



International Conference on

REVITALISING COMMUNITY FORESTRY IN THE ERA OF SOCIO-ENVIRONMENTAL CRISIS

04-05 March, 2024
(21-22 Fagun, 2080)

Kathmandu, Nepal

BOOK OF ABSTRACTS



About the conference

Human society and our life support system are experiencing multiple challenges and heading towards an existential threat. The impacts of climate crisis, biodiversity loss, and extreme poverty and inequality have begun to manifest from local to global levels. There are attempts to find better ways of addressing these multiple challenges. Redefining nature-society relations and reframing our approaches to managing forestlands and associated ecosystems for enhanced productivity, sustainability, and equity are at the core of these initiatives. Accordingly, local innovations, policy initiatives, and academic inquiries have focused on community forestry in its diverse forms and frames to address multiple and sometimes competing objectives. Modern forms of community forestry have seen four decades of experimentation, piloting, consolidation, and expansion at national and regional levels. While in many countries, it has become a dominant forest management system, in others, it is still being gradually expanded at different scales.

Meanwhile, its core objectives and rationales have significantly expanded over the decades: from meeting forest product needs of local communities and supporting their livelihoods to mitigating climate change and supporting resilient economies. Nepal's community forestry has evolved into a robust system of community-based natural resources management, with legally secure devolution of forest rights to local communities through a legally recognised and perpetually self-governed institution. Over 23,000 registered groups operate across the country, benefiting 16.6 million people through active and sustainable management of over 1.8 million hectares of forests. Nepal's community forest has not only been considered as one of the most successful development programmes in the country, it has also been globally acknowledged as an effective community-based forest management approach.

In recent years, however, there is a growing realisation regarding the lack of vitality and dynamism in this program of global reputation. Concerns over efficacy and impact have been raised by community leaders, front-line government staff, and their large base of supporters. In fact, a large body of research has also emerged, confirming that community forestry's contribution to local livelihoods is currently much less than its actual potential. These issues have emerged as a result of fundamental shifts in the socio-economic context in the country; demographic dynamics, income levels, and agricultural practices have changed substantially, creating a mismatch between what community forests can deliver and what local communities expect from it. In such a rapidly changing context, it has become urgent to revisit community forestry so that it remains fully attuned to the changing context and becomes more relevant in the future.

There is a further need to assess the relevance of the current modality of community forestry. An updated analysis of the governance, institutional, and technological changes and the challenges and opportunities they bring would provide insights of the transferability of Nepal's community forestry lessons and its efforts towards building resilient landscapes to regional and global scales. In this context, this international conference on community forestry aims to provide a productive platform to share lessons and insights from practitioners, professionals, policy actors, and researchers through plenary talks, presentations, and panel discussions. It is designed to forge productive dialogue between practice-based insights, theories, and policy questions. It is expected that the conference will draw relevant lessons, help address emerging policy questions, and re-energise momentum towards ecosystem restoration through community forestry.

Organizing Committee

- Shiva Kumar Wagle, Director General, Department of Forest and Soil Conservation (DoFSC)
- Sindhu Dhungana, Director General, Department of National Parks and Wildlife Conservation (DNPWC)
- Maheshwar Dhakal, Head, Participatory Forestry Division, Ministry of Forests and Environment (MoFE)
- Yam Prasad Pokharel, Director General, Forest Research Training Center (FRTC)
- Rajendra K.C., Director General, Department of Plant Resources (DPR)
- Nabaraj Pudasaini, Chief, REDD Implementation Center (REDD-IC)
- Bir Bahadur Khanal Chhetri, Dean, Institute of Forestry (IoF)/Tribhuvan University
- Gandiv Kafle, Dean, Faculty of Forestry, Agriculture and Forestry University (AFU)
- Thakur Bhandari, Chair, Federation of Community Forestry Nepal (FECOFUN)
- Naya Sharma Paudel, EnLiFT2 in country coordinator, ForestAction Nepal
- Rabindra Maharjan, DDG, Department of Forests and Soil Conservation (DoFSC)

Scientific Committee

- Bir Bahadur Khanal Chhetri, Dean, Institute of Forestry (IoF)/Tribhuvan University (Member Secretary)
- Ganga Ram Dahal, Forestry Expert
- Carsten Smith Hall, University of Copenhagen, Denmark
- Ian Nuberg, University of Adelaide, Australia (EnLiFT2 project leader)
- Dipak Jnawali, DDG, Department of Forests and Soil Conservation (DoFSC)
- Sita Aryal, Executive Director, Federation of Community Forestry Nepal (FECOFUN)
- Naya Sharma Paudel, EnLiFT2 in country coordinator, ForestAction Nepal

Secretariat

- Rahul Karki, ForestAction Nepal (Coordinator)
- Binita Guragain, Ministry of Forest and Environment (MoFE)
- Prakash Nepal, Department of Forest and Soil Conservation (DoFSC)
- Siddhartha Aryal, Department of Forest and Soil Conservation (DoFSC)
- Samata Manandhar, ForestAction Nepal

Table of contents

Day 1 Parallel Session 1	1
Track 1: Community forestry and inclusive governance	1
<ul style="list-style-type: none"> In the shadows of identity politics: To what extent have the issues of indigenous peoples been addressed in Nepal’s community forestry? <i>Sindhu Prasad Dhungana</i> Intersecting women’s marginalization in community forestry in Nepal <i>Srijana Baral, Kanchan Lama</i> The impact of community forestry on the socio-economic status of Dalit women <i>Dylan Rachel Gribble, Thorsten Treue, Arjun Chapagain</i> Contribution of indigenous communities to forest conservation in North-Eastern India <i>Susmita Shil, Asha K Raj</i> 	2 3 4 5
Track 2: Community forestry and landscape restoration	6
<ul style="list-style-type: none"> Forest landscape restoration (FLR) through community forestry: lessons from Asian countries <i>Ganga Ram Dahal, PhD, Basundhara Bhattarai, PhD, and Hemant Ojha, PhD</i> Question of multipurpose forestry and biodiversity conservation in community managed Sal forests of Nepal <i>Lila Nath Sharma, Muna Bhattarai, Rabindra Pun Magar</i> Comparative Analysis on Community Forests in Nepal and their Influence on Forest Cover <i>Sepp Feiersinger, Anko Stilma, Arjun Chapagain</i> 	7 8 9
Track 3: MAPs, community prosperity, and sustainability	10
<ul style="list-style-type: none"> A roadmap to sustainable management of commercial medicinal and aromatic plants, fungi, and lichen in Nepal <i>Carsten Smith-Hall, Dipesh Pyakurel, Thorsten Treue, Mariève Pouliot, Suresh Ghimire, Anastasiya Timoshyna, Henrik Meilby</i> Sustainable management and trade of environmental products: A district-level roadmap to reinvigorate community forestry in Nepal <i>Dipesh Pyakurel, Arjun Chapagain, Carsten Smith-Hall, and Dietmar Stoian</i> Bayesian Belief Network model to assess sustainability of medicinal plants in Nepal <i>Reshu Bashyal, Anastasiya Timoshyna, Carsten Smith-Hall, Cara Flowers, Amy Hinsley</i> Governance implications of informal payments in Nepal’s Community Forestry and medicinal and aromatic plants sectors <i>Thorsten Treue</i> 	11 12 13 14

Parallel Session 2	15
Track 1: Community forestry in socio-economic transition	15
• Growing new forests in challenging times: Insights about demographic change among smallholders in Indonesia and Nepal <i>Digby Race, Popular Gentle, Bhawana KC</i>	16
• Fifty years of community forestry in Nepal: Achievement and challenges <i>Bir Bahadur Khanal Chhetri</i>	17
• Changing socio-economic dynamics and shifting forest-people relationships on rural livelihoods: Nepal's community forestry in a quandary <i>Bishnu Hari Poudyal, Dil Khatri, Dinesh Paudel, Kristina Marquardt, Sanjaya Khatri, and Gobinda Paudel</i>	18
• Forest-based livelihood pathways during the agrarian transition: the example of the Nepali mid-hills <i>Douglas Bardsley, Edwin Cedamon, Ian Nuberg, Naya Sharma Paudel</i>	19
Track 2: Community forest management and silviculture (Rajesh Rai), Sakura Hall	20
• Forest management, silviculture and productivity in community forestry in Nepal <i>Shambhu Dangal, Pawan Karki, Edwin Cedamon, Madan Bashyal, Niraj Babu Bhatta</i>	21
• Restoring degraded community forests through high value tree species: A study from hilly area of Nepal <i>Uendra Aryal, Dipak Jnawali, Ashok Parajuli, Bhawana Rijal</i>	22
• Where is Our Forest Management Heading Towards? Analysis of the Long-term Effects of Forest Management Practices in the Terai Community Forestry of Nepal <i>Sony Baral, Mathias Neumann, Khagendra Prasad Joshi and Harald Vacik</i>	23
• Implication of silviculture-based forest management in Lumbini Province, Nepal <i>Bikash Adhikari, Prabin Bhusal, Lila Puri, Bir Bahadur Khanal Chhetri</i>	24
Track 3: Communities and forest-based enterprises	25
• Innovative approaches to community forest enterprise development: A cross-country analysis between Nepal and Guatemala <i>Anukram Adhikary, Dietmar Stoian</i>	26
• Promised much delivered little: a story of forest-based enterprises in Nepal <i>Govinda Paudel, Craig Johns, Naya S Paudel</i>	27
• Prospects and challenges on community forests for livelihood and economic empowerment of women <i>Bishnu Prasad Sharma</i>	28
Day 2 - Parallel Session 1:	29
Track 1: Community forestry and institutions	29
• Reframing institutional framework for effective community forestry under federalism in Nepal <i>Mani Ram Banjade</i>	30
• Recentralization in the community forestry of Nepal: By design or default? <i>Bijendra Basnyat</i>	31

• Unveiling the institutional systems of forest restoration in Chure region of Nepal <i>Upama Ashish Koju, Naya Sharma Poudel, Rahul Karki</i>	32
• Governance and wellbeing outcomes of urban community forestry in Malaysia <i>Tapan Kumar Nath</i>	33
Track 2: Forest ecosystem services and carbon trade	34
• Market-Based Approach for Sustainable Forest Management in Nepal <i>Rajesh Kumar Rai</i>	35
• Ecosystem service approach of valuing natural forests: A case of Panchase forest <i>Ananta Ram Bhandari, Udhab Raj Khadka, Keshav Raj Kanel</i>	36
• Policy and Governance Frameworks For Integrating Community Forests into REDD+: A Pathway to Sustainable Forest Management and Climate Change Mitigation <i>Nabaraj Pudaissaini1, Prakash Lamichhane</i>	37
Track 3: Community forestry in changing socio-political context	38
• Future of Community Forestry in Changing Contexts: Forest Users' Perspectives in the Midhills of Nepal <i>Prabin Bhusal, Rajan Parajuli, Erin Sills and Sony Baral</i>	39
• Political parties and community forest governance: A case study of Chitwan district of Nepal <i>Sanjaya Mahato</i>	40
• The changing mode of production and community forestry in neo-liberalizing mid- hills Nepal <i>Dilli P. Poudel</i>	41
• Forest governance and community engagement in the changing political and social context of Nepal <i>Mary Hobley and Yam Malla</i>	42
Parallel Session 2:	43
Track 1: Societal transition and community forestry	43
• Shifting local interests in community forests: evidence from socio-ecological survey in the mid-hills of Nepal <i>Edwin Cedamon, Douglas Bardsley, Ian Nuberg and Naya Paudel</i>	44
• Transitioning perceptions of forests in Nepal: lessons from a case study in the middle hills <i>Nicola McGunnigle, Douglas Bardsley, Ian Nuberg, Edwin Cedamon</i>	45
• Socio-ecological transitions and emerging human-wildlife relations in the Nepalese Himalaya <i>Dil Khatri1, Dinesh Paudel, Bishnu Hari Poudyal, Sanjaya Khatri, Kristina Marquardt, Dilli P. Poudel</i>	46
• Acknowledging Nepal's community forest areas as OECMs: Exploring the potential <i>Ekraj Sigdel, Mahesh Poudyal, Naya Sharma Paudel, Bir Bahadur Khanal Chhetri</i>	47

Track 2: Community forestry and biodiversity conservation	48
<ul style="list-style-type: none"> • Is buffer zone community forest contributed better forest products supply to forest users? Reflection from five community forests in Bardia National Park Buffer Zone, Nepal <i>Keshav Raj Acharya, Thakur Silwal, Neelam C. Poudyal</i> 49 • Role of community forestry in sustainable management of conservation landscape: Review of two decades of policies and practices <i>Bharat Gotame</i> 50 • Assessment of bird diversity and associated ecosystem services along the land use gradient in West Sikkim, Eastern Himalaya, India <i>Samjetsabam Bharati Devi, Pema Lepcha, Kishor Sharma</i> 51 • Protected areas co-management in Bangladesh: Past, present, and future <i>Sharif A. Mukul, Azharul H. Mazumder</i> 52 	
Track 3 Community forestry and rural prosperity	53
<ul style="list-style-type: none"> • Role of community forestry in rural development in Nepal <i>Damodar Sharma, Pashupati Koirala</i> 54 • Empowering Local Communities through Community Forest Rights and Exploring Economic Opportunities in Nepal <i>Sita Aryal, Arjun Chapagain, Sujan Khanal</i> 55 • Role of NTFPs based micro-enterprises in livelihood improvement of forest user group: A case of mid-hills Nepal <i>Sujan Rajbhandari, Yogendra Yadav , Prerana Shrestha, Reecha Basnet</i> 56 	
Posters	57
<ul style="list-style-type: none"> • Navigating socio-environmental challenges <i>Aasha Khatri</i> 58 • Dependency of peri-urban people on forest resource: A case study in two micro catchments of Kaski district <i>Ashish Ghimire</i> 59 • Policy documents acknowledged in the forest literature of Nepal: A systematic review <i>Asmita Ghimire, Aastha Acharya</i> 60 • Factors influencing household dependency on community forest in the Chitwan district, Nepal <i>Binayak Prakash Mishra</i> 61 • Potentiality of Pangolin based eco-tourism in Cuchhekhola community forest user group <i>Deepa Dahal</i> 62 • Floristic composition of a logged-over lowland dipterocarp forest in Southern Leyte, Philippines <i>Eduardo G. Espejon Jr</i> 63 • Spatial and temporal distribution of forest fires in Madhesh Province of Nepal <i>Gunjan Adhkari</i> 64 	

- Provisioning ecosystem services of Shankarnagar community forest in Tilottama Municipality, Rupandehi
Karuna Kafle 65
- Climatic trends, impacts and livelihood vulnerability assessment: A case study from Mohana watershed, Kailali district of Nepal
Milan Adhikari, Amrita KC 66
- Beyond plantation: advancing forest restoration in community forests
Muna Bhattarai, Rahul Karki, Lila Nath Sharma 67
- Unraveling the volume puzzle: Comparing different formulas for estimating tree and log quantity in Nepal
Pawan Karki, Shambhu Dangal, Edwin Cedamon 68
- Impact of silviculture system on regeneration status and species diversity: Reflection from far-western lowland, Nepal
Prakash Ojha, Sandip Mahara 69
- Local perception and prioritization of ecosystem services from community forest: Case study of Kalidamar Bahunijhora community forest in Mahottari district of Nepal
Pratap Rijal, Rabin KC 70
- Effects of invasive alien plant species on biodiversity and importance value index in three altitudinal ranges: A case study of five community forest of Jajarkot district
Prerana Shrestha 71
- Human-wildlife conflict: how do communities respond to the crisis?
Sajjan Regmi 72
- Assessment of forest aboveground biomass using multispectral remote sensing imagery: A case study from community forests of Pudi Watershed, Kaski, Nepal
Sandeep Mahara 73
- The journey of wood from log to sawn timber: Diagnosis of saw milling, utilization and carbon storage
Sushil Subedi 74
- Exploring the Relationship between Diameter and Length in Two Bamboo Species Indigenous to Nepal
Sushila Sapkota 75
- Pattern and correlation of human-wildlife conflict: Insights for its mitigation
Sweta Karki 76
- Green enterprises: A pathway to women's economic empowerment
Usha Thakuri1, Srijana Baral1, Kanchan Lama1 77

Day 1: 4 March 2024

Parallel Session 1

**Track 1: Community forestry and
inclusive governance**

In the shadows of identity politics: To what extent have the issues of indigenous peoples been addressed in Nepal's community forestry?

Sindhu Prasad Dhungana¹

¹Department of National Parks and Wildlife Conservation, Nepal

Community forestry (CF) in Nepal is considered a decentralized practice integrating indigenous peoples and local communities in community institutions. Notwithstanding, civil societies advocating rights of indigenous peoples have asserted that CF policies have failed to acknowledge the roles and rights of indigenous peoples over land and forest resources. I argue that the space of indigenous peoples in Nepal's CF is scientifically unexplored. This paper draws on literature review and is substantiated by key informant interviews. Major issues associated with indigenous peoples in forest resources were identified and summarized in the light of multilateral environmental agreements (MEAs) to which Nepal is a party. Basically, UN Convention on Biological Diversity, Nagoya Protocol to CBD and Cancun Safeguard Principles of UNFCCC were reviewed and contextualized in the policies and practices of various forest management modalities in Nepal. CF was compared with other forms of forestry being practiced in Nepal against the number and leadership positions held by individuals from indigenous communities. The number and leadership positions held by individuals from indigenous communities in CF was also compared with those of non-indigenous communities. It was found that despite Nepal's ratification of MEAs, part of the rights of indigenous peoples are not reflected in domestic laws, nor are they recognized while managing and utilizing forest resources. CF also does not legally and explicitly recognize the rights of indigenous peoples over forests and associated resources. Examining the space for negotiation in practice at community level (despite unclear legal provisions), it is concluded that there are more opportunities to accommodate the needs and identity aspirations of indigenous peoples in CF than in other forms of forest management modalities in Nepal.

Key words: Community forestry, indigenous peoples, identity, rights, institutions

Intersecting women’s marginalization in community forestry in Nepal

Srijana Baral¹, Kanchan Lama²

¹ RECOFTC Main Office, Bangkok, Thailand

² ForestAction Nepal, Kathmandu, Nepal

Community forestry in Nepal has provided ample opportunities for women to engage in forest-based business and contribute to low carbon economy. However, there are paucity of studies on how different intersecting factors like ethnicity, age, marital status, well-being conditions and geography plays role in women’s stake in community forestry decisions. This study adopted an intersectional approach and methodological tenants of oppression, relationality, context and complexities of social inequalities. Participatory mapping exercises (3), storytelling and oral histories during focus group discussions (4), and ethnographic observation were adopted to examine the influencing factor in women’s marginalization in four sites of Sindhupalchok and Nawalparasi districts in Nepal. We found that every person has multiple, intersectional identities, that can either confer privilege or subject them to exclusion. Multiple systems and ideologies of oppression intersect and operate cumulatively and concurrently to produce a specific experience of oppression among women due to the inequitable distribution of rights, assets, resources, and power in the society. Thus, their needs and interest are seldom reflected in the community forest management plans and are dominated by masculine natured decisions. In some cases, elite women in forest user group executive positions demonstrate a patriarchal masculine attitude. Women’s marital status and relationship with the spouse, geographic locations and their access to land tenure defined women’s power relations in community forestry. Hence the multitude of compounded factors, including interpersonal relationships shape women's recognition, participation and benefit sharing needs consideration in achieving inclusive community forestry.

Key words: Intersectionality, power relations, exclusion, oppression, inequality

The impact of community forestry on the socio-economic status of Dalit women

Dylan Rachel Gribble¹, Thorsten Treue¹, Arjun Chapagain²

¹Department of Food and Resource Economics, University of Copenhagen

²Federation of Community Forestry Users Nepal (FECOFUN), Bhaktapur, Nepal

This study is based on field work conducted from October to December 2023 in Kaski and Syangja districts of Nepal. Research was completed in partnership with FECOFUN and University of Copenhagen. The primary purpose of this study is to analyze how and if membership in a community forest user group (CFUG) influences livelihoods and social development of Dalit women. To investigate how Dalit women can benefit from CFUG membership, semi-structured interviews, forest walks, CFUG document analysis, and literature analysis were employed. Literature analysis develops a Nepali context for caste discrimination, gender-based discrimination, and agrarian change related to community forests; while semi-structured interviews and CFUG document review are employed to collect field data which depicts the lived situation of Dalit women in community forest users. Three CFUG's were selected based on differing caste and gender demographics within CFUG executive committees, CFUG income, and differing caste and gender distributions. Considering these differences, comparison of how Dalit women benefit from membership differently in each study site allows for analysis of how livelihoods and social benefits are impacted by the caste and socio-economic status of women forest users and members of the CFUG governing body. Field work and literature analysis will reveal that the main factors which influence a Dalit woman's ability to benefit from CFUG membership are, their level of forest resource dependency, caste and socio-economic status, level of social capital, and the level of CFUG governance.

Key words: Community forestry, subjectification, agrarian change, livelihoods

Contribution of indigenous communities to forest conservation in North-Eastern India

Susmita Shil¹, Asha K Raj¹

¹Department of Silviculture and Agroforestry, College of Forestry, Kerala Agricultural University, Thrissur, Kerala

The Northeast region of India, renowned for its rich biodiversity and unique ecosystems, serves as a critical repository of natural resources. Central to conservation endeavors in this area is the extensive engagement of indigenous communities, whose enduring symbiotic relationship with the forests spans centuries. In contrast to much of the Indian subcontinent, where state forest departments have historically managed forests, in the Northeast, autonomous district councils legally oversee at least two-thirds of the region's forests. These areas are physically controlled and managed by rural inhabitants. Indigenous community institutions, such as village councils and chieftainships, play a pivotal role in safeguarding forest resources. Drawing on the strengths of small, homogeneous village societies, these institutions effectively address collective needs and interests. Illustrative examples include the Nishi tribe in Arunachal Pradesh, who have established comprehensive controls over critical watersheds and diverse forests, and the Jamatia people of Tripura, who have revitalized traditional conservation strategies to restore degraded forests. In Nagaland, the Naga of Mokokchung District historically designated specific forest blocks as conservation areas. Recognizing the unique rights of indigenous hill communities, the Indian Constitution's Sixth Amendment affirmed their special status. The Forest Rights Act of 2006 further aimed to protect the rights of forest dwellers while involving them in forest preservation. Indigenous communities, deeply rooted in cultural heritage, possess invaluable traditional ecological knowledge, contributing significantly to sustainable forest management and biodiversity conservation. Integrating this wisdom with modern conservation practices and fostering collaborative efforts presents a substantial opportunity to ensure the sustained vitality of the region's forests for generations to come.

Key words: Northeast India, tribal community, forest conservation, biodiversity

Track 2: Community forestry and landscape restoration

Forest landscape restoration (FLR) through community forestry: lessons from Asian countries

Ganga Ram Dahal, PhD¹, Basundhara Bhattarai, PhD², and Hemant Ojha, PhD³

¹ International Forest Landscape Restoration Specialist-FAO of the United Nations

² Senior Gender and Environment Advisor, IFSD Australia

³ Principal Advisor, IFSD Australia

Forest landscape restoration has attracted global attention with the recent declaration of the UN Decade on Ecosystem Restoration (2021-2030), and the Bonn Challenge/New York Declaration with aim to bring 350 million hectares of deforested and degraded land into restoration by 2030. The countries in Asia with higher deforestation and degradation rate are using FLR as an approach to bring people together to identify, negotiate and implement practices that restore an agreed optimal balance of the ecological, social and economic benefits of forests and trees within a broader pattern of land uses. In many countries Asia forest landscape restoration has significantly progressed through adoption of community forestry, where indigenous peoples and local communities (IPs and LCs) protect natural resources within their territories, undertake necessary plantation and adopt sustainable silvicultural techniques to restore designated community forest areas. However, the progress made so far is too little as compare to the scale and need to restore the degraded and deforested forestlands in Asia. The findings of previous studies and practical experiences across Asian countries have revealed that there are a number of proximate and underlying factor those hinder the restoration process such as: non recognition of the role of IPs and LCs, insufficient resources (financial and human), inadequate collaboration amongst multiple actors etc . Against this backdrop, the paper presents current status of FLR in the selected Asian countries and synthesizes and discusses the factors behind success or failure of FLR initiatives taking the experiences from country cases from Asia. Finally, the paper outlines the interrelation between FLR and the role of local communities and indigenous people, and draws key lessons to move forward in achieving better results from restoration initiative in Asia.

Key words: Forest, Landscapes, Restoration, community forestry

Question of multipurpose forestry and biodiversity conservation in community managed Sal forests of Nepal

Lila Nath Sharma¹, Muna Bhattarai¹, Rabindra Pun Magar¹

¹ForestAction Nepal, Bagdol, Lalitpur, Nepal

Community forestry program of Nepal is a successful model of decentralized forest governance. The program has made a visible contribution in improving forest cover, increasing tree density and restoring degraded forest. While increase in forest cover and tree density has been equated as biodiversity conservation, scholars have questioned biodiversity outcomes in community forests. In addition, despite passive management, community forests have prioritized few major timber species against the multipurpose nature of forest-people interaction. In this context, combining forest biodiversity data across various groups of plants and animals, in situ interview of forest leaders and local people, review of forest management plans and observation of routine management activities in 22 Sal dominated community forests in lowland of Nepal, we analyzed how existing management in community forest support biodiversity conservation and multipurpose forestry. Our results show that while community forests have important role in protecting the forest, they have failed to acknowledge the richness of biodiversity and multifunctional nature of forest. Management plans and specific actions are guided by broader political narratives around economic growth and prosperity, and traditional dependence of local people are overlooked. We discuss how specific features of forest biodiversity are underappreciated in management plans and silvicultural interventions, and preferential protection of timber species exists even in passive management. We reaffirm, considering biodiversity and associated ecosystem services in management helps building resilient forests and society at the face of global climate and biodiversity crises.

Key words: Community forests, Sal, Management plans, Routine management, Environmental services

Comparative analysis on community forests in Nepal and their influence on forest cover

Sepp Feiersinger¹, Anko Stilma¹, Arjun Chapagain²

¹Van Hall Larenstein University of Applied Sciences, Netherlands

²Federation of Community Forestry Users Nepal (FECOFUN), Bhaktapur, Nepal

Community forestry program in Nepal is recognized globally for successful forest conservation. Within the middle hills of Nepal, Operations Plans were found to prescribe the same operations, irrespective of species composition, forest conditions, and forest management objectives. The OPs play little, if any, role in practical forest management. The combined use of remote sensing and GIS technologies can be invaluable to address a wide variety of resource management problems, including the assessment of forest cover change and its causes. In this research the OPs of two community forests in the middle hills of Makwanpur district, selected based on their change in forest cover, were compared with each other to see if forest cover change was caused by differences in OPs and their implementations. Three methods were used to see if similarities in forest cover of two community forests can be explained by how the OP is implemented by the Community Forest User Groups (CFUGs): forest cover measurements with annual landcover data, a content analysis of the OPs and ground truthing the current situation with the help of interviews and surveys (Likert scale). A significant difference was only found in the forest cover analysis. Machhedanda CFUG is more turbulent in their forest cover change compared to Baluwa Bhanjyang CFUG. The OPs were the same but showed differences in the way their activities were explained. Machhedanda CFUG is more socio-economic focused and Baluwa Bhanjyang CFUG is aiming on their forest conservation. Qualitative data shows that both CFUGs face communication challenges and struggle to fully implement their OPs. Further research may be needed to establish a stronger connection between OP implementation and forest cover change.

Key words: Forest cover, operational plan, community forest, Nepal

Track 3: MAPs, prosperity, and sustainability

A roadmap to sustainable management of commercial medicinal and aromatic plants, fungi, and lichen in Nepal

Carsten Smith-Hall¹, Dipesh Pyakurel², Thorsten Treue¹, Mariève Pouliot¹, Suresh Ghimire³, Anastasiya Timoshyna⁴, Henrik Meilby¹

¹ University of Copenhagen, Faculty of Science, Department of Food and Resource Economics, Denmark

² Asia Network for Sustainable Agriculture and Bioresources, Kathmandu, Nepal

³ Tribhuvan University, Institute of Science and Technology, Central Department of Botany, Kathmandu, Nepal

⁴ TRAFFIC, Cambridge, UK and IUCN Medicinal Plant Specialist Group, Cambridge, UK

As many as 300 medicinal and aromatic plants, fungi, and lichen species are traded in tens of thousands of tons worth tens of millions of USD in and from Nepal annually. Past interventions have not ensured sustainable trade, leaving many species vulnerable to commercial harvesting and threatening rural household incomes, the processing industry, and government revenues. Building on documented evidence and stakeholder involvement, we used a theory of change approach to develop a roadmap with explicit pathways to sustainable management. We produced a draft roadmap by combining proposed interventions at annual key stakeholder dialogue meetings in 2016, 2017, and 2018 with recommendations extracted from a literature review of commercial medicinal plants, fungi, and lichen trade and conservation in Nepal. This was discussed at a national workshop in Kathmandu in 2023 with sector-wide stakeholder representation to derive the final roadmap. The literature review also identified the causal assumptions and theoretical explanations – for each pathway action and outcome – and pathway feedback mechanisms. The roadmap has five pathways: i) Increase cultivation, ii) Strengthen local management, iii) Support domestic businesses, iv) Improve sector governance, and v) Increase international collaboration. Each pathway consists of actions (2-5 per pathway) that lead to outputs (2-5) and outcomes (2-6). Accordingly, the roadmap offers stakeholders a structured approach to implement future activities and investments to enhance sustainable trade. The approach can be replicated for environmental products traded in and between countries in other parts of the world.

Key words: Conservation policies, environmental products, Himalaya, illegal wildlife trade, livelihoods, sustainability

Sustainable management and trade of environmental products: A district-level roadmap to reinvigorate community forestry in Nepal

Dipesh Pyakurel¹, Arjun Chapagain², Carsten Smith-Hall³, and Dietmar Stoian⁴

¹ Asia Network for Sustainable Agriculture and Bioresources (ANSAB), Kathmandu, Nepal

² Federation of Community Forestry Users Nepal (FECOFUN), Bhaktapur Road, Kathmandu 44601, Nepal

³ University of Copenhagen, Faculty of Science, Department of Food and Resource Economics, Rolighedsvej 23, 1958 Frederiksberg C, Denmark

⁴ CIFOR-ICRAF, Charles-de-Gaulle-Strasse 5, 53113 Bonn, Germany

After three decades of successful forest restoration and conservation, community forestry in Nepal requires reinvigoration to become a vehicle for economic development given demographic and technology changes, expansion of road networks, and other livelihood options for the rural populations. Sustainable management and trade of environmental products is crucial to such progress: the country's trade in 300 species of medicinal and aromatic plants, fungi, and lichen is worth tens of millions of US dollars every year. Here, we present district-level options to increase sustainable environmental incomes, supplies to processing industries, and government revenues. First, using the example of Gorkha District, we present an overview of the economic importance of environmental products using species-level data from 1994-95, 2014-15, and 2021-22 derived from trader interviews. Second, we present an overview of the more than 500 community forestry user groups in the district, including their current approaches to commercial environmental products. Third, we show how community forestry can be reinvigorated by operationalising the "Roadmap to sustainable management of commercial medicinal and aromatic plants, fungi, and lichen in Nepal" with its five pathways (Increase cultivation; Strengthen local management; Support domestic businesses; Improve sector governance; and increase international collaboration). For each pathway, we present concrete actions that lead to outputs and scalable outcomes. The resultant district-level roadmap offers stakeholders a structured approach to actions and investments to advance sustainable production and trade. The approach can be replicated for environmental products elsewhere in Nepal and abroad.

Key words: community forestry, economic development, medicinal and aromatic plants, fungi and lichen, non-timber forest products, Gorkha

Bayesian Belief Network model to assess sustainability of medicinal plants in Nepal

Reshu Bashyal¹, Anastasiya Timoshyna², Carsten Smith-Hall³, Cara Flowers², Amy Hinsley⁴

¹ Greenhood Nepal, Kathmandu, Nepal

² TRAFFIC International, Cambridge, United Kingdom

³ Department of Food and Resource Economics, Faculty of Science, University of Copenhagen, Denmark

⁴ University of Oxford, United Kingdom

Medicinal plant harvesting and trade has been supporting rural livelihoods. However, lack of harvest and trade related data impedes sustainability assessments for commercial species and the development of appropriate research and policy responses. This is especially relevant to Nepal where hundreds of thousands of rural people rely on commercial medicinal and aromatic plants for income generation. While work is progressing on how to enhance sustainable trade, such as through "A roadmap to sustainable management of commercial medicinal and aromatic plants, fungi, and lichen in Nepal", sustainability assessments are rare and costly. Here we use a Bayesian Belief Network model to predict the sustainability of harvests under changing market and supply conditions for specific species-area combinations in Nepal. In doing so, we bring together expert knowledge and available evidence into the model. Expert knowledge is derived from interviewing medicinal plant harvesters, traders, experts, and government officials involved in regulating harvests. We used expert-elicitation (experts identified purposively based on their publications on medicinal plant trade followed by referral/snowball sampling) to define conditional probabilities for the model and apply it to different species, including important international exports such as *Nardostachys jatamansi* and Maire's yew *Taxus* spp., to predict sustainability under future conditions. The initial scoping of the ongoing research shows that alternative income sources for harvesters, enforcement of harvesting regulations, and international demand for medicinal plants play a key role in influencing sustainability and future responses could benefit by considering these areas.

Key words: BBN model, changing markets, expert-elicitation, harvest, livelihoods

Governance implications of informal payments in Nepal's community forestry and medicinal and aromatic plants sectors

Thorsten Treue¹

¹ University of Copenhagen, Faculty of Science, Department of Food and Resource Economics, Denmark

Drawing on the concepts of access theory, street-level bureaucrats, and collusive corruption, we investigate the governance outcomes of informal payments in Nepal's timber and medicinal and aromatic plant (jadibuti) sectors in community forestry (CF). Based on literature studies and interviews at all levels in the timber and jadibuti value chains of CF as well as the forest bureaucracy, we document informal payment systems and uncover their functions, including connections to official institutions. In both sectors, sustainable harvest levels are bureaucratically determined and based on sketchy or non-existing biophysical knowledge. We show that the official system in CFs has established 'hidden institutions' that secure unofficial cash flows to forest bureaucrats and criminal gangs but involve little risk of overharvesting timber resources. Forest bureaucrats also generate informal payments from the jadibuti (herbal) sector but with higher risks of promoting over utilisation. We conclude that when biophysical knowledge about stocks and increments is scarce, and the state cannot pay adequate official salaries to its employees, decentralised governance of renewable natural resources is the best policy option. Experience-based local knowledge and local institutions' economic interest in sustaining the long-term harvest potential will likely result in sustainable practices. However, overharvesting is still a threat, so 'the state' has legitimate interests in monitoring and regulating the outcomes of decentralisation when needed. Thus, to promote sustainable resource use, 'the state' must establish 'hidden institutions' that offer opportunities for its bureaucrats to unofficially 'tax' revenue streams while minimising their temptation to engage in resource degradation for short-term financial gains.

Key words: Sustainability, decentralised governance, informal payments, hidden institutions

Parallel Session 2

Track 1: Community forestry in socio-economic transition

Growing new forests in challenging times: Insights about demographic change among smallholders in Indonesia and Nepal

Digby Race¹, Popular Gentle², Bhawana KC³

¹ Land Management and Development, School of Business and Management, University of the South Pacific, Suva, Fiji

² Office of the Rt. Hon'ble Prime Minister of Nepal.

³ Centre for Human Factors and Sociotechnical Systems, University of the Sunshine Coast, Queensland, Australia.

Smallholders remain a feature of global agriculture for their vital role in food security, particularly at a local level. Recent data indicate that there are at least 480 million smallholders who comprise about 85% of farm enterprises and produce about a third of the world's food. Yet most smallholders are challenged by difficult environmental conditions, fluctuating markets and a plethora of policies, so they are in a continual process of adaptation and innovation in an effort to sustain their livelihoods. Another factor is demographic change as more smallholders seek off-farm employment locally and even migrate to cities for extended periods. Although demographic change among smallholders has received little attention, it is an important dimension if we are to understand the future contribution by smallholders to farming and forestry. The authors draw on their experience from Indonesia and Nepal to discuss how smallholders are responding to changes in their operating environment. The outcome of the response by smallholders is leading to different approaches to farming and forestry, with one result being less intensive farming and more planted and regenerating trees on farmland. Rather than being a sign of neglect of previous agrarian livelihoods, it can be viewed as an important part of the adaptive capacity of smallholders and an opportunity to reimagine the forest products and services of smallholders and rural landscapes.

Key words: Smallholders, new forests, enterprise diversification, socio-economic change

Fifty years of community forestry in Nepal: Achievement and challenges

Bir Bahadur Khanal Chhetri¹

¹ Institute of Forestry, Dean Office, Kathmandu, Nepal

The forestry sector in Nepal operated within a feudal system for many centuries, primarily benefiting the ruling elites. This persisted until the formal launch of the community forestry (CF) program in 1978. The CF program gained additional strength through the Forest Act of 1993 and the Forest Regulation of 1995. During the initial two decades, community forests not only experienced rapid expansion but also transitioned from subsistence use to greenery promotion. Over its more than fifty-year history, CF has transformed from basic community-managed forests to technical forestry and is now gradually progressing towards sustainable forest management and in many places served as a vehicle for rural development. Currently, CF covers 2.6 million hectares of national forest area, managed by 22,000 community forest user groups, involving 3.3 million Nepalese households. Beyond ecosystem improvement, CF has the potential to contribute to poverty alleviation and hunger reduction by focusing on small-scale forest-based enterprises. Additionally, it aims to advocate for environmental benefits and add value to forest products generated by community forests. The paper underlines that the CF program anticipated to promote gender equality, empower women, ensure environmental stability, and ultimately contribute to the sustainable development of the nation itself. The transition from a unity system to a federal structure in the country has given rise to challenges in coordinating different layers of governance for the effective implementation of CF program following the new Forest Act 2019 and the Forest Regulation 2022. Furthermore, it discusses other key challenges that the CF is facing at present.

Changing socio-economic dynamics and shifting forest-people relationships on rural livelihoods: Nepal's community forestry in a quandary

Bishnu Hari Poudyal¹, Dil Khatri^{2,4}, Dinesh Paudel³, Kristina Marquardt⁴, Sanjaya Khatri², Govinda Paudel²

¹ Forest Action Nepal/Food and Agriculture Organization of the United Nation, Nepal (FAONP)

² Southasia Institute of Advanced Studies (SIAS), Kathmandu, Nepal

³ Appalachian State University, NC, USA

⁴ Swedish University of Agricultural Sciences, Uppsala, Sweden

Nepal is going through a major shift in forest management practices leading to different forest-people relationships in recent years. Nepal's forests in general are experiencing a transition of recovery where forest areas particularly in community forestry are rejuvenating substantially with new growth, regeneration and diversity in forest composition. These changes are linked to the shifting community collective action and emerging new socio-economic changes such as income-diversification, declining subsistence utilization and outmigration. However, these changes are highly differentiated within the country and dynamic in its nature. The Nepalese mid-hills are experiencing swift and massive changes in both forest recovery and collective action whereas the case of the lowlands of Terai is different. Based on the comparative case study of four villages from three different ecological regions, we examine the interplay between forest transition and community collective action in the context of community managed forests. Findings show that the forest transition is not static, but a dynamic process shaped by diverse local and external factors. In Nepal's case, changing or declining utilization of forests for subsistence uses leading to new dynamics in community collective action has played a central role in driving forest transition i.e., forest recovery. As a result, local forests are increasingly recovered, but community participation in forest management activities and utilization are declining. Reconceptualizing local collective action in this changed context requires revisiting forest policies and institutions that can respond to the socio-economic changes of the mountain landscape.

Key words: Collective action, community forestry, forest transition, Himalaya livelihoods, Nepal

Forest-based livelihood pathways during the agrarian transition: the example of the Nepali mid-hills

Douglas Bardsley¹, Edwin Cedamon¹, Ian Nuberg¹, Naya Sharma Paudel²

¹ School of Agriculture, Food and Wine, The University of Adelaide, Adelaide, Australia

² ForestAction Nepal, Lalitpur, Nepal

Significant changes are underway in forest management in Nepal. Knowledge of complex local socio-ecological situations can guide multi-purpose forest management systems that provide unique pathways for different types of households reliant on subsistence agriculture and commercial activities. Forests are directly supporting different household groups across central Nepali mid-hill communities, but dependency on local forests is declining in regions experiencing dynamic socio-economic change. Results from the survey of 1200 households of community forest user group members in Sindhupalchowk, Kavrepalanchowk, Lamung, Udaypur, and Rukum suggest that less than one third of respondents access the majority of their income from agriculture and forestry, and are increasingly reliant on off-farm/forest activities, including from remittances to generate financial capital. Respondents also stated that they are less actively managing or utilising the community forest than they did five years ago. Nevertheless, forest resources remain important for subsistence livelihoods, including providing fuel, timber and fodder and mulch for local agriculture, and those resources are increasingly exploited to support a range of niche commercial agro-forestry opportunities. As rural societies transition and people are less immediately dependent on local environments, policy will need to support sophisticated links between forests and agriculture for direct livelihood benefits. Socio-economic and demographic structural changes are important determinant factors in driving a divergence in the direct use values of the forest, and socio-ecological surveys can help to understand that complexity. Ongoing access to forest resources, formal education and technical skills will be fundamental to support the evolving vested interests in sustainable forest management during the agrarian transition.

Key words: agrarian transition, livelihoods; reflexivity; Nepal.

Track 2: Community forest management and silviculture

Forest management, silviculture and productivity in community forestry in Nepal

Shambhu Dangal¹, Pawan Karki², Edwin Cedamon³, Madan Bashyal⁴, Niraj Babu Bhatta⁵

¹ Senior Advisor, RECOFTC Nepal, Kathmandu, Nepal

² RECOFTC Nepal, Kathmandu, Nepal

³ School of Agriculture, Food and Wine, The University of Adelaide, Adelaide, Australia;

⁴ ForestAction Nepal, Kathmandu, Nepal

⁵ RECOFTC Nepal, Kathmandu, Nepal

Forest Management is the process of improving forests through application of silviculture and other forestry principles. Silviculture is an art and science of creating a forest where forest is manipulated through various operations. The National Forest Master Plan 1976, and its translation to the Forest Act 1976 that provisioned the handing over management right of forests to Village Panchayat is the milestone of participatory forest management in Nepal. This paper provides an overview of evolution of community-based forest management (CBFM) in Nepal and how it was successful in reverting massive deforestation and forest degradation and bringing the mid-hills back to greenery. The paper highlights the importance, challenges, and opportunity for silviculture to timber and non-timber forest management, agroforestry promotion and watershed management. The paper offers policy, institutional and technological roadmaps to promote forest management in Nepal.

Key words: Silviculture, community-based forest management, challenges, policy

Restoring degraded community forests through high value tree species: A study from hilly area of Nepal

Upendra Aryal¹, Dipak Jnawali² Ashok Parajuli³, Bhawana Rijal¹

¹Forest Officer, Division Forest Office, Palpa

²Joint Secretary, Department of Forests and Soil conservation

³ Forest Officer, Division Forest Office, Kathmandu

Inadequate financial returns, reduced dependence on forest for livelihoods, and a higher youth migration rate are resulting to inactivity of community forests (CF) in Nepal. Most of the hilly community forests are encroached by invasive species such as *Lantana camera* and other unproductive shrubs that have resulted in higher forest coverage but lesser production and lower economic return. Plantation of economically valuable *Cinnamomum* species in such degraded areas of community forest are being practiced in Palpa district since 2021. This study aims to identify the motivating factors for forest restoration and quantify the seedling survival status in degraded areas of three different CFs in Palpa district. Site clearance and plantation of 18,400 seedlings were carried out in June/July 2021, and the total number of seedlings survived was recorded in July 2022 and July 2023. Field observation, key informant interviews and focus group discussions were carried out for data collection and analysis were done using R script. The result showed that major motivating factors for degraded forest restoration were short rotation species followed by high economic value and easy harvest. The result also showed that *Cinnamomum* seedlings exhibited survival rates of 83.1% in the first year and 71.3% in the second year. While overall seedling mortality was low, primary factors included elevated weed growth (37%), drought (19%), and unsafe transportation (15%). This study suggests the need for advocacy in the policy front for restoring unproductive community forests, and mobilize users towards income generation and quick-return species in Nepal.

Key words: Forest restoration, *Cinnamomum tamala*, community forest, survival, degraded areas.

Where is our forest management heading towards? Analysis of the long-term effects of forest management practices in the Terai community forestry of Nepal

Sony Baral¹, Mathias Neumann², Khagendra Prasad Joshi³, Harald Vacik²

¹ Institute of Forestry, Department of Social Forestry and Forest Management, Pokhara, Nepal

² Institute of Silviculture, University of Natural Resources and Life Sciences, Vienna, Austria

³ Institute of Forestry, Dean Office, Kathmandu, Nepal

In Nepal, forest management is protection-oriented with a focus on maintaining and enhancing the growing stock volume of forests. This approach has increased the forest cover successfully, but the changes in forest conditions and quality remain unexplored. Based on longitudinal forest inventory of the permanent sample plots collected over five time periods (2005, 2010, 2013, 2016, and 2022), this study assesses the change of forest conditions in community forests of the Terai region focusing on the changes in the basal area density of forests, in-growth and regeneration. As forests are largely used for subsistence purposes, trees basal has increased from 13.4 in 2005 to 23.1 m² per ha in 2022 with a statistically significant difference, however, the increment was mostly observed in large-size trees. The number of small-size trees (less than 10 cm DBH) per ha decreased in all inventory periods. Furthermore, the condition of regeneration is poor and even declining. This is primarily due to the grass collection and haphazard harvesting of small trees for fodder. As the establishment of new trees is very limited, and diameter classes are dominated by large trees, the stand structure does not reassemble with an inverse J shape curve. Hence, forest sustainability remains a question. This is due to the adoption of selective felling and harvesting of trees haphazardly, without considering the forest stand conditions. Likewise, interventions were hardly carried out for promoting in-growth in the forests. There is a need to shift the current forest management approach in community forests to ensure forest sustainability focusing on maintaining the stand diversity.

Key words: Sustainability, Stand Condition, In-growth, Selective Felling

Implication of silviculture-based forest management in Lumbini Province, Nepal

Bikash Adhikari¹, Prabin Bhusal¹, Lila Puri¹, Bir Bahadur Khanal Chhetri¹

¹ Institute of Forestry, Pokhara Campus, Pokhara, Nepal

Silviculture-based Forest management is extensively implemented in Lumbini Province of Nepal, with the aim of regulating sustained yield while preserving regeneration and species composition. This study evaluates the regeneration status and timber production of silviculture-based forest management in community, collaborative, and block forests across 12 districts of Lumbini Province. Data collection involved office records of Division Forest office and 25 CBFM in the 12 districts of Lumbini provinces and field inventories. Results indicate that the overall regeneration status of silviculture-based forest management in the province is higher than that reported by the national forest inventories of Nepal, with significant variations among the different management regimes and the districts. The seedling and sapling densities varied, with community forests exhibiting higher densities compared to the others. In community forests, seedling density was 16000 per hectare which is higher than the density found in block (15000 per hectare) and collaborative (13000 per hectare) forests. Similarly, the sapling density was 7000 per hectare in the Hill and 5500 per hectare in the Terai. There occurred a significant difference in timber production between the Terai and Hilly regions. The average annual timber production from community forests was 3869.1 cft and 7797.7 cft in the hills and Terai, respectively. The study underscores the importance of regeneration management, advocating for equal focus on regeneration and regeneration felling. It recommends maintaining species composition based on natural growth patterns and suggests conducting panel studies to support policy interventions promoting silviculture-based forest management in the future.

Key words: Forest management, regeneration, species composition, silviculture, timber production

Track 3: Communities and forest-based enterprises

Innovative approaches to community forest enterprise development: A cross-country analysis between Nepal and Guatemala

Anukram Adhikary¹, Dietmar Stoian²

¹ Department of Forestry and Environmental Resources, North Carolina State University, Raleigh, USA

² Lead Scientist, Value Chains, Private Sector Engagement and Investments, CIFOR-ICRAF, Bonn, Germany

Secure tenure and forest use rights are crucial for equitable community forestry, but its sustainability hinges on developing viable community forest enterprises (CFEs). This is demonstrated with examples from Nepal and Guatemala, two countries widely considered leaders in forest rights devolution. In Nepal, over 22,400 community forest user groups (CFUGs) have gained usufruct rights since the early 1990s, fostering ownership and aiding forest restoration on 2.3 million hectares. Today, however, community forestry is facing challenges as outmigration, road construction, technology shifts, and reduced forest reliance have led to inactivity of numerous CFUGs. Forest management plans have expired, with CFUGs lacking financial and technical capacity on their renewal. In Guatemala, 424,000 hectares of forest in the Maya Biosphere Reserve have been granted as concessions to local communities since the late 1990s. From the beginning, a total of 12 community forest concessions have been operated by CFEs, generating significant employment and income through processing and commercializing timber and non-timber forest products (NTFPs). A comparative study between Nepal and Guatemala allows to identify critical success factors for the evolution of community forestry and the role of CFEs therein. Our analysis covers 19 enabling conditions regarding the political-legal frameworks, institutional support, market access, and forest product endowments. We identify gender- and age-differentiated opportunities for employment and income in timber and NTFP value chains and conclude with a strategic framework for rejuvenating community forestry in Nepal through CFE development, with wider implications for poverty reduction, biodiversity conservation, and livelihood development.

Key words: Community forest enterprises, timber, non-timber forest products, comparative analysis

Promised much delivered little: a story of forest-based enterprises in Nepal

Govinda Paudel¹, Craig Johns², Naya S Paudel¹

¹ Forest Action Nepal, Lalitpur, Nepal

² School of Economics and Public Policy, University of Adelaide, Adelaide, Australia

Forest based enterprises (FBEs) have been hailed as means of achieving economic development while also incentivising local people to manage forests sustainably. It is argued that such enterprises contribute in building local capital, enhancing entrepreneurship and promoting growth. Resonating with this argument, policies, plans and programs of Nepal have considered forest-based enterprises as promising means in generating income and employment opportunities for economic development and poverty alleviation. However, Nepalese forestry enterprises have not performed well in terms of overall business sustenance and prospect of growth. This paper aims to investigate why this state of entrepreneurial underperformance persists and to what extent the policy related barriers constrain the development of forest-based enterprises. We analyse the local socio-political context, enterprise related policy provisions and institutions governing forestry enterprises to understand how policy and local practices undermine the development of forest-based enterprises. The paper draws on the experience of action research work with forestry entrepreneurs based in Kavre and Lamjung districts of Nepal. The paper argues that policy instruments at local level are impractical, conflicting, complex and subject to personal judgement despite seemingly supportive government policies, plans and programs at central level. We demonstrate how policies are understood, interpreted and implemented at local level and how such practices severely constrain enterprise development and growth.

Key words: forest-based enterprises, policy constrains, income and employment, economic development

Prospects and challenges on community forests for livelihood and economic empowerment of women

Bishnu Prasad Sharma¹

¹ Department of Economics, Patan Multiple Campus, Tribhuvan University, Nepal

The community forestry (CF) programme of Nepal completed its four decades with successful outcomes in institutional development and forest regeneration. However, studies show that its contribution to income and employment generation is relatively weak. Consequently, the CF programme is losing vibrancy at the local level which is compounded by large out-migration of its local custodians, declining forest dependence with introduction of non-biomass fuels and changing livelihood patterns. This paper examines the impacts of a recently completed two- and half-year participatory action research project focusing on economic empowerment of poor and marginalized women through forest solutions. The action research focused on the prospects of gender-sensitive and business-oriented low-carbon forest solutions. The interventions consisted of capacity building through enterprise and skill training, support in establishing diverse forest-based enterprises, market access and networking, technology support and, institutional support to the poor and marginalized women. A total of 18 non-timber forest-based enterprises were set up in two ecologically diverse districts – Sindhupalchowk and Nawalparasi. Baseline and end line data were collected at the household level to compare pre and post project scenario. Income from forest-based enterprises have started yielding income but were not significant. More importantly, however, the perceived empowerment status among participating women had significantly improved following the project intervention. The small-scale of operation and policy barriers, particularly related to extraction and marketing of forest-based products, appeared as one of the important barriers to their sustainability.

Key words: Community-forest, women-empowerment, forest-based enterprise, gender-sensitive

Day 2: 5 March 2024

Parallel Session 1

**Track 1: Community forestry and
institutions**

Reframing institutional framework for effective community forestry under federalism in Nepal

Mani Ram Banjade¹

¹ ForestAction Nepal, Kathmandu, Nepal

Nepal's community forestry (CF) is facing a significant challenge of forest management and group governance under the considerable changes in local demographic structures, livelihoods strategies and political governance. The recent state restructuring under federalism has brought local governments as a resourceful and largely autonomous entities with democratic legitimacy enshrined through periodic elections. In recent years, increasing trends of migration, dramatic shift in local economy from subsistence farming to cash based and commercially intended economic activities, and correspondingly changing local livelihoods strategies demand for reframing community forestry governance in the middle hills of Nepal. Based on over five years of experience of action research in Kavrepalanchok and Sindhupalchok districts, this paper presents insights in two areas: i) potential areas of contestations and cooperation between community forest user groups (CFUGs), local governments (LGs) and government forestry agencies influencing CF development and harnessing optimal benefits from CF management, and ii) possibility of clustering adjacent CFUGs for accessing technical and administrative services and developing strategies and management plans for larger forest stands. Reflection on working with LGs and at cluster level shows promises for reenergizing otherwise passive CFUGs, developing plans for collective forest-based enterprises and hiring technical services for forest management. There are, however, challenges ranging from no clarity on policy on role of LGs, reluctance and resistance from forest authorities in offering more authority at the LG level, and sustainability of cluster level mechanisms when there is limited legal space for them to operate independently. We propose a framework for enhancing cooperation between CFUG and LGs by designing and promoting deliberative forums and synergizing available resources.

Key words: CF-LG cooperation framework, cluster level mechanism, deliberation, changing demography and economy, Nepal

Recentralization in the community forestry of Nepal: By design or default?

Bijendra Basnyat¹

¹ Independent researcher, Kathmandu, Nepal

Scholars have claimed that community forestry in Nepal is gradually being recentralized, but it is unclear whether this is an intentional action by the forest bureaucracy or an unintended consequence of their practices. To investigate this, a comprehensive review of forestry laws from the last three decades (1993-2023) was conducted, along with discussions with forest officials, forest user group leaders, and members of right-holder organizations. The study found that recentralization of community forestry i.e. the recapture of decision-making powers over resources (timber) and revenue occurred gradually in Nepal. This was primarily through the everyday practices of forestry officials, who designed new mechanisms or strategies through technical domination or legal-sounding practices. Later, these practices were legitimized by enacting the 2019 Forest Act, the 2022 Forest Rule, and provincial forestry legislation. The country's federalization further provided opportunities for the integration of these practices. Forestry legislation at all tiers of government treated community forestry as a "cash machine" by imposing different taxes that contradicted the country's constitution, while investment of forest user groups was poorly accounted. Recentralization, which was the result of everyday practices of forestry bureaucracy, is now legitimized. As a result, the forest user groups' rights were curtailed while the power of forest bureaucracy was strengthened. The study concludes that without organized resistance from forest user groups, recentralization will continue to be mainstreamed.

Key words: Devolution, power, rights, resources, community

Unveiling the institutional systems of forest restoration in Chure region of Nepal

Upama Ashish Koju¹, Naya Sharma Poudel¹, Rahul Karki¹

¹ ForestAction Nepal, Kathmandu, Nepal

Against the backdrop of changing climate and escalating environmental threats, Nepal's Chure region stands as a crucible for exploring the intricate interplay between forest restoration, community participation, and ecological resilience. This study delves into the contrasting trajectories of forest cover change within three distinct governance regimes: community forestry user groups (CFUGs), collaborative forest management (CFM), and forest protection area. Focusing on case studies from Bagbhairav CFUG (Bara), Musahar CFUG (Mahottari), Tamagadhi CFM (Bara), and Dhanushadham Protected Forest (Dhanusha), our exploration intertwines remote sensing data analysis with institutional scrutiny. The two-decade dynamic landscape of forest cover change unveils distinctive signatures shaped by each management approach. Methodologically, our study harmonizes quantitative analysis of forest cover trends with qualitative insights drawn from focused group discussions, key informant interviews, and literature review. The synthesis of these methodologies sheds light on the transformative potential of community-driven initiatives. Initial insights suggest that CFUGs, empowered by participatory decision-making and resource use rights, may hold the key to unlocking robust and sustