Department of Environment & Forests, Mizoram chaired the technical session of the workshop. In the technical session six presentations were made. **Following four presentations were made during the pre lunch session of the workshop:**

1. “Overview of REDD-plus concepts, issues for India and role of State Forest Department in REDD-plus implementation” by Mr. V.R.S Rawat, Scientist 'F', Biodiversity and Climate Change Division, ICFRE, Dehradun
2. “Sharing experiences from ICIMODs landscape approach to REDD-plus” by Dr. Bhaskar Singh Karky, Programme Officer, ICIMOD, Kathmandu (Nepal)
3. “ICFRE-ICIMOD REDD-plus programme in North Eastern Himalayas” by Dr. T.P. Singh, Assistant Director General (Biodiversity and Climate Change), ICFRE, Dehradun
4. “Valuation of goods and ecosystem services from forests of Mizoram” by Dr. N.S. Bisht, Director (International Cooperation), ICFRE, Dehradun

Mr. V.R.S. Rawat, Scientist 'F', ICFRE, Dehradun delivered his presentation on “Overview of REDD-plus concepts, issues for India and role of State Forest Department in REDD-plus implementation”. He highlighted the development of REDD-plus in international climate change negotiations. He briefly explained about the role of forestry sector in climate change. He further explained the process of evolution of REDD-plus from Montreal (2005) to Warsaw (2013) where Warsaw Framework for REDD-plus was adopted and finally culminated in Paris (2015) as an important article of Paris Agreement. He also informed about the India's draft national REDD-plus Policy and Strategy. He stressed for a need of REDD-plus readiness pilot projects in North East India considering the importance of forests of Mizoram. He further highlighted the various REDD-plus projects in India like Uiam Sub-Watershed REDD-plus Project,



Meghalaya, Uttarakhand REDD-plus Pilot Project and Forest PLUS Projects in Himachal Pradesh, Sikkim, Karnataka and Madhya Pradesh. At last, he focused on the strategy for REDD-plus in North East India and highlighted the India's potential for REDD-plus because of a well-established system of national forest monitoring; integration of remote sensing satellite imagery for forest assessment; forest conservation oriented policies and

afforestation programmes in India; well established forestry institutions (ICFRE/ FSI/ IIFM/ SFDs); involvement of local communities for forest management through Joint Forest Management and Village Community Forests (*Van Panchayats in Uttarakhand*); well established forest governance and rights of local communities.

Dr. Bhaskar Singh Karky, Programme Officer from ICIMOD, Kathmandu (Nepal) delivered his presentation on “Sharing experiences from ICIMODs landscape approach to REDD-plus”. Firstly, he briefed about the ICIMOD as an Inter-Governmental Organization including the eight member countries Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal and Pakistan with a mission “To enable sustainable and resilient mountain development for improved and equitable livelihoods through knowledge and regional cooperation”. He emphasized the role of ICIMOD in linking science-policy and practice. He highlighted transboundary REDD-plus programme of the ICIMOD. He further stated about the overarching goal at regional level of REDD-plus Himalayas, is to improve the conditions for implementing REDD-plus measures to mitigate climate change that are socially and environmentally sound in four Himalayan countries; building a regional REDD-plus learning platform to foster south-south learning. This programme is based on south-south cooperation where Himalayan nations of India, Nepal, Bhutan and Myanmar will be sharing their REDD-plus experience and expertise. He emphasized in his presentation on the readiness elements of REDD-plus. He stated that REDD-plus strategy, measuring, reporting and verification (MRV), reference levels (RLs) and reference emission levels (REL) and implementation institutions are the major elements for the effective implementation of REDD-plus. He highlighted the various issues regarding the REDD-plus strategy: MRV involving where, when, how to reduce emissions? At what cost? Who participates? Rights of forest dependent community; who has right to the carbon? How to share benefits? Environmental and Social safeguards. He further explained that Nepal has the success story of effective implementation of REDD-plus programmes in three watershed viz. Ludikhola Watershed, Charnawati Watershed and Kyar Khola Watershed. He elaborated on the statistics of the project area, comprised of 27,789 ha in the three watersheds. He also explained about the ethnic groups living in the project area and how their livelihood is dependent on the forests and what role they can play in protecting the forests for climate change mitigation. He explained various drivers of deforestation and forest degradation acting in the project area comprised of unsustainable harvesting of forest products; poverty and high dependence on forest; fuelwood is a major source of residential energy; no scientific management of forest; increasing pressure on forest and few alternative energy options; weak governance and law enforcement; forest encroachment; settlement expansion; agriculture expansion; infrastructure development; lack of land use planning; political patronage; over grazing; lack of improved animal husbandry and pasture management practices; forest fire. He briefly explained about the project activities undertaken in the Nepal's REDD-plus project. He highlighted the carbon financial mechanism involved for the management of forests by the local communities. He also focused on the institutional arrangement in Nepal and need for the development of REDD-plus Action Plan.



Dr. T.P. Singh, Assistant Director General (Biodiversity and Climate Change), ICFRE delivered his presentation on “ICFRE-ICIMOD REDD-plus Programme in North Eastern Himalayas”. He explained the importance of Cancun Agreement in the forestry sector. He also briefed about the Reference Document for REDD-plus in India and said that this document is based on the existing knowledge available on the subject and roles and responsibilities of different departments, institutions, civil society and local communities. He emphasized the need of guidance and framework for REDD-plus implementation covering national forest reference level; safeguards; MRV mechanism; capacity building, and identification of research gaps. He explained about the different phases of Roadmap for REDD-plus in India. Phase 1: National Strategy and Action Plan Development, key role played by Ministry of Environment, Forest and Climate Change; Phase 2: Readiness and Initial Action; Phase 3: Countrywide Implementation. Phase 2 and 3 of the REDD-plus can be implemented simultaneously in various locations. He also stated that, Phase 2 (Readiness and Initial Action) includes piloting of REDD-plus projects; capacity building at project level and learning lessons for Phase-3. Further, he stated that passing financial incentives to local communities can make the REDD-plus a success at local, sub-national and national level.



He stressed that institutional capacity is lacking in India about the REDD-plus programmes as a means of mitigating climate change and the workshop will be beneficial in sensitizing the Officials from North Eastern States about the REDD-plus programme. He presented the forest cover status of Indian Himalayan States and stated that pilot project site will be selected to develop the institutional capacity and the effective implementation of the REDD-plus programme. He further described about the deliverables of the

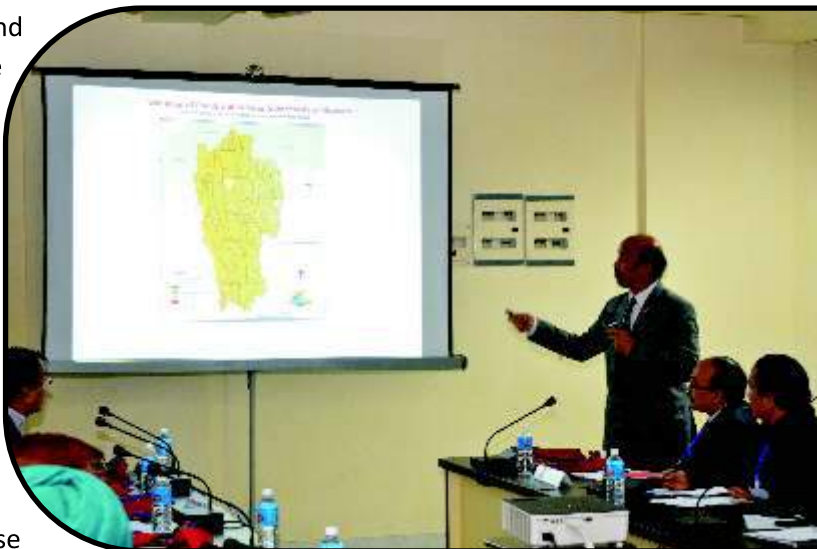
REDD-plus programme in Mizoram and implementation of the project will increase the capacity of stakeholder by training, research and communication. Programme outputs will help in the development of standard protocols (MRV, SIS); guidelines on benefit sharing and incentives; data collection, analysis and validation; well defined roles and responsibilities/ institutional mechanisms that lead to the enhanced capacity of development and implementation of REDD strategy and action plan at each level (community, State and National levels) and improved understanding of scientific knowledge for precise estimation of carbon stocks. He also explained about the activities completed in the year 2015 and the activities planned for year 2016. He also highlighted that Uttarakhand REDD-plus project implemented in the village council forests (*Van Panchayats*) of Nainital, Uttarakhand. He concluded that REDD-plus is an innovative way to mitigate climate change through sustainable development that India started strategy development and piloting, that pilot projects shall provide a good learning platform for this mechanism, that there is need to learn from within and outside country, and synergizing with other projects as well as capacity building for further dissemination.

Dr. N.S. Bisht, Director (International Cooperation), ICFRE delivered his presentation on “Valuation of Goods and Ecosystem services from forests of Mizoram”. He explained about the economics

of various ecosystem services and the methods to calculate the ecosystem services. He further requested forest officers to account and document carbon benefits to the nation flowing from forests and how to develop a system of payments to communities. He explained about the economics of the climate amelioration and carbon sequestration conducted by the forests. He further explained that the climate change is having adverse

impacts on the goods and ecosystem

services provided by the forests. He concluded that measures should be developed to mitigate the climate change thorough forest.



Following two presentations were made during the post lunch session of the workshop:

1. "Forest and forestry scenario in the state of Mizoram in the context of REDD-plus" by Mr.Tsewang Gyaltsen, Deputy Conservator of Forests (DCF) Working Plan, Department of Environment and Forests, Mizoram
2. "Methodological issues on Measuring, reporting and verification of REDD plus projects" by Dr. Rajiv Pandey, Scientist 'E', ICFRE, Dehradun.

Mr. Tsewang Gyaltsen, Dy. Conservator of Forests, Working Plan, Mizoram delivered his presentation on "Forest and forestry scenario in the state of Mizoram in the context of REDD-plus". He briefly explained about the profile of Mizoram and stated that Mizoram has population of 1.09 million consisting of 95% tribal. Literacy accounts for 91.58% in Mizoram. 55-60% of the population is dependent on agriculture. Mizoram has 13 major rivers that make deep gorges. He also explained organizational structure of Environment and Forest Department. Mizoram has 10 Territorial Divisions, 3 Autonomous Councils, 4 Wildlife Divisions for 10 Protected Area and 6 Functional Divisions looking after Working Plan, Resource Survey, Protection, Training and Extension. Further, he highlighted the status of forest cover

which comprises of six (06) forest type viz. Cachar Tropical Semi-Evergreen Forest, Secondary Moist Bamboo Brakes, Pioneer Euphorbiaceous Scrub, East Himalayan Moist Mixed Deciduous Forest, East Himalayan Subtropical Wet Hill Forest and Assam Subtropical Pine Forest.

He also briefed the participants about the legal categories of forests in Mizoram. State Forest Department manages Reserved Forests of 4483.29 sq km



notified and protected under Mizoram Forest Act, 1955 and Protected Areas of 1822.75 sq km notified and protected under Wildlife Protection Act, 1972. Mizoram also has Village Safety and Supply Reserves managed by local communities. He further elaborated that moderately dense forest and open forest strata are facing decrease in forest cover and these areas have the scope for enhancement of carbon stock. He also highlighted various issues and challenges that can be addressed through the effective implementation of REDD-plus in Mizoram. Declining trend in forest cover; mostly open degraded forests (61%); Destructive jhumming/ reducing cycle; Heavy dependence on forests: unsustainable extraction of non-timber forest produces; forest fires; erosion and landslides are some of the issues affecting the forests of Mizoram. He also provided the mechanism to reduce the pressure of forests. He advised to include the landscape based afforestation approach under Green India Mission synergized with the REDD-plus activities. Livelihood generation should be scaled up to reduce the pressure on forests. Subsidy on LPG and distribution of improved cook stoves will be helpful in reduction of fuel wood from the forests. He also stated that new Land Use Policy implemented by Government of Mizoram is playing a vital role in the reduction of *Jhum* cycle. He emphasized the need of training and capacity building of the staff for field measurement and carbon stock calculations.



Dr. Rajiv Pandey, Scientist 'E' from ICFRE delivered presentation on “Methodological issues on measuring, reporting and verification of REDD-plus projects”. He highlighted the REDD-plus work done in the state of Uttarakhand by ICFRE. He further highlighted the methods and procedures followed in Uttarakhand REDD-plus projects for the estimation of carbon stocks in the forests. He also explained the MRV system in the context of assessment of carbon stocks.

Measurement refers to information on the extent to which a human activity takes place leading to emission with coefficients that quantify the emissions or removals per unit activity. He stressed the need to use the remote sensing satellite data for the measurement of carbon stocks. Reporting implies the compilation of data and statistics for information in the format of a GHG inventory. Verification is the process of independently checking the accuracy and reliability of reported information or the procedures used to generate information.

5. Plenary Session

Dr. Ashwani Kumar, Director General, ICFRE, Chaired the Plenary Session on “Preparedness of State forest Departments in REDD-plus implementation and capacity building”. Participants from Mizoram, Assam, Meghalaya, Manipur and Arunachal Pradesh participated in the panel discussions. Mr. R. Thick, Working Plan Officer, Meghalaya, stressed the coordination and cooperation between Village Councils and Forest Departments. He said that in Meghalaya, only 4-5% of forests are under the control of Forest Department. Communities in Meghalaya are controlling forests through Village Council and forests in Meghalaya are also owned by private holders.

Mr. Satender Singh, Chief Conservator of Forests, Silchar (Assam) expressed his views by highlighting that through the increase in population and commercial exploitation has decreased the quality of forests in Assam. He said that better options should be provided to the local communities for the improvement of their livelihood. In Assam, stall feeding is not practiced and cattle hamper the regeneration in the forests. He further stressed that the REDD-plus programme should also include other departments for the betterment of the local communities. He also proposed for a two week capacity building programme for staff of Assam Forest Department.



Dr. Abdul Qayum, Dy. Conservator of Forests, Arunachal Pradesh highlighted that Jhumming is reduced in Arunachal Pradesh due to LPG distribution. The State Forest Department of Arunachal Pradesh is running various programmes like Assisted Natural Regeneration etc. He further explained about the work done in the preparation of e-working plan of Forest Division. He also explained about the plantation activities carried out using Compensatory Afforestation Fund Management and Planning Authority (CAMPA) Funds.

Mr. R.K. Amarjit Singh, Divisional Forest Officer from the state of Manipur described about the status of forests in Manipur and stated that Manipur is the only state to show the increase in the forest cover. He further explained the various work done by the Forest Department of Manipur. He also explained about City Forest Area programme and School Nurseries programme effectively run by the Forest Department.

Mr. Umakant, Officer on Special Duty, Mizoram Government at New Delhi stated that economic analysis and feasibility study should be done before the implementation of the REDD-plus project in North East India. Cost of implementation of REDD-plus project, sustainable management of forest and conservation should be calculated. He also explained about the New Land Use Policy (NULP) of Mizoram and implementation of policy can reduce the forest dependence by providing land for agricultural activities. He expressed his concerns that the synergies between the programmes can help to increase the livelihood of the locals and provide great opportunity for the improvement.

Dr. Ashwani Kumar, Director General, ICFRE was fully convinced that all the North East States are capable of taking on a REDD-plus programme. He further highlighted that cooperation is required between official from Forest Department and officials from Autonomous District Councils. He stressed that the synergy of Green India Mission with REDD-plus projects can be beneficial in mitigating climate change. Such synergies could be documented or at least a draft policy brief could be produced for tapping those synergies. He emphasized that two types of publications on REDD-plus programme should be prepared, one for the technical persons and one for the local communities in local language.

At the end of deliberations, **Dr. Hansraj**, Director, Advance Centre for Research in Bamboos and Rattan, Aizawl proposed a vote of thanks to all the participants. He further said that experts discussed on various aspects of REDD-plus including developing the methodology for REDD-plus, associated carbon stocks, community involvement in the REDD-plus programmes apart from governance issues in forestry



sector. He thanked State Forest Department for their collaboration and support in making the workshop successful.

6. Field Visit

Field visit to Reiek Village, Mamit of Mizoram was conducted on 29 January 2016 and all the participants participated in the field visit. Members of Village Councils and Young Mizo Association from two villages, Reiek and Ailawng were present during the meeting. Livelihood

pattern of two villages were explained by the local communities. Reiek Village has the population of about 450 Households with 2150 population. 70 % of the population is dependent on agriculture while the rest (30%) are government employed or doing business. Ailwang Village is comprised of 350 households and 750 populations. In Reiek Village, only 30% population has LPG connection. Transportation of LPG connection is a major problem faced by the local communities. In Ailawng village, only 20% population has a LPG connection. Turmeric is the major crop of villagers in Reiek and Ailawng. Multipurpose Society is operational in Reiek which manages processing and packing of Turmeric. The community proposed that a solar drier could help in faster processing of turmeric. Peoples from different villages are migrating to Reiek village for a better livelihood.

In villages, Village Council Members and President are elected every five years. Minimum land holding of the villagers is 1 hectare. Regulation of firewood collection from safety and supply forest is done by the Village Council President. There is a reduction in shifting cultivation practices. There is no production of biogas in village Reiek and Ailawng. Tea cultivation is also started in Reiek village. Spice Board of India is providing subsidy and technical skills for the cultivation of spices. Subsidy for terrace farming has also been provided by Horticulture Department. 100 families received New Land Use Policy (NLUP) incentive in Reiek Village for turmeric cultivation while in Ailwang only 60 families had received the incentives from NLUP. Handicraft production is not practiced in Reiek and Ailawng villages. Communities have shown the interest in cultivating bamboo if necessary support and subsidy are provided to them. Marketing problem is also faced by the local communities. There was no final conclusion on REDD-plus project site for Mizoram. Reik forest site could be one of the potential candidate site for a REDD-plus project in Mizoram. Details of site such as maps, forest management practices, forest cover role of communities in forest management, socio



economic aspects are being worked out for REDD-plus project.

At the end of the meeting with the community members, Dr. T.P. Singh, Assistant Director General (Biodiversity and Climate Change), ICFRE proposed vote of thanks to all the participants and local community members from Reiek and Ailwang villages for their support they tendered in making the workshop successful.



Interaction with the representatives of Village Council and Young Mizo Association

Schedule of two day Inception Workshop

28 th January 2016		
TIME	TOPIC	RESOURCE PERSON
09.30 – 10.00 A.M.	Registration	
10.00 – 10.45 A.M	Inauguration <ul style="list-style-type: none"> • Welcome and Introduction to Workshop: Dr. T.P. Singh, ADG, ICFRE • Introductory remarks and Introduction to project by Mr. Kai Windhorst, Chief Technical Advisor, GIZ • Address by Dr. N.S. Bisht, Director (International Cooperation), ICFRE • Inaugural Address by Chief Guest Pu Lalrinmawia Ralte, Hon'ble Minister of E&F, Mizoram • Vote of Thanks Dr. R.S.C. Jayraj, Director RFRI Jorhat 	
10.45 – 11.15 A.M	High Tea and Group Photo	
11.15 – 11.40 A.M.	Overview of REDD+ concepts, issues for India and role of State Forest Departments in REDD+ implementation	Sh. V.R.S. Rawat, Scientist 'F' (BCC), ICFRE
11.40 A.M. – 12.05 P.M.	Trans-boundary REDD-plus programme of ICIMOD	Dr. Bhaskar Singh Karky, ICIMOD Nepal
12.05 -12.30 P.M.	ICFRE-ICIMOD project on REDD-plus in North-eastern Himalayas	Dr. T.P. Singh, ADG (BCC), ICFRE
12.30- 12.55 PM	Valuation of goods and services from forests of Mizoram	Dr. N.S. Bisht, Director (International Cooperation), ICFRE
12.55-02.00 P.M.	Lunch Break	
02.00– 2.20 P.M.	Forest and forestry scenario in the state of Mizoram in the context of REDD-plus	Mr. Tsewang Gyaltsen, DCF Working Plan, Mizoram
02.20 -02-45	Methodological issues MRV and safeguards in the context of REDD-plus in Mizoram	Dr. Rajiv Pandey, Scientist 'E', BCC Division, ICFRE
02.45-3.00 P.M.	Tea Break	
3.00-4.30 P.M.	Plenary Session: Preparedness of SFDs in REDD+ implementation and capacity building Chair: Dr. Ashwani Kumar, Director General, ICFRE Panelists: <ul style="list-style-type: none"> • Dr. T.P. Singh, ADG (BCC), ICFRE: Setting the theme • Officers from SFDs of all North-eastern states Chair to sum up the discussions	
4.30 P.M.	Vote of thanks	Mr. Hans Raj, Scientist 'C', ACBR Aizawl
4.45 P.M.	Tea with snacks	
7.00-8.30 PM	Cultural programme	
8.30 onwards	Dinner	
29 th January 2016		
09.00 A.M. onwards Field visit to tentative REDD-plus project site		

List of Delegates/ Participants


S.No.	Name, Designation and Address	S.No.	Name, Designation and Address
1	Mr. Lalrinmawia Ralte Minister, Environment & Forests, Aizawl, Mizoram	2	Dr. Ashwani Kumar DG, ICFRE, Dehradun
3	Mr. L.R. Thanga Principal Chief Conservator of Forests, Aizawl, Mizoram	4	Mr. K. Jagdishwor Sinha Chief Conservator of Forests, Forest department, Manipur Mobile No. +919436204318 kjagdishwor@gmail.com
5	Dr. N.S. Bist Director (International Corporation) ICFRE, Dehradun.	6	Dr. R.S.C. Jayaraj Director, RFRI, Jorhat, Assam
7	Mr. Rosiama Vanchhong Addl. Principal Chief Conservator of Forests, Aizawl, Mizoram	8	Dr. T.P. Singh Assistant Director General (Biodiversity and Climate Change), ICFRE, Dehradun
9	Mr. Rohming Lien Thiek Shillong Mobile No. +919436999192 rohmingbuhul@gmail.com	10	Mr. Kai Windhorst GIZ/ICIMOD, Kathmandu, Nepal kaiwindhorst@giz.de
11	Dr. Satyendra Singh CCF, Southern Assam, Silchar, Assam Mobile No. +919435102834 satyendra96ifs@gmail.com	12	Mr. R.K. Amarjit Singh DFO/Chandel, Manipur Mobile No. +918979164185 dfochandel@gmail.com\
13	Mr. N.R. Pradhan Principal, FTS, Aizawl, Mizoram Mobile No. +919436141162	14	Mr. Rajib Kumar Kalita Scientist-E Mobile No. +9194353517 kalitark@icfre.org
15	Mr. Umakant OSD, Mizoram Govt. New Delhi Mobile No. +919868492206 agmu144@ifs.nic.in	16	Mr. L. Pachuau DFO, Aizawl Mobile No. +919436150944 ltmuana60@gamil.com
17	Prof. U.K. Sahao Prof & Head, Deptt. of Forestry, Mizoram University, Aizawl. Mobile No +919436150944 uksahao_2003@rediffmail.com	18	Mr. Jenny Sailo Assistant Conservator of Forests (Legal), Aizawl, Mizoram
19	Mr. Lalrammawii Sailo DFO Extension, Aizawl, Mizoram	20	Mr. R.K. Gupta Commissioner & Secretary (Power), Aizawl, Mizoram
21	Mr. H. Lalzarliana General Manager, Aizawl, Mizoram	22	Mr. C.Vanlalena DCF(Hqrs), Aizawl, Mizoram

23	Mr. Lal Thankima PA, Minister E&E, Aizawl, Mizoram	24	Dr. Umakant OSD, Mizoram House New Delhi
25	Mr. V.R.S. Rawat Scientist-F, BCC Division ICFRE, Dehradun	26	Dr. Rajiv Pandey Scientist-E, BCC Division ICFRE, Dehradun
27	Mr. Tsewang Gyaltsen Aizawl, Mizoram tgyaltson@gmail.com	28	Dr. Gaurav Mishra Scientist-B, RFRI, Jorhat, Assam.
29	Mr. A.Qayum qayum.iitk@gmail.com	30	Dr. Krishna Giri Scientist-B, RFRI, Jorhat, Asaam.
31	Mr. Z.D. Zonunthuanpa Aizawl, Mizoram	32	Dr. Mohd. Shahid Research Associate, BCC Division, ICFRE, Dehradun
33	Mr. M.Z. Singson DFO, Khawzawl Division, Aizawl, Mizoram	34	Mr. H.R. Bora Scientist-B, ARCBR, Aizawl, Mizoram
35	Dr. Hans Raj Scientist-C, ARCBR, Aizawl, Mizoram	36	Mr. Sandeep Yadav Scientist-B, ARCBR, Aizawl, Mizoram
37	Mr. Liankima Lailung Chief Conservator of Forests (Retd.)	38	V. Lalfala Conservator of Forests (CC), Aizawl, Mizoram

Presentations of the Workshop Speakers

Appendix III

Overview of REDD+ concepts, issues for India and role of State Forest Departments in REDD+ implementation




V.R.S. Rawat, Scientist 'F'
 REDD-plus negotiator
 Biodiversity and Climate Change Division
 Indian Council of Forestry Research and Education (ICFRE)
 P.O. New Forest Dehradun, 248006 INDIA
 email: rawatvrs@icfre.org

REDD: Reducing Emissions from Deforestation and Forest Degradation

Background of Negotiations

Role of Forestry Sector in Climate Change

- Forests both sources and sinks of carbon
- Forests contribute about 9-11% of global CO₂ emissions (IPCC, 2014)
- Forests provide large and (relatively low cost???) mitigation opportunities
- Provide other ecosystem goods and services to the communities to adapt to climate change

The Agenda of REDD

- Avoided Deforestation was discussed in the side events of UNFCCC in COP 9 (2003)
- Agenda Item on **"Reducing emissions from deforestation in developing countries: Approaches to stimulate action"** first presented in COP 11 Montreal (2005) in response to request of Papua New Guinea and Costa Rica
- COP 11 invited parties and accredited observers to submit views on related issues and also to organize a workshop

The climate change conventions...

COP 8	New Delhi, 2002
COP 9	Milano, Italy 2003
COP 10	Buenos Aires, Argentina 2004
COP 11	Montreal, Canada 2005
COP 12	Nairobi, Kenya 2006
COP 13	Bali, Indonesia, 2007
COP 14	Poznan, Poland, 2008
COP 15	Copenhagen, (Denmark) 2009
COP 16	Cancun, (Mexico) 2010
COP 17	Durban (RSA) 28 Nov - 9 Dec 2011
COP 18	Doha 29 Nov - 9 Dec 2011
COP 19	Warsaw 11-22 Nov 2013
COP 20	Lima (Peru) Nov Dec 2014
COP 21	Paris (France) Nov-Dec 2015

Active Agenda Item with COP and SBSTA (REDD) since 2005

Avoided Deforestation

Compensated Reduction

Reducing Emissions from Deforestation in Developing Countries (REDD)

Compensated Conservation?

"Compensated Reduction"

Financial incentives to Non Annex 1 countries

for

reducing present annual deforestation rate and stabilizing it in future

India made its stand clear in UNFCCC 1st Workshop on REDD in Rome (2006) and 2nd Cairns (2007), and COP-12 in Nairobi (2006)

- Nations not managing forests in a sustainable manner stand to benefit from the proposal
- Thereby favouring only avoidance of deforestation goes against very preamble of UNFCCC and Kyoto Protocol (sustainable development)
- Reducing deforestation only defers emissions
- Capable of shifting attention of Annex I countries from crucial domestic action for GHG reduction
- Nations who have implemented strong conservation regulations put at disadvantage

REDD: Bali and after

Main issues under discussion

Indian Viewpoint on REDD

Comprehensive REDD

Carbon Saved and Carbon Added

• Reducing Deforestation & Degradation

• Conservation, Sustainable Management of Forests, Increase in Forest Cover (A&R)

Indian submission incorporates above and seeks incentives on incremental and Baseline stocks

COP 13: December 2007

Bali Action Plan: "...Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries..."

[Para 1b (iii) of BAP] (Decision 1/CP.13)

REDD+: a slow progress under UNFCCC



- Copenhagen
- Cancun
- Durban
- Doha
- Warsaw
- Lima
- Paris



Copenhagen Accord and REDD

There was clear intent in the Copenhagen Accord to get REDD going without delay. The accord called for the “**immediate establishment of a mechanism including REDD-plus**”.

Copenhagen Accord and REDD+

In the context of meaningful mitigation actions and transparency on implementation, developed countries commit to a goal of mobilizing jointly USD **100 billion dollars a year by 2020** to address the needs of developing countries

A significant portion of such funding should flow through the Green Climate Fund

Establishment of a Green Climate Fund to support mitigation activities in developing countries, **including REDD-plus**

Methodological guidance for REDD plus:....
Decision 4/CP.15 requests developing country Parties, to take the following guidance into account

- d) To establish, **robust and transparent national forest monitoring systems** and, if appropriate, sub-national systems as part of national monitoring systems that:
 - (i) Use a combination of **remote sensing and ground-based forest carbon inventory approaches** for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes;
 - (ii) Provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities;

Cancun Forestry decisions

2010

Decision 1/CP.16 Scope of REDD plus finally agreed by parties (Cancun Agreements)

- (a) Reducing emissions from deforestation;
- (b) Reducing emissions from forest degradation;
- (c) **Conservation of forest carbon stocks;**
- (d) **Sustainable management of forest;**
- (e) **Enhancement of forest carbon stocks;**

Cancun forestry decisions....

REDD plus activities to be implemented in **three phases**:

1. beginning with the **development** of national strategies or action plans, policies and measures, and capacity-building,
2. followed by the **implementation** of national policies and measures and national strategies or action plans, technology development and transfer and **results-based demonstration activities**,
3. and evolving into **results-based actions** that should be fully measured, reported and verified (MRVable).

Cancun forestry decisions Safeguards.....

That actions are consistent with the **conservation of natural forests and biological diversity**, ensuring that the (REDD Plus) actions are **not used for the conversion of natural forests**, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to **enhance other social and environmental benefits**

Safeguards...

- Respect for the **knowledge and rights of indigenous peoples** and members of local communities,
- The **full and effective participation of relevant stakeholders**, in particular indigenous peoples and local communities, in the (REDD plus) actions



REDD+ Decisions Durban 2010

FCCC/CP.2010/5/Add.2

Decision 12/CP.17

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 as referred to in decision 1/CP.16

The Conference of the Parties,

Recalling decisions 2/CP.13, 4/CP.15 and 1/CP.16,

Recalling also decision 1/CP.16, paragraphs 69–71 and appendices I and II,



REDD-plus Decisions in Durban (2011)

- (i) guidance on systems for providing information on how **safeguards are addressed and respected**,
- (ii) modalities for **forest reference emission levels and forest reference levels**

COP-18 Doha (2012) Forestry Decisions non Carbon benefits

Agreed on a work programme for 2013 to address:

- (a) Ways and means to transfer payments for results-based actions;
- (b) Ways to incentivize **non-carbon benefits**;

*Also to initiate work on methodological issues related to **non-carbon benefits** resulting from the implementation of the REDD+ activities*

Warsaw Framework for REDD Plus

1. Results-based finance for the full implementation of activities in Decision 1/CP.16, Paragraph 70 (REDD+)

2. Coordination of support for the implementation of activities in relation to mitigation actions in the forest sector by developing countries, including institutional arrangements

Methodological guidance for activities relating to REDD+

1. National forest monitoring systems

2. Measuring Reporting and Verification (MRV) of REDD + activities

3. Technical assessment of Reference Emission levels/ Reference Levels submitted by Parties

4. Timing and frequency of submission of summary of information on how Safeguards are addressed and respected

5. Addressing drivers of deforestation and forest degradation

Key Elements of REDD+ and UNFCCC Decisions



COP 21 on REDD–plus agreed on:

- Non-market approaches
- Incentivising non-carbon benefits
- REDD-plus Safeguards: Additional guidance

Forests under Paris Agreements

Article 5 of the PA

1. Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases ..., including forests.
2. Parties are **encouraged to take action to implement and support, including through results-based payments, the existing framework as set out in related guidance and decisions already agreed under the Convention for: policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries;** and alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests, while reaffirming the importance of incentivizing, as appropriate, **non-carbon benefits associated with such approaches.**

Initiation of REDD plus Pilot projects in India

Uiam Sub-Watershed REDD+ Project, Meghalaya
17000.00 ha

Uttarakhand REDD Plus pilot project

Forest plus by USAID Grant US\$ 4 million

Under Forest Plus, Pilot projects are proposed in following parts of the country:

- Shimoga (Karnataka)
- Harda Dist Hoshangabad (Madhya Pradesh)
- East Sikkim (Sikkim)
- Chamba/Mandi (Himachal Pradesh)

• TERI REDD+ pilot projects financed by Norwegian Government 6 sites in different states has been initiated: (i) Mussoorie, in Uttarakhand), (ii) Renukoot, Uttar Pradesh, (iii) Chhindwara, Madhya Pradesh, (iv) Angul, (Odisha), (v) Sundarbans (West Bengal WB) and (vi) Nagaland

Uiam Sub-Watershed REDD+ Project, Meghalaya

- A pilot project in the East Khasi Hills in Meghalaya being run jointly by a California-based non-profit organization, Community Forestry International (CFI) and the Mawphlang community (Meghalaya).
- The total project area is 17,052 ha.
- The net CO₂ additionality per year on account of avoided Deforestation and degradation and afforestation in the project area works out as under:
Net CO₂: 11,444 t CO₂
- The project is registered with Plan Vivo Standard.

India's draft national REDD+ policy and Strategy: 7 Chapters

1. Overall objective and intent
2. Implementation principles
3. Compatibility with UNFCCC decisions
4. National Laws
5. Coverage
6. Benefits of REDD+ implementation
7. Operationalization of REDD+ Policy:

Overall objective and intent

1. Objective:

Overarching objective of the policy is to facilitate implementation of REDD+ in conformity with:

- relevant decisions of UNFCCC,
- the "Warsaw Framework for REDD- Plus",
- and the national legislative framework

REDD+ is to be community driven, i.e., local communities partners and stakeholders in steering the implementation of REDD+ at the grassroots level.

The policy clearly spells out the financial incentives the local communities.

The Policy ensures the protection, conservation of all natural resources including forests and other tree resources

Overall objective and intent

The policy devolves major responsibility for REDD+ activities and measurement of their performance on the **State Forest Departments (SFDs)**

It places high priority on capacity building of the local communities, all levels of the SFD, and staff of other line departments with a view to facilitating implementation of REDD+, and creating awareness about its benefits to the community, and sustainable management of natural resource of forests

Overall objective and intent

equal importance to **all the ecosystem services flowing from the forests**, which are traditionally harvested or enjoyed by the local communities, and will treat carbon as one such important service.

Local communities, wherever they are managing or co-managing forest or tree resources will have first right over the financial incentives accruing as a result of REDD+ performance in the country.

Strategies for REDD-plus in NE region



**Training capacity building
Support CDM/REDD+
carbon sink programme
design and implementation**

**Opportunities for REDD Plus
Creating Market for REDD-plus
Fund based or Market based**

India's Potential for REDD-plus

- Well established system National Forest Monitoring
- Integration of Remote Sensing Satellite Imagery for forest assessment.
- Forest Conservation oriented policies and afforestation programmes in India
- Well established forestry Institutions ICFRE/FSI/IIFM/SFDs
- Involvement of local communities for forest management through Joint Forest Management and Village Community Forest (*Van Panchayats in UK*)
- Well established forest governance and rights of local communities

Joint Forest Management:

1,12,816 JFM committees have been formed covering about 25 million ha of forest area.

JFM has enabled protection and regeneration of existing forests, and raising of forest plantations, which is contributing in conservation of existing forests as also the carbon stocks.

The concept of JFM in India is a step towards the **conversion of low-productivity forests to productive forests**. Improving the stocking of poorly stocked forests will also in turn increase carbon stocks. Currently, JFM covers approximately 29.8% of the total forest area of the country (ICFRE 2011).

Forest dwelling communities JFM and REDD-plus

Tribal communities, forest dwellers and other local communities have always enjoyed legal safeguards to exercise their customary rights and traditions.

There is ample scope and opportunity for integrating the REDD initiative with JFM.

For this purpose, methodologies and modalities for a procedural framework will need to be worked out to ensure people's participation and sharing of the benefits accruing from REDD incentives.

India needs to do in light of various REDD-plus decisions/ agreements

- Develop a REDD strategy or action plan for REDD plus implementation and capacity building
- Developing safeguards Information system of
- Pilot/ Demonstration Projects on REDD plus
- Developing Reference Emission Levels/Reference Level for REDD plus
- Developing a transparent national system of MRV
- Quantification of REDD plus benefit and sharing mechanism with REDD+ Communities
 - Finance for REDD Plus actions
- Performance based payments for emission reduction

Carbon Market- Structure

International Carbon Market

Compliance/
Regulatory
structure

Voluntary
Structure

REDD plus yet not
agreed UNFCCC

REDD/REDD plus

UNFCCC Website is source of all information related to REDD +



Thanks

This was a
presentation from
ICFRE
www.icfre.gov.in



For further detail pl Contact:
rawatvrs@icfre.org

Appendix IV

Sharing experiences from ICIMODs Landscape approach to REDD+

Bhaskar Singh Karky (PhD)
Resource Economist
bkarky@icimod.org

International Centre for Integrated Mountain Development
Kathmandu, Nepal



FOR MOUNTAINS AND PEOPLE

ICIMOD
International Centre for Integrated Mountain Development

Mission:
To enable sustainable and resilient mountain development for improved and equitable livelihoods through knowledge and regional cooperation




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Inter-governmental organization

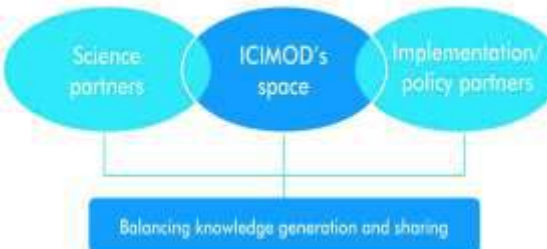
8 member countries:
Afghanistan
Bangladesh
Bhutan
China
India
Myanmar
Nepal
Pakistan

ICIMOD'S role:
Linking Science-Policy-Practice




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Basic science Applied science Knowledge sharing Policy/practice



Overarching goal at regional level of REDD + Himalaya



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- To improve the conditions for implementing REDD measures to mitigate climate change that are socially and environmentally sound in four Himalayan countries.
- Building a regional REDD learning platform to foster south-south learning.






Implementing partners for REDD+ Himalaya




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- Bhutan:** Department of Forests and Park Services/ Ministry of Agriculture and Forests
- India:** Indian Council of Forestry Research and Education/Ministry of Environment, Forests and Climate Change
- Myanmar:** Forest Department/Ministry of Environmental Conservation and Forestry
- Nepal:** REDD Implementation Centre/Ministry of forests and Soil Conservation

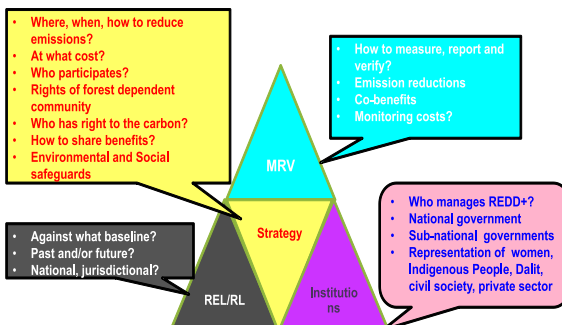


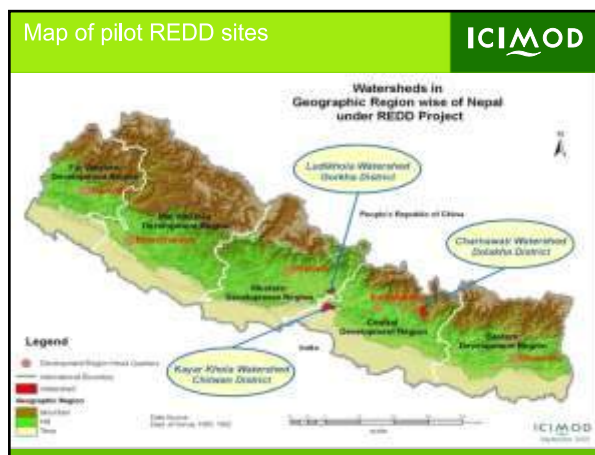



The readiness elements of REDD+



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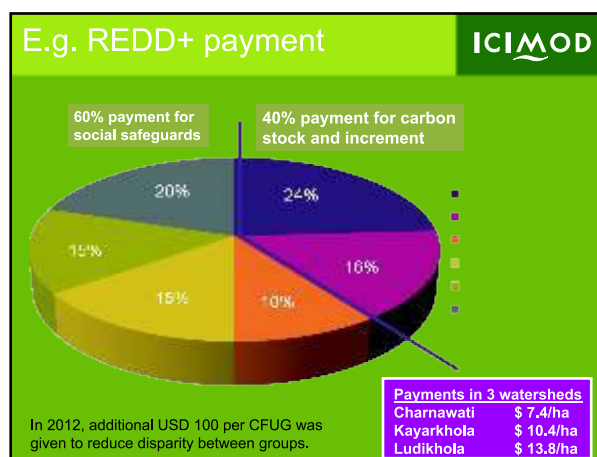
Forests and project area in three watersheds

Watershed (District)	Watershed [ha]	Forest in watershed [ha]	Total Community Forest [ha]	Forest area [ha]	
				Dense	Sparse
Charnawati (Dolakha)	14,037	7,492	5,996	3,899	2,097
Kayarkhola (Chitwan)	8,002	5,821	2,381	1,902	479
Ludikhola (Gorkha)	5,750	4,869	1,888	1,634	252
Total	27,789	18,182	10,266	7,437	2,829

Socio-demography data

Watershed (District)	CFUGs	CFUG Households	Population	Major ethnic groups
Charnawati (Dolakha)	58	7870	42609	Tamang, Chhetri, Brahmin, Thami, Dalit
Kayarkhola (Chitwan)	16	4146	23223	Chepang, Tamang
Ludikhola (Gorkha)	31	4110	23685	Magar, Gurung, Tamang, Dalit, few Brahmin and Chhetri
Total	105	16144	89517	

- ### Drivers of D & D
- Unsustainable harvesting of forest products**
 - Poverty and high dependence on forest
 - Fuelwood is a major source of residential energy
 - No scientific management of forest
 - Increasing pressure on forest and few alternative energy options
 - Weak governance and law enforcement
 - Forest encroachment**
 - Settlement expansion
 - Agriculture expansion
 - Infrastructure development
 - Lack of land use planning
 - Political patronage
 - Over grazing**
 - Lack of improved animal husbandry and pasture management practices
 - Forest fire



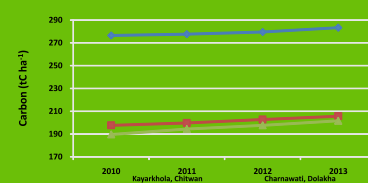
How was REDD money used?

ICIMOD

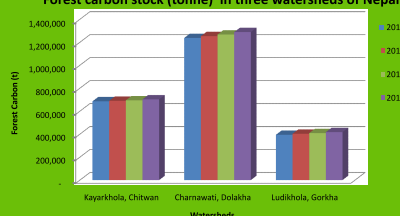
Expenses activities	Expenditure Status in %			
	Dolakha	Gorkha	Chitwan	Average
1. Livelihood improvement activities	53.8	50.3	48.5	50.9
2. Capacity building (awareness, workshop)	9.7	9.4	8.3	9.1
3. Forest carbon monitoring (training LRPs for forest inventory)	7.2	4.3	27.7	13.1
4. Alternative energy schemes	11.9	15.0	13.5	13.5
5. Others (Forest mgmnt activities + enrichment plantation)	17.4	21.0	1.9	13.4
	100.0	100.0	100.0	100.0
Co-financed by CFUGs (% in total invested amount)	43.9	2.3	69.9	49.2

Real biomass enhancement

Mean annual carbon stock and increment in three watersheds



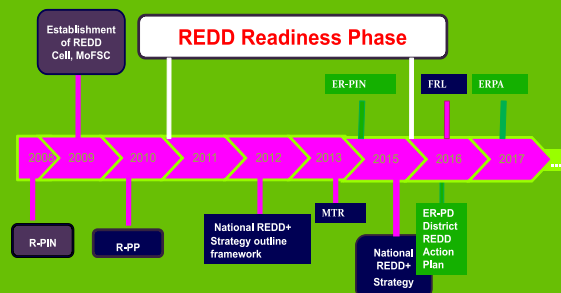
Forest carbon stock (tonne) in three watersheds of Nepal



Landscape of REDD+ in Nepal

ICIMOD

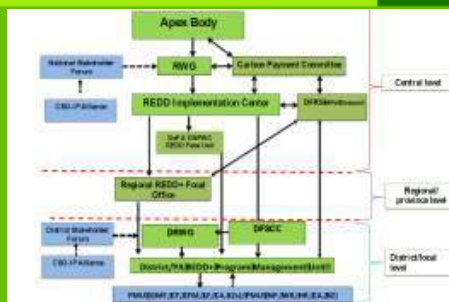
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Institutional arrangement in Nepal

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Developing State REDD Action Plan

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PREPARE

- Orientation of the SRAP process
- Capacity assessment and awareness raising of state level stakeholders
- State institutional and stakeholder analysis

ANALYZE

- Spatial analysis: Identification of key parameters, baseline information and mapping
- Participatory analysis of "Drivers"

PLAN

- Identification of state intervention "packages"
- Review of packages against REDD+ safeguards
- Estimate financial and technical feasibility: develop cost norms for packages

MONITOR

- Develop monitoring frameworks for state and site level interventions
- Identify potential 'incentive packages' that link resource distribution to verifiable performance indicators

APPROVE & IMPLEMENT

- Formulate into a "SRAP document" for approval
- Site-level planning: local-level negotiated agreements for adaptation and implementation of activity packages

Validating the District REDD Action Plan (DRAP)

ICIMOD

FOR MOUNTAINS AND PEOPLE



Thank you

ICIMOD

FOR MOUNTAINS AND PEOPLE



Appendix V

ICFRE-ICIMOD REDD+ Programme in North Eastern Himalayas



Dr. T.P. Singh
Assistant Director-General
Biodiversity and Climate Change
Indian Council of Forestry Research and Education,
28th January 2016
Aizawl, Mizoram

Cancun Forestry decisions

Decision 1/CP.16 (2009) Scope of REDD plus finally agreed by parties

- (a) Reducing emissions from deforestation
- (b) Reducing emissions from forest degradation

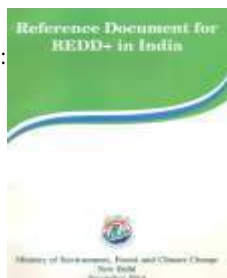
- (c) Conservation of forest carbon stocks
- (d) Sustainable management of forest
- (e) Enhancement of forest carbon stocks

Reference document for REDD+ in India:

The document based on the existing knowledge available on the subject and roles and responsibilities of different departments, institutions, civil society and local communities

Necessary guidance and framework for REDD+ implementation, covering:

- National forest reference level,
- Safeguards,
- MRV mechanism,
- capacity building, and
- identification of research gaps



Major responsibility for REDD+ activities and measurement of their performance on the State Forest Departments (SFDs)

High priority on capacity building of the local communities, all levels of the SFD, and staff of other line departments

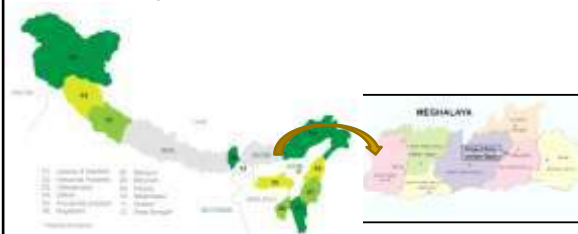
Roadmap for REDD+ in India

- Phase 1 – National Strategy and Action Plan Development (MoEF)
 - Phase 2 – Readiness and Initial Action
 - Phase 3 – Countrywide Implementation
- } Overlapping

Meghalaya Project (1st REDD+ in India)

A REDD+ pilot project in the East Khasi Hills in Meghalaya

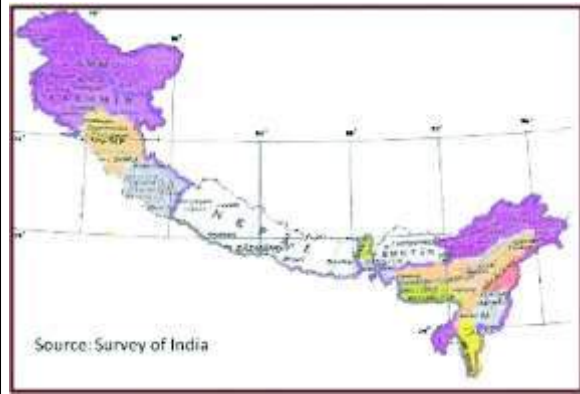
Community Forestry International (CFI) and the Mawphlang community working together since 2005 to preserve a 17000 Hectare area in the Umiang basin watershed region



Other Projects under implementation

- Uttarakhand REDD+
 - ICFRE and Uttarakhand Forest Department
- FOREST PLUS of USAID
 - MoEF, ICFRE Institutes and FSI
 - 4 Landscapes (in HP, MP, Sikkim and Karnataka)
- World Bank-GEF Project
 - ESIP
 - To start this year
- Collaborative Pilot between ICFRE and ICIMOD
 - Eastern Himalayas
 - In India, Nepal, Bhutan and Myanmar

Indian Himalayan Region



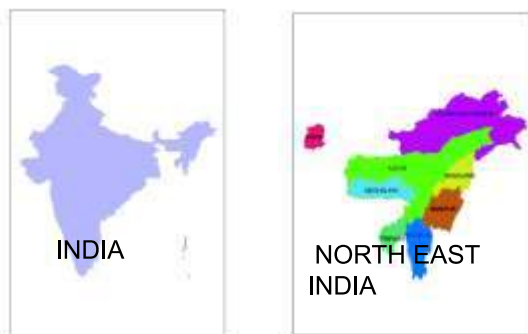
Indian Himalayan States

Himalayan State	Area (in km ²)	% share of India's total area	% of area of Indian Himalaya
Jammu & Kashmir	222236	6.76	41.83
Arunachal Pradesh	83743	2.55	15.76
Himachal Pradesh	55673	1.69	10.48
Uttarakhand	51124	1.56	9.62
Meghalaya	22429	0.68	4.22
Manipur	22327	0.68	4.20
Mizoram	21081	0.64	3.97
Nagaland	16579	0.50	3.12
Assam Hills*	15322	0.47	2.89
Tripura	10491	0.32	1.98
Sikkim	7096	0.22	1.34
West Bengal Hills*	3149	0.10	0.59

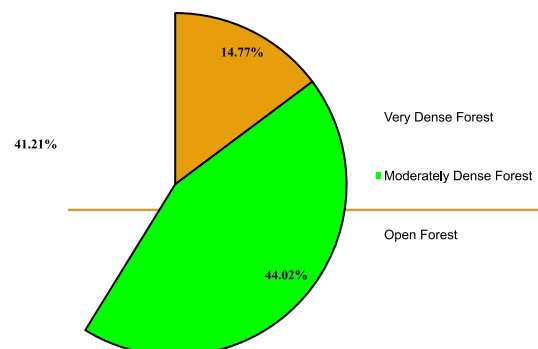
Forest cover and total growing stocks in Indian Himalayan States

Himalayan State	Forest Cover (Sq. Km)	Total Growing Stock (million cum)
Arunachal Pradesh	67410	567.205
Assam Hills	12189	-
Himachal Pradesh	14679	342.460
Jammu and Kashmir	22539	375.133
Manipur	17090	81.569
Meghalaya	17275	66.375
Mizoram	19117	77.434
Nagaland	13318	53.636
Sikkim	3359	20.849
Tripura	7977	29.255
Uttarakhand	24496	481.006
West Bengal Hills	2289	-

Location of North East India



Forest Cover of North East India



Forest Cover Change in North East India between 2011 and 2013

State	Forest Cover (2011) (km ²)	Forest Cover (2013) (km ²)	Change in Forest Cover wrt ISFR 2011 (km ²)
Arunachal Pradesh	67410	67321	-89
Assam	27673	27671	-2
Manipur	17090	16990	-100
Meghalaya	17275	17288	13
Mizoram	19117	19054	-63
Nagaland	13318	13044	-274
Sikkim	3359	3358	-1
Tripura	7977	7866	-111
Total	173219	172592	-627

Source: (ISFR 2013) FSI, Dehradun

ICIMOD-ICFRE REDD+ Project

- Part of Trans-boundary REDD+ Programme of ICIMOD in 4 countries
- Improve capacity on REDD+ understanding in Indian Himalayas
- Focus specifically on the North-Eastern States of India
- Contiguous with other three countries: Nepal, Bhutan and Myanmar

Logical Framework

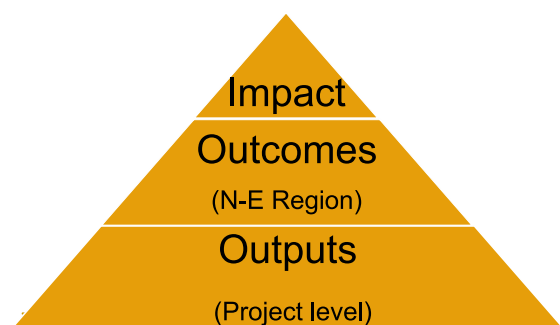
- Developed through a detailed stakeholder consultation workshop at Dehradun (Oct 2014)
 - Jointly by ICFRE and ICIMOD
- Decided that Impacts, Outcomes and Outputs shall be measured by
 - Indicators
 - Means of Verification (MoV) and
 - Risks and Assumptions

Development of Results Framework

Impact Pathways Analysis

- Programme Outputs
 - Measurable indicators at Project level
- Programme Outcomes
 - Enhanced Capacity and Improved understanding of scientific knowledge in N-E region
- Programme Impact
 - Integration of action plan with policy at National Level

REDD+ Results Framework



Programme Outputs

- Output 1
 - Increasing capacity of stakeholders
 - By Training, Research and Communication
- Output 2
 - Development of Standard Protocols (MRV, SIS)
 - Guidelines on benefit sharing and incentives
 - Data collection, analysis and validation
- Output 3
 - Well defined roles and responsibilities / Institutional Mechanisms

Programme Outcomes

1. Enhanced capacity of development and implementation of REDD strategy and action plan at each level (community, State and National levels)
2. Improved understanding of scientific knowledge for precise estimation of carbon stocks

Programme Impact

- REDD+ action plans are integrated with national forest policy and institutional framework
- Effective and equitable implementation of REDD+
 - Which is environmentally sound, gender sensitive and socially inclusive

Specific Project Objectives

- Development of Methods for calculating, modelling and forecasting carbon storage
- Developing instruments in preparation for REDD+ Readiness in North-Eastern India
- Exchange of experience and mutual learning for other three countries
 - MRV, SIS, Reference Levels (Regional)
- Establishment of South-south cooperation

How to achieve these objectives?

- Project period from 2015-2019
- Funding of Euro 300,000 (Rs. 2.25 Crores) is granted to ICFRE by GIZ-Nepal through ICIMOD
- Detailed year – wise activities have been worked out
- Candidate State is Mizoram (*To begin with*)
- However, capacity building of all the North-Eastern States is envisaged

Activities completed in 2015

Two side events during December '15 at UNFCCC CoP21 in Paris

- REDD+ in Trans-boundary landscapes
- Mitigation and adaptation of climate change in Himalayan ecosystems

Activities planned from Jan.- Jun. 2016

- Inception Workshop at Aizawl (28-29 Jan.)
- Formation of REDD+ Working Group with members from all N-E States (& Uttarakhand)
- Stock taking review to understand climate change and REDD+ implementation in country
- Site selection in Mizoram and preliminary analysis
- Scoping study of REDD+ in Kailash Landscape of Uttarakhand Himalayas

Activities planned from July to Dec '16

- Development of Training Manuals
- 03 Training/Workshops on REDD+ in N-E States
- Scoping study of promoting Bamboo plantation in addressing REDD+ Objectives (Mizoram)
 - 01 Workshop for finalizing the same
 - Starting preparation of State REDD+ Action Plan for Mizoram (and Uttarakhand)
- Pilot landscape restoration site in Cheerapunji (RFRI)

ICFRE Pilot Project in Uttarakhand (Initial action, Phase—2 of REDD+)

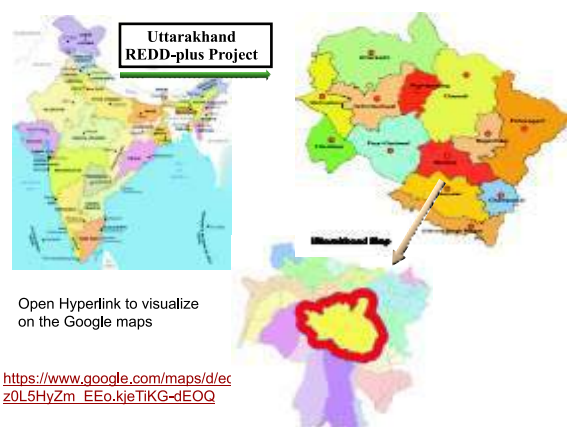
- Community managed forest like **Van Panchayats** in Uttarakhand are example of community control over forests.
- **REDD+** actions are initiated as demonstration activities
- With sizable potential sequestration of carbon and biodiversity conservation

Project Location and area

Area selected in consultation with Uttarakhand Forest Department

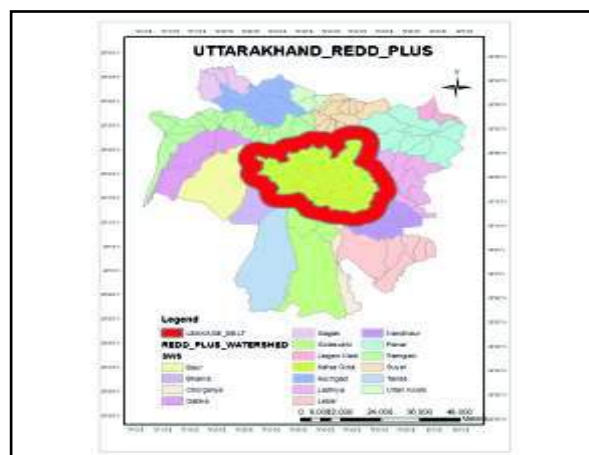
The Project is implemented in 50,000 Ha. of *Nainital District*

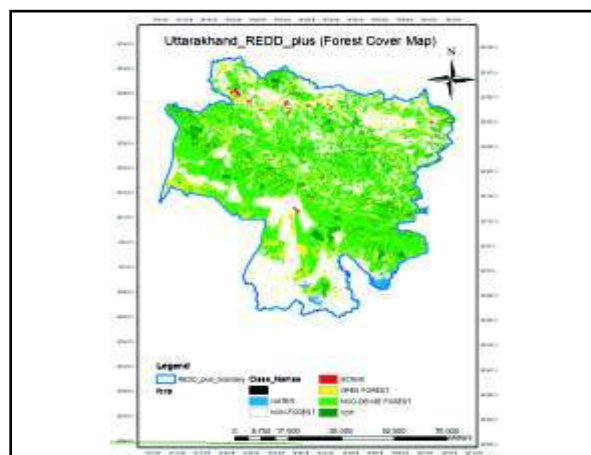
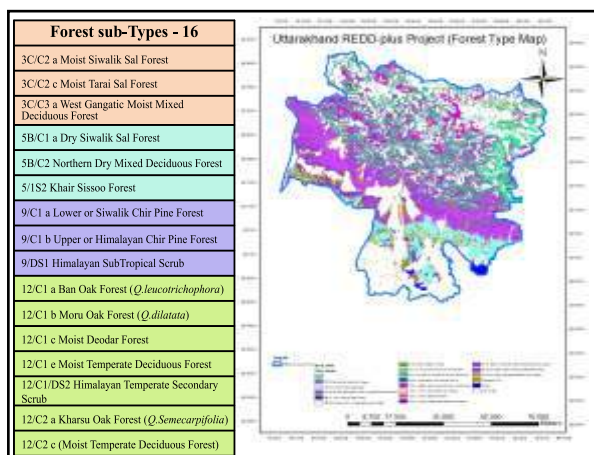
Kosi Watershed – Kalsa Gola sub-watershed



Uttarakhand REDD-plus Project Profile

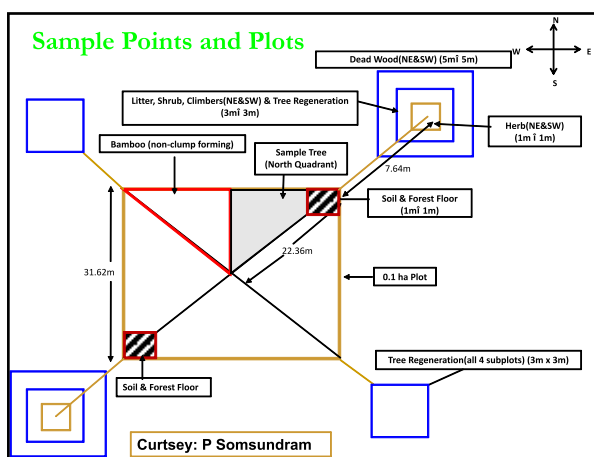
District	Total Forest Area(ha)	Total Area(ha)
Kalsa Gola (Project Area)	45856	61194
Leakage Area	53226	69167
Reference Area	250124	423532
Project Zone	349206	553893





Objectives of Pilot in Van Panchayats

- Estimation of C status in the selected *Van Panchayats*
- Developing a transparent MRV system
- Developing an SIS
- Capacity building of participating communities
- Getting the project registered for carbon credits



Drivers of Degradation at Project Site

- Collection of fuelwood is for cooking and source of energy for heating during winter months.
- Fodder collection for animals.
- Cattle Grazing in the Forest.
- Fire
- Collection of Understorey vegetation for livestock bedding and manuring.
- Encroachment in the forest.
- Illegal felling.



Measures to Address the Drivers of Degradation

- Security guard for the patrolling in the *Van Panchayat*.
- Plantation of fodder grasses.
- *Pirul* collection contributes reduction in fire incidence.
- Small water reservoirs can be prepared to store the rain water .
- Check Dam construction to control the flow of water and soil erosion.
- Appropriate Tool/implements can be provided to Van Panchayats to control the fire occurrence.
- Need for more awareness programmes to control forest fire.
- Improved Cook Stove and LPG can be provided to the community to reduce the usage of fuelwood hence addressing forest degradation.

Learnings from other Projects

- Green India Mission
- SLEM Project of ICFRE and Uttarakhand Watershed Directorate
- FOREST-PLUS Project of FRI and FSI
- Rainfed Authority Project, FRI

Way forward

- REDD+ is an innovative way to mitigate climate change through sustainable development
- India started strategy development and piloting
- Pilot Projects shall provide good learning platform for this mechanism
- Need to learn from within and outside country
- Synergizing with other Projects
- Capacity building for further dissemination

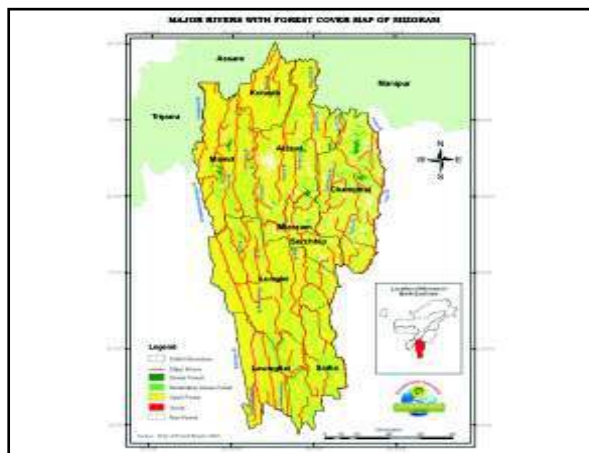


Thanks

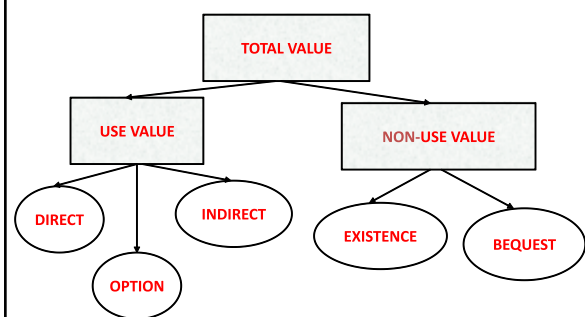
Valuation of Goods and Services from forests of Mizoram

Dr. N. S. Bisht

Director (International Cooperation)
Indian Council of Forestry Research and Education, Dehradun



TOTAL ECONOMIC VALUE



Ecosystem services (MEA, 2005)

Provisioning	Regulating	Cultural	Supporting
Goods produced or Provided by ecosystems	Benefits obtained from regulation of ecosystem processes	Non material benefits obtained from ecosystems	Services necessary for the production of all other ecosystem services
Food	Climatic regulation	Spiritual	Soil formation
Timber	Disease control	Recreational	Nutrient cycling
Fuel wood	Flood control	Aesthetic	Primary production
NTFPs	Detoxification	Inspirational	
Fresh water		Educational	
Fiber		Educational	
Bio-chemical		Communal	
Genetic resources		Symbolic	

Notified Forest areas of Mizoram

Category of Forests	Area (km ²)	Year of Notification
Riverine Reserved Forests	1832.50	1965
Inner-line Reserved Forests	570.00	1878
Roadside Reserved Forests	97.20	1965
Other Reserved Forests	1873.65	1964 onwards
Compensatory Afforestation Areas	89.98	1993 onwards
Non Notified Forest Areas/ Tree Cover Areas	833.00	
Autonomous District Council Forest Areas		
Chakma Autonomous District Council	1369.00	
Lai Autonomous District Council	976.00	1976
Mara Autonomous District Council	217.00	1981
Village Safety and Supply Reserves	238 Nos.	1996
Protected Area Network	1728.75 (488 sq. km, DTR - 2011)	1994-2011
Total	9,587.08	43.16% of G.A.

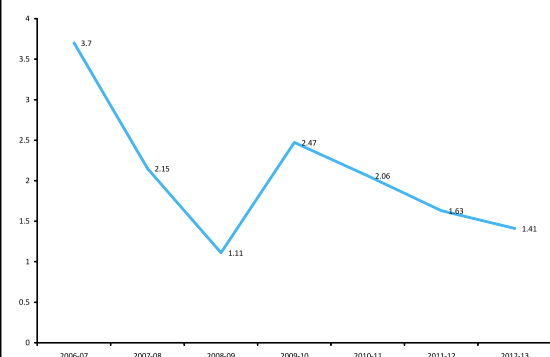
Methods used

- Annual Revenue of Forest Department
- NPV
- By using Costanza *et al.* (1997) values
- Valuation based on People's perception

Annual Revenue of Forest Department

Items/ Year	2006-07	2010-11	Items/ Years	2006-07	2010-11
A. Mahals			Broomsticks		1209585.00
Bamboos	15056550.00	-	Bamboos	3634694.00	7007242.00
Fish	137005.00	-	Cane	278.00	43728.00
Sand	2018500.00	-	Stone	592926.00	68665.00
Broom grass	10655000.00	-	Gravel	5426.00	6250.00
Anchiri	-	-	Sand	1690215.00	165795.00
B. Wood products			Fish	9988.00	-
Timber	661189.00	6337378.00	Boulders	79337.00	9584.00
Fuel wood			Bricks	-	
Poles			Others		121445.00
Thinning yields & transportation fees	612962.00	839177.00	D. Auction of illegally seized forest produce	466432.00	3690700.00
C. NTFPs			Rent, Fine, Fee etc.		1156186.00
Charcoal	8472.00	-	TOTAL	37045216.00	20655735.00

Annual revenue of forest department (2006-07 to 2012-13)



Valuation by using NPV

Category of forest	VDF	MDF	Open forest
Area (ha)	6,460.00	2,89,621.00	6,13,818.00
Per hectare value (Rs.)	10,43,000.00	9,39,000.00	7,30,000.00
Total value (Rs.)	673,77,80,000.00	27,195,41,19,000.00	44,808,71,40,000.00
		Grand Total	72,677,90,39,000.00
Area (ha)	6,460.00	2,89,621.00	6,13,818.00
Per hectare value (Rs.)	38,35,000.00	23,62,000.00	19,03,000.00
Total value (Rs.)	2477,41,00,000.00	68,408,48,02,000.00	11,680,95,56,000.00
		Grand Total	18,769,54,56,000.00

Valuation based on Costanza *et al.* (1997) framework

	Value US\$/ha	Very dense forest (Ha)	Moderately dense forest	Open forest (Ha)	Total
Ecosystem services		6,460.00	2,89,621.00	6,13,818.00	909899.00
Climate regulation	223.00	1440580.00	64585483.00	136881414.00	202907477.00
Disturbance prevention	5.00	32300.00	1448105.00	3069090.00	4549495.00
Water regulation	6.00	38760.00	1737726.00	3682908.00	5449394.00
Water supply	8.00	51680.00	2316968.00	4910544.00	72179192.00
Erosion control	245.00	1582700.00	70957145.00	150385410.00	222925255.00
Soil formation	10.00	64600.00	2896210.00	6138180.00	9098990.00
Nutrient cycling	922.00	5956120.00	267030562.00	565940196.00	838926878.00
Waste recycling	87.00	562020.00	25197027.00	53402166.00	79161213.00
Food	32.00	206720.00	9267872.00	19642176.00	29116768.00
Raw material	315.00	2034900.00	91230625.00	193352670.00	286618195.00
Genetic	41.00	264860.00	11874461.00	25166538.00	37305859.00
Recreation	112.00	77520.00	32437552.00	68747616.00	101262688.00
Cultural	2.00	12920.00	579242.00	1227636.00	1819798.00
Total	2008.00	12971680.00	581558968.00	1232546544.00	1826431202.00
Value (Rupees)		882074240.00	39546009824.00	83813164992.00	12424,12,49,056.00

Sampling design

Districts	Number of total HH		HH Covered		Total	Forest Ranges covered
	Urban	Rural	Urban	Rural		
Aizawl	60857	17749	164	105	269	5
Champhai	9148	14639	52	84	136	7
Kolasib	9098	7058	52	74	126	9
Lunglei	13040	19642	44	106	150	5
Mamit	2788	13354	30	78	108	6
Serchhip	6091	6264	38	67	105	9
Lawngtlai	3630	16775	42	102	144	6
Saiha	6468	8077	48	86	134	3
TOTAL	111120	103558	470	702	1172	51


Socio-economic details of the respondents (%)

Parameters	Average	Parameters	Average
Occupation		Income (Rs/m)	
Farmers	60.80	Up to 10,000	19.02
Self employed	15.16	10000 – 25000	41.35
Govt employees	12.50	25000 – 50000	27.12
Social workers	11.24	50000 – 100000	12.61
Age group		Literacy	
Up to 30	10.42	Up to class 5	7.74
30 to 45	38.24	Class 5 to 10	24.96
45 to 60	40.13	Class 10 to 12	33.53
Above 60	11.27	Class 12 and above	33.64
Family size			
Up to 4	20.40		
5 to 6	46.48		
7 and above	33.11		

Timber, small wood and poles					
Timber and small wood					
Districts	Range (cft)	% HH	No. of HH	Av. qu. (cft)	Total Quantity
Aizawl	< 50	17.39	2019	38.87	74478.53
65.39'	51-100	34.59	4016	81.24	326259.84
(11607)²	101-200	37.34	4334	132.66	574948.44
Total	>200	10.66	1238	220.48	272954.24
					1252641.05
Poles					
Use range	% HH	No. of HH	Av. No.	Total number	
<20	25.40	2949	14	41286	
21-30	33.18	3852	24	92448	
31-40	27.43	3184	36	114624	
>40	14.06	1632	52	84864	
				332222	

Timber – 78,678777.29 cft Annual consumption 74,932.16 cum
Poles - 21,80,136 -do- 6,93,397 @ Rs. 50.00 each
50% Timber @ Rs. 15,750.00; 50% small wood @ Rs. 5,250.00
TOTAL VALUE = Rs. 82,14,56,630.00

Fuel wood from Forests



The collage consists of six photographs arranged in two rows of three. The top row shows: 1) A large stack of cut logs on a dirt ground. 2) A tall, narrow pile of logs standing upright. 3) A sawmill building with a large metal roof. The bottom row shows: 1) A pile of logs bundled together. 2) A dirt road in a village with traditional houses. 3) A group of people standing next to a truck loaded with logs.

Fuel wood

Family size	Aizawl	Champhai	Kolasib	Lunglei	Mamit	Serchhip	Langtlai	Saiha	Total
Up to 4	3761	1938	1266	5631	3186	477	3774	1471	86016
5 to 6	9171	6781	2689	9297	4946	2804	8621	4460	243845
7 and above	4817	5920	3103	4714	5213	2983	4378	2146	232918

FSI (2011) 2.19 kg/capita/day in NE region
 562778 x 2.19 x 365 x Rs. 2.50 per kg = Rs. 112,46,43,484.00
 Dwivedi (1996) 400 kg/year
 FSI (1996) 652kg per capita/Year in Uttarakhand
 Singh (2005) per Ha value of FW collected from forest Rs. 1,297 to Rs. 3,793 per Ha
 Singh (2007) subsidy on fuel wood
 Balland *et al.* (2006) Rs. 200/LPG demand reduced by 44%;
 usage increased 7% -78%
 Cost Rs. 96,000.00 for villages 200 popln. ; Rs. 2.40 lakh for 500 popln

Bamboo culms

Growing stock - 56,02,69,931 culms (NESAC)
Annual yield - 11,20,53,986 culms
or 5,60,270 tonnes (5kg per culm dry weight)
Value = Rs. 84,04,05,000.00/ yr @ Rs. 1,500/T
10% = Rs. 8,40,40,500.00 per annum

Bamboo shoots

The collage consists of seven square images arranged in two rows. The top row contains three images: the first shows several bamboo shoots with their dark, fibrous sheaths; the second shows a person's hands peeling a bamboo shoot; the third shows a pile of peeled bamboo shoots. The bottom row contains four images: the first shows a pile of peeled bamboo shoots; the second shows bamboo shoots being sliced; the third shows sliced bamboo shoots in a pot of water; the fourth shows a pile of cooked, shredded bamboo shoots.

Fresh bamboo shoots

• 91% respondents consumed fresh bamboo shoots	
• 62.28% HH i.e. 1,24,244 x 2 bundles per week	= 2,48,488
• 28.72% HH i.e. 57,294 x 1 bundle per week	= 57,294
• Annual consumption of fresh bamboo shoots bundles	= 3,05,782
• assuming 90% share of ' <i>Mautuai</i> ' bundles	= 2,75,204
• 10% share ' <i>Rautuai</i> ' bundles	= 30,578
• Economic value of ' <i>Mautui</i> ' 2,75,204 x Rs. 50.00	= 1,37,60,200.00
• Economic value ' <i>Rautui</i> ' = 30,578 x Rs. 50.00	= 15,28,900.00
• Total estimated value (Rupees)	= 1,52,89,100.00

Fodder

- Livestock (2012) 3,84,604 (Pigs 73.35%)
- Pandey (2011) – ACU 13.01kg/day (57% forest biomass)
- Pandey (2011) – Rs. 32.00/ day value of fodder
- Cattle, Mithun (1,931), goats etc. not included
- 1 ACU = 3 Pigs
- Banana stem; *Mikania* leaves (50% of total food)
- Rs. 5.33 per day
- Rs. 1,33,323 x Rs. 5.33 x 365 = 25,93,73,230.35
- FSI – Livestock 518.6 m = 381.8 ACU
- 22.63% fully dependant = Rs. 8907 crore

Total value (Goods)

Items	Value (Rs.)	% value
Fuel wood	112,47,67,383.00	41.34
Timber, small wood and poles	82,14,56,630.00	30.19
Fodder	25,93,73,230.35	9.53
NTFPs	25,14,71,000.00	9.24
Bamboo shoots	15,28,91,000.00	5.63
Bamboo culms	8,40,40,500.00	3.08
Charcoal	2,70,00,000.00	0.99
TOTAL	272,09,99,743.35	100.00

ES-1: Climate amelioration

- Das (1979) - US\$ 1,93,250 = Rs. 1.32 crore
- O₂ - \$ 31,250; Soil fertility - \$ 31,250
- Air pollution & soil erosion - \$ 62,000
- Water recycling - \$ 37,500; Home for birds & animals - \$ 31,250
- Direct benefits 0.3%
- **Dasgupta (2004)- Health cost (Diarrheal disease) Rs. 2,200.00/yr**
- Krieger (2001) – Air Quality Value = US \$ 4.16/ Tree
- Powe & Willis (2004)- Air Pollution SO₂/PM – Life expectancy
- 9,00,000 (Pond) for 1 sq km area
- Gupta (2008) – Rs. 170.00 (savings if pollution red. to safe level)
- 91.44 Population
- **Rs. 16,95,95,910.00**

ES-II. Carbon sequestration

Items with symbolic description	Factor	2003	2011
Growing stock of the forests in Mm3			
Mean Biomass Expansion Factor – EF	1.575		
Ration (Below to Above Ground Biomass) – RBA	0.266		
Above Ground Biomass (Volume) – AGB = GS x EF		99.93	121.95
Below Ground Biomass (Volume) – BGB = AGB x RBA		26.58	32.43
Total Biomass		126.51	154.38
Mean Density	0.7116		
Biomass in Mt = Total Biomass x mean density		90.02	109.85
Ratio (Other forest floor biomass except tree to tree biomass)	0.015		
Total Forest Biomass in Mt (Trees + Shrubs + Herbs) – TFB		91.37	111.49
Dry Weight in Mt (80% of TFB) – DW		73.09	89.19
Carbon in Mt (40% of Dry Weight)		29.29	35.67

0.228 MT/Yr = 0.832 MT CO₂ (1 Ton = \$ 5) = Rs. 27,04,00,000.00



ES – III. Water regulation and supply

Willingness to Pay (Rs. Per month)							
Aizawl	Yes	No	10.00	20.00	50.00	100.00	500.00
	11.11		16.67	22.22	27.78	19.44	2.78
No. of HH	8733		13104	17466	21837	15281	2185
WTP (Rs.)			131040	349320	1091850	1528100	1092500
Total (1 year)			523980				56601480
Grand Total							120428117.00

Chaturvedi – Rs. 4745.00/ Ha/ Year

ii. Cost Benefit Analysis

Revenue from water charges : 2009-10 - Rs. 2,92,36,276.00; 2010-11 - Rs. 4,26,30,051.00
2011-12 - Rs. 4,67,92,570.00

Expenditure : Rs. 30.48 crore (Rs. 8.75 crore/yr electricity charges; Rs. 5.77 crore/yr on diesel for pumps, maintenance of pumps + Staff salary)

ES – IV. Prevention of Soil erosion and Landslides

i. WTP Method - Rs. 5,60,91,314.00

ii. Avoided Cost Method

• Value of labour put in by the people
- Rs. 37,18,11,000.00

iii. Value of losses occurred in the Past

Rs. 77,97,07,497.00 - Rs. 15,59,1,499.00/Yr

Total value = Rs. 52,77,52,499.00

Food and Livelihood Security

A. Food Security

i. Production Function Approach

23,150 Ha x 1.2 T/ha x Rs. 30.00/Kg = Rs. 84,34,00,000.00

75% as Opportunity cost of labour; 25% Food Security = Rs. 20,83,50,000.00

ii. Replacement Cost Method

Nutrients	Old Jhum	New Jhum	Difference	Requirement N,P,K (kg/Ha)	Current Prices (Rs./Kg)	Value (Rs./Ha)
N	3,660.00	3,300.00	360.00	652.17	5.70	3,717.37
P	29.00	17.30	11.70	65.00	22.00	1,430.00
K	626.00	469.00	157.00	78.33	16.25	1,272.86
					TOTAL	6,420.00

Total value = Rs. 6,420.00 x 23,150Ha = Rs. 14,86,28,324.00

B. Livelihood security

No. of jhum cultivators – 79,960 (GoM, 2008)

10% = 7996 x 100 days x Rs. 220.00 = Rs. 17,59,12,000.00

Money spent on wages by F.D. (2014-15) = Rs. 20,58,87,444.00

TOTAL = Rs. 59,01,49,444.00

NTFPs for Food & Livelihood security



ES – VI. Pollination

Crops	Production (Ton)	Pollination impact factor	Average price (Rs.)	Price taken for valuation (Rs.)	Economic value (Rs.)
Bean	5040.00	+	20.00	2.00	10080000.00
Bitter gourd	19570.00	++++	15.00	13.50	264195000.00
Brinjal	13500.00	++	15.00	7.50	101250000.00
Chayote	66500.00	++++	10.00	9.00	598500000.00
Chillies (dried)	9790.00	+	100.00	10.00	97900000.00
Kiwi	100.00 qt	++++	200.00	180.00	180.000.00
Mango	100.00	++++	20.00	18.00	90.000.00
Orange	22230.00	+	25.00	2.50	55582500.00
Papaya, Pumpkin, Guava, Passion fruits, Tamarind, Squash	++++ Rs. 2,50	++ 3,00	++++ 8,00	++++ 2,00	4,00
					1 30,01,63,500.00

ES – VII. Recreation

Year	Number of tourists		Revenue (Rs. in Lakh)
	Domestic	International	
2008-09	56793	842	110.00
2009-10	57639	675	123.51
2010-11	57623	619	148.15
2011-12	53512	744	153.64
2012-13 (up to Dec.)	48416	511	145.40
Average Annual Value = Rs. 2,31,64,436.00			

Total value of goods and services from forests of Mizoram

Items	Value (Rupees)	% share
Fuel wood	112,46,43,484.00	21.82
Timber, small wood and poles	82,14,56,630.00	15.93
Pollination	72,53,76,000.00	14.07
Food and livelihood security	59,01,49,444.00	11.45
Prevention of soil erosion & landslide		
Carbon sequestration	52,77,52,499.00	10.24
Fodder	27,04,00,000.00	5.24
NTFPs	25,93,73,230.35	5.03
Climate amelioration	25,14,71,000.00	4.88
Bamboo shoots	16,95,95,910.00	3.29
Water retention and water supply	15,28,91,000.00	2.96
Bamboo culms	12,04,28,117.00	2.33
Charcoal	8,40,40,500.00	1.63
Recreation	2,70,00,000.00	0.52
Biological control	57,87,500.00	0.45
GRAND TOTAL	515,35,29,750.75	0.11

Appendix VII

Forests and forestry scenario in Mizoram

Inception workshop on REDD+ in North-eastern
Himalayas
Aizawl, Mizoram 27-28th Jan 2016

Tsewang Gyaltsen
DCF Working Plan, Mizoram

Mizoram

People
Population: 10.9 lakh
Tribal: 95%
Literacy: 91.58%

Economy
GSDP :6991 cr(2011-12)
Agriculture: 55-60%
Rural poverty: 35%



Geography
Hilly, moderate to steep slopes
13 major rivers make deep gorges

Climate & Soil
Sum: 18-29°C, Win: 11-21°C
Precipitation: 250 cm annual
Soil: Rich in organic low in potash

Administrative Divisions

10 Territorial Div.

3 Autonomous District Councils

4 Wildlife Div. for 10 PAs

6 Functional Div. looking after

- 1) Working Plan
- 2) Resource Survey
- 3) Protection
- 4) Training
- 5) Extension



Organizational Structure of E&F Deptt Mizoram



Forest Types Mizoram

Table 28: Area under different forest types

S.No.	Forest Type	Area	% of Total Forest Cover
1	2B/2C1 Pioneer Cup/Indica/Scrub	246.75	1.50
2	2B/2C2 Pioneer Cup/Indica/Scrub/Forest	4,979.00	29.00
3	2B/2C3 Pioneer Cup/Indica/Scrub/Forest	6,494.00	39.90
4	3C/3b East Himalayan Moist Mixed/Deciduous Forest	5,138.17	30.40
5	4B/C1 East Himalayan Subtropical Wet Hill Forest	4.82	0.04
6	4B/C2 Assam Subtropical Pine Forest	116.26	0.67
Total		18,664.00	100.00

Table 29: Area under different forest types and canopy density classes

S.No.	Forest Type Group	Very Dense Forest	Mod. Dense Forest	Open Forest	Scrub	Total
1	Group 2 Tropical Semi-Empress Forest	45.16	3,452.73	9,514.41	0.00	13,012.30
2	Group 3 Tropical Moist Deciduous Forest	42.58	2,471.71	2,593.86	0.00	5,108.15
3	Group 4 Sub-Tropical Deciduous Hill Forest	0.00	2.51	4.28	0.00	6.79
4	Group 5 Sub-Tropical Pine Forest	2.36	66.02	47.40	0.00	115.78
Total		90.10	6,032.97	12,270.00	0.00	19,293.07

Source: FSI Dehradun



Forest Types of Mizoram

East Himalayan Moist Mixed Deciduous Forest (3C/C3b)

- *Schima wallichii*, *Syzgium cumini*, *Albizia procera*, *Dillenia pentagyna*, *Artocarpus lakoocha*, *Terminalia Spp.*, *Lagerstroemia parviflora*, etc. It is found in all districts of Mizoram.

East Himalayan Subtropical Wet Hill Forest (8B/C1):

- Major characteristic species are *Quercus vercu*, *Q. serrata*, *Castanopsis* spp., *Litsea* spp., *Machilus* spp. etc. This forest type is found in Kolasib district.

Assam Subtropical Pine Forest (9/C2):

- Mostly dominated by *Pinus kesiya* with associates like *Quercus* spp., *Schima wallichii*, *Rhododendron* spp. etc. Found mainly in Champhai district.

Forest Types of Mizoram

Cachar Tropical Semi-Evergreen Forest (2B/C2)

- Mostly found in all districts of the State.
- imp species are *Dipterocarputurbinatus*, *D. tuberculatus*, *Terminaliachebula*, *Emblicaspp*, *Careyaarborea* etc.

Secondary Moist Bamboo Brakes (2/2S1):

- Dominant species of bamboo like *Melocannabambusoides*, *Dendrocalamushamiltonii* etc

Pioneer Euphorbiaceous Scrub (2B/2S1):

- Generally found in degraded forests and exposed lands present on higher slopes and on top of the hills.
- Quick growing species like *Macaranga* spp., *Mallotus* spp. etc. All districts except Kolasib.

Legal Categories of Forests

Govt Forests: E & F Deptt mizoram

Reserved
Forests: 4483.29
sq km

Protected Areas:
1822.75 sq km

Community managed: Village Councils

Village Safety &
Supply Reserves:
around 500

Jhumlands :
Current &
abandoned

Reserved Forests & Protected Areas



Reserved Forests : Riverine RFs, Roadside RFs, CA areas, other RFs. Total area 4483.29 sq km. Notified and protected under Mizoram Forest Act. 1955

Protected Areas : 7 Wildlife Sanctuaries, 2 National Parks and 1 Tiger Reserve. Total Area 1822.75 sq km. Notified and protected under Wildlife Protection Act. 1972

Community managed Forests

Village Forest Reserves

Safety Reserves: for
protection against
fires, landslides, soil &
water conservation

Supply Reserves: for
bonafide needs of
timber, firewood,
fodder, NTFPs

Jhumlands

Current jhum:
reduced from 45000
to 25826 ha (11th
plan)

Abandoned jhum:
mostly degraded
open forests

Forest Cover Mizoram



Total Forest Cover: 18,748 sq km
% of Total Area : 88.93%
Open Forest: 60.49%
Moderately Dense: 27.79%
Very Dense: 0.65%

Source: FSI Dehradun

Comparison between ISFR 2015 and ISFR 2013 for Mizoram.

Class	% of Total GA	2015(Sq Km)	2013(Sq Km)	Change (sq km)
Very Dense Forest	0.65%	138	138	0
Moderately Dense Forest	27.79%	5858	5900	-42
Open Forest	60.49%	12752	13016	-264
Total Forest Cover	88.93%	18748	19054	-306




Table 5.19 Forest type and density wise carbon stock under different carbon Pools.
(’000 Tonnes)

Forest Type Stratum	Density	Area in Km ²	AGB	BGB	Dead wood	Litter	SOM	Total	C Stock/ha (tonnes)
Tropical Semi Evergreen Forests North East	VDF	67.6	134.2	27.6	9.2	9.0	565.7	745.8	110.39
Tropical Semi Evergreen Forests North East	MDF	3,632.7	4,566.2	939.2	132.9	459.3	20,345.8	26,443.5	72.79
Tropical Semi Evergreen Forests North East	OF	9,740.4	7,417.3	1,525.6	195.3	1,312.8	29,346.0	39,798.8	40.86
Tropical Moist Deciduous Forest	VDF	62.6	189.9	39.1	7.3	14.7	630.3	881.3	140.83
Tropical Moist Deciduous Forest	MDF	2,471.7	2,250.2	462.8	203.7	604.8	13,726.2	17,247.8	69.78
Tropical Moist Deciduous Forest	OF	2,585.9	1,044.7	214.9	103.4	335.8	9,863.2	11,561.9	44.71

REDD+ Preparedness



- ▶ GIS manpower, interpretation of satellite imageries etc, WP work outsourced to NESAC
- ▶ Field staff :technical skills for field measurements, carbon stock calculation
- ▶ Lack of local Allometric equations
- ▶ Lack of historical data:Working plans, growth & yield statistics
- ▶ Green India Mission

REDD+ Preparedness



- ▶ GIS manpower, interpretation of satellite imageries etc, WP work outsourced to NESAC
- ▶ Field staff :technical skills for field measurements, carbon stock calculation
- ▶ Lack of local Allometric equations
- ▶ Lack of historical data:Working plans, growth & yield statistics
- ▶ Green India Mission

Issues & Challenges to address



- ▶ Declining trend in forest cover
- ▶ Mostly open degraded forests(61%)
- ▶ Destructive jhumming/ reducing cycle
- ▶ Heavy dependence on forests: unsustainable extraction of many NTFPs
- ▶ Forest fires, erosion, landslides

▶ Thank you

MRV and Social Safeguard of REDD+

Dr Rajiv Pandey
28th Jan., 2016

REDD+ Framework – Broader Perspective

- Strategy of actions
- Forest reference level
- Transparent forest monitoring and reporting system
- Information system to report on adherence to safeguards

Measurement, Reporting and Verification (MRV)

A key element for an effective REDD+ mechanism

Elements of MRV

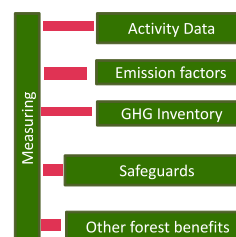
- i. Measurement (periodicity, basic datasets, accuracy and precision)
 - Data collection
 - Data analysis
- ii. Reporting (according to predetermined formats and established standards)
 - Information management
 - Reporting frequency and cycle
- iii. Verification (formal verification of reports)
 - Quality assurance

Measurement

- Refers to information on the extent to which a human activity takes place leading to emission with coefficients that quantify the emissions or removals per unit activity.

Measurement (REDD+)

- Measurements of forest area and area change (AD)
- Measurements of forest carbon stock and carbon stock changes (EF).
- Basis for compiling greenhouse gases (GHGs) inventory.
- Measurement of safeguards indicators and other forest benefits.



Measurement

- Activity data (Satellite Land Representation System)
 - Area change data
 - Using satellite remote sensing
- Emission factors (National Forest Inventory or Field Survey)
 - Forest carbon stock and carbon stock change data
 - Through national forest inventory (NFI) or Field Survey

Carbon Estimation

Mathematically,

$$C_{Carbon} = C_{Biomass} + C_{Soil}$$

C_{Carbon} = Total available carbon in the forest

$C_{Biomass}$ = Total available carbon in the above and below ground biomass of all forest vegetation

C_{Soil} = Total available soil organic carbon (SOC) up to 30cm depth in the forest

Soil Organic Carbon Stocks in Forests

Soil organic carbon stock Q_i (Mg m^{-2}) in a soil layer or sampling level i with a depth of E_i (m) depends on the carbon content C_i (g C g^{-1}), bulk density D_i (Mg m^{-3}) and on the volume fraction of coarse elements G_i , given by the formula (Batjes 1996)

Biomass Carbon in Forest

$$C_{Biomass} = \text{Biomass (B) of the Forest} \times (1 - \text{mcdb}) \times \text{Proportion of Carbon Content}$$

$$B = \text{GS}_{\text{Total}} \times \text{MD}$$

= Total forest growing stock (Mm^3)

B = Biomass (Mt)

MD = Mean wood density

mcdb = Moisture Content on dry basis (ranges between 10 – 20 %)

Proportion of Carbon Content (ranges between 40 – 50%)

Sample selection

Sampling

- Various sampling protocol
- Stratified Random Sampling
- Stratification Criterion – Forest Major Group Type
- Sample Size Estimation – Scientific
- Sample Allocation – Proportional (Area)

Calculation of sample size (Number of Plot to be Surveyed)

$$n = \frac{N * t_{VAL}^2 * \left(\sum_{i=1}^3 w_i^2 * s_i^2 \right)}{N * E^2 + t_{VAL}^2 * \sum_{i=1}^3 w_i^2 * s_i^2}$$

where:

n = Number of sample plots required for estimation of biomass stocks within the project boundary; dimensionless

N = Total number of possible sample plots within the project boundary (i.e. the sampling space or the population); dimensionless

t_{VAL} = Two-sided Student's t -value, at infinite degrees of freedom, for the require confidence level; dimensionless

w_i = Relative weight of the area of stratum i (i.e. the area of the stratum i divided by the project area); dimensionless

s = Estimated standard deviation of biomass stock in stratum i ; t.d.m. (or t.d.m. ha⁻¹)

E = Acceptable margin of error (i.e. one-half the confidence interval) in estimation of biomass stock within the project boundary; t.d.m. (or t.d.m. ha⁻¹), i.e. in the units used for s_i .

$i = 1, 2, 3$. Biomass stock estimation strata within the project boundary.

Calculation of number of sample plot

• Level of Error : 5%

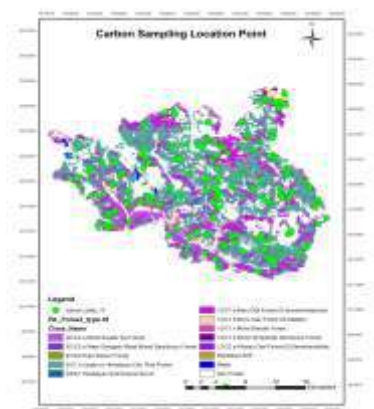
Confidence Level : 95%

• Plot Size : 0.1 ha

Stratum	Area (ha)	Mean Biomass (t ha ⁻¹)	Standard Deviation (t ha ⁻¹)	Number of Plot (Sample)	Additional plot (10%)
Tropical Moist Deciduous Forest	121479	79.20	22.46	34	37
Tropical Dry Deciduous Forest	10452	128.92	54.49	7	8
Sub Tropical Pine Forest	126925	122.63	32.14	51	56
Himalayan Moist Temperate Forest	61598	135.14	39.37	30	33
Total	320454	465.89	148.46	122	134

Source : Derived from FSI Report

Sample Plot Location in Project Area



Geo-Coordinates of all Sample Plot

Carbon Estimation (Biomass and Soil)

PLOT LAYOUT

Plot Identification



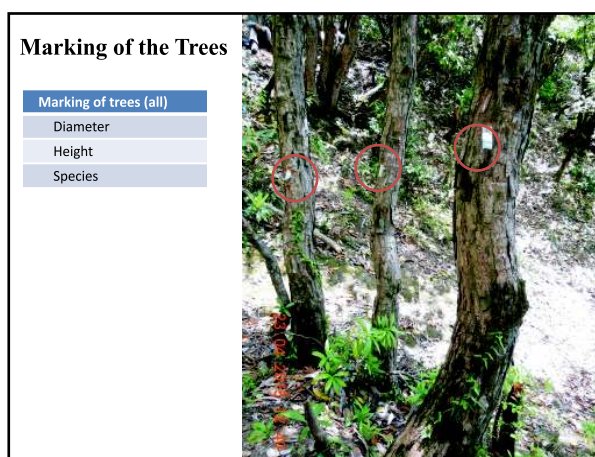
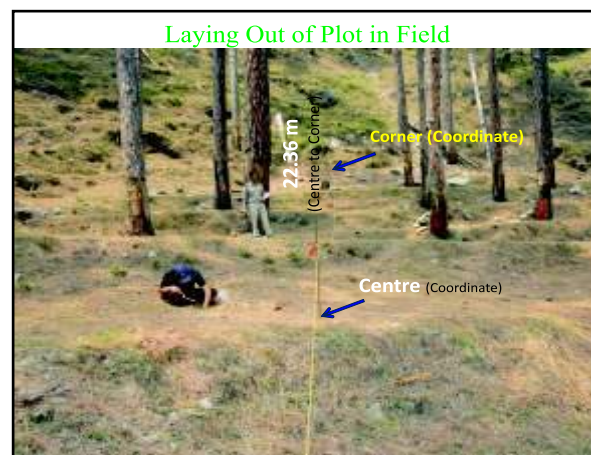
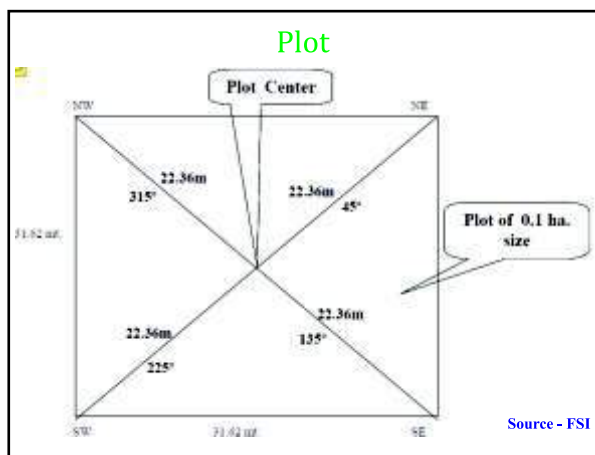
Plot Layout



Plot Layout

Plot Identification (Centre)	Geo-coordinates
Centre Marking	Through Pole
Plot Size	0.1 ha (Square Plot)
Dimensions	31.62 m x 31.62 m
Diagonal Distance from centre	22.3 m (in four direction)
Direction	<ul style="list-style-type: none"> • NE at 45° • SE at 135° • SW at 225° • NW at 315°
Corner Marking	Through poles with red ribbon

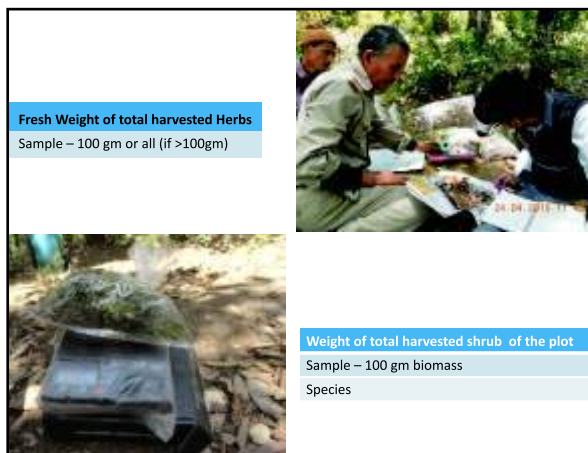
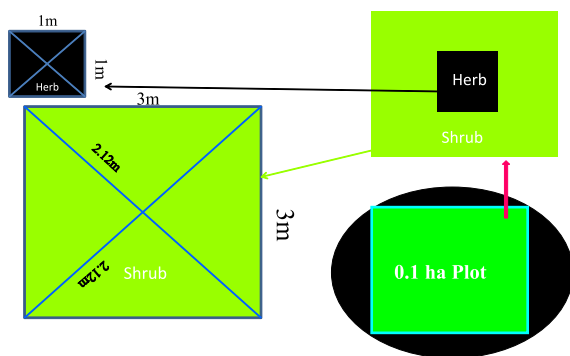
Derived and modified from FSI



Plot Layout for Herbs and Shrubs

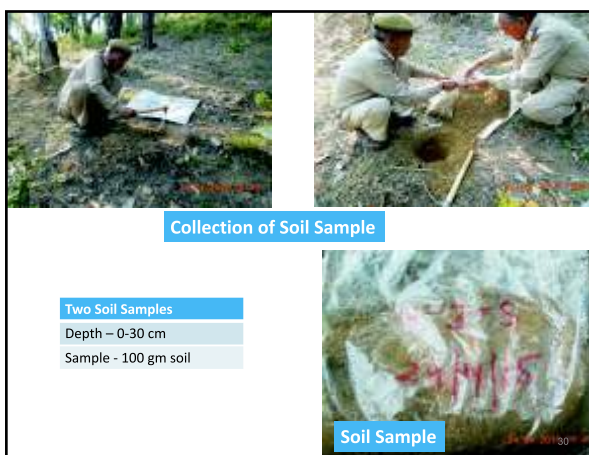
Plot Identification	Sub-plot
Sub-plot location	At corner
Number of Plots	4 (Herbs); 2 (Shrub)
Plot Size for herb	1m x 1m
Plot Size for shrub	3m x 3m

Diagrammatic Representation of Plot



Plot Layout for Soil and Forest Floor Litter

Plot Identification	Sub-plot
Sub-plot location	At corner
Number of Plots	4 (Litter); 2 (Soil)
Plot Size	1m x 1m



Social Survey

- Questionnaire development for Socio-Ecological Survey of Forest Adjoining Village

- Informed Consent
- Geographical Information of Village
- Socio-Demographic Profile of Household
- Livelihood options (As Farming Practices ...)
- Dependence on Forest Resources
- Causes of forest degradation and deforestation

Questionnaire

Questionnaire for Socio-Ecological Survey of Forest Adjoining Village

INFORMED CONSENT

Please read the following that explains this research study including the associated risks and benefits, if any. You are being asked to take part in the research being conducted by ICFRE under the management of Dr. P. Singh, ADD, B&C Division, IGP&R, Calcutta. This should help you decide whether or not you want to participate in the study. Agreeing to this will confirm that you have been informed about the study and you want to participate. Taking part in this study is completely voluntary and anonymous.

Research Description

This research is about the preparation of project development document for REDD+ REDD+ intends to conserve forests to reduce greenhouse gas emissions and forest degradation, and ensure sustainable management of forests, and enhancement of forest carbon stocks. It is aimed to facilitate conservation against REDD+ based mechanism. We would like to hear your views and provide strategy between climate change mitigation and financial benefits against carbon enhancement and other benefits of the forests to the local communities. Through this research will be aimed to participate in this research study.

Risks and Benefits

There are no foreseeable risks or discomforts for participating in this study. The use of information from this study will help part in this study. However, by participating in this study, you support the research community about the intended decisions and for ensuring appropriate plans for addressing potential consequences for mitigation of climate change. There may be other benefits from research, besides facilitation for REDD+ mechanism in the area.

Ending your Participation

You have the right to withdraw your consent at any time. At any time, you have the right to refuse to answer any questions or refuse to participate in any procedure for any reason. Refusing to participate in this study will not result in any penalty or loss of benefits to which you are otherwise entitled.

Description of Procedures

If you agree to take part in this study, you will be asked to complete a survey that will last approximately 45 minutes.

Confidentiality

We will make every effort to maintain the confidentiality of your responses. Only the team of the project will have access to the data and information about participants and will not be shared with others, except the research publication and community awareness. The researcher can be reached through email to Dr. P. Singh, pdg@icfre.org.in or Dr. Raju Pandey, rajup@icfre.org.in.

Questionnaire

Authorization
I have read this information about the study and I have decided to take part in the study. I understand that the information provided by me will be used for the study and will be kept confidential.

Signature _____ of _____

Questionnaire No. _____ Date _____

Geographical Information of Village

Q1. Name of Village _____ Village _____

Q2. GPS Location: Latitude _____ N Longitude _____ E

Q3. Altitude _____ (meters)

Q4. Location _____

Socio-Demographic Profile of Household

Q5. Name of Respondent _____

Q6. Age _____ Q7. Sex: ☐ M ☐ F

Q8. Education: ☐ Illiterate ☐ Primary ☐ High School ☐ Intermediate ☐ Graduate and above

Q9. ☐ Q10. ☐ Q11. ☐ Q12. ☐

Q13. What type of house do you have?
a. Kachha House b. Semi-detached House
c. Pucca House

Questionnaire

Q12. Age wise distribution of household members

Gender	Below 5	Between 5 to 12	Above 12 years
Male			
Female			

Q13. Family Education Status

Education	Below 5	Between 5 to 12	Between 12 to 18	Between 18 to 25	Above 25
Male					
Female					

Q14. Production
Primary Production: ☐ Agriculture ☐ Horticulture ☐ Livestock ☐ Other ☐

Secondary Production: ☐ Agriculture ☐ Horticulture ☐ Livestock ☐ Other ☐

Approximate Annual Income (Rs.): _____

Q15. Land Area

Area	Below 5	Between 5 to 12	Above 12 years
Male			
Female			

Q16. Major crop/production

Crop	Area	Production	Value	Cost	Benefit
Wheat					
Rice					
Other					

Q17. General Characteristics
Availability of fuel efficient energy: ☐ Yes ☐ No

Distance from the nearest health center: ☐ 1-5 km ☐ 6-10 km ☐ 11-15 km

Farming Practice

Area	Production	Expenditure	Income
Wheat			
Rice			
Other			

Questionnaire

General information about farming practices

• Type of land used: ☐ Open ☐ Closed ☐ Barren

• Annual quantity of chemical fertilizer for the cultivation: _____ kg/ha

• Annual quantity of organic manure used for the cultivation: _____ kg/ha

• Use of chemical fertilizer: Yes ☐ No ☐

Dependence on Forest Resources

Q18. Fuelwood collection

Season of Collection	Where	Quantity
Winter		
Summer		
Monsoon		
Post-monsoon		

Q19. Fodder collection

Season of Collection	Where	Quantity
Winter		
Summer		
Monsoon		
Post-monsoon		

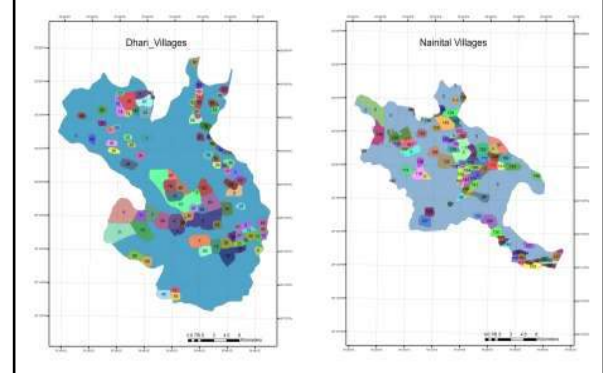
Q20. Fuelwood collection

Season of Collection	Where	Quantity
Winter		
Summer		
Monsoon		
Post-monsoon		

Q21. Fodder collection

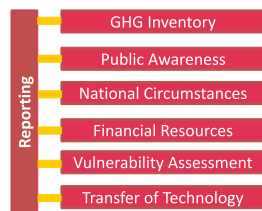
Season of Collection	Where	Quantity
Winter		
Summer		
Monsoon		
Post-monsoon		

Village and Samples



Reporting

- Implies the compilation of data and statistics for information in the format of a GHG inventory. For reporting GHG mitigation performance (in MtCO₂e) to the UNFCCC



Verification

- The process of independently checking the accuracy and reliability of reported information or the procedures used to generate information.
- By an independent and external review.

Verification

- Methods: Interviews with key informants (villagers, government officials and NGOs) analysis of reports, and other materials
- REDD+ payments cannot be distributed until verification takes place

REDD+ Policy and MRV Development – The Reporting Principles

5 Reporting principles of IPCC

- Consistency – Based on accepted standards of carbon accounting
- Comparability - Straight-forward comparisons
- Transparency – Clear and complete assumptions and methods
- Accuracy - Unbiased with minimum uncertainty
- Completeness – Inclusion of relevant pools and activities

REDD+ Policy and MRV Development – The Reporting Principles

5 Reporting principles of IPCC

Consistency – an MRV system should provide estimates that are consistent across years. Under certain circumstances, estimates generated from different methodologies in different years can be considered consistent if they have been calculated in a transparent manner

REDD+ Policy and MRV Development – The Reporting Principles

5 Reporting principles of IPCC

Comparability - estimates of emissions and removals should be comparable among different forest owners and among Parties. For this purpose, forest owners/ Parties should follow the methodologies and standard formats provided by the IPCC and agreed within the UNFCCC for compiling and reporting inventories.

REDD+ Policy and MRV Development – The Reporting Principles

5 Reporting principles of IPCC

Transparency – all the data and the methodologies used in the MRV system should be clearly explained and appropriately documented, so that anyone can verify their correctness.

REDD+ Policy and MRV Development – The Reporting Principles

Besides the 5 Reporting principles of IPCC; conservativeness should also be considered

Conservativeness: when completeness or accuracy of estimates cannot be achieved, the reduction of emissions should not be overestimated, or at least the risk of overestimation should be minimized.

Safeguards

- Respect for rights of indigenous peoples and local communities
- Benefits for indigenous peoples and local communities improve human well-being
- Full and effective participation and access to information
- Contribution to broader sustainable development
- Equitable benefit sharing
- Maintenance of biodiversity and ecosystem services
- Compliance with national and international laws

Take Home Information

- Follow a standard procedure
- Documentation of procedure
- Participation of stakeholders
- Identification D&D
- Addressing the Safeguards

Thanks

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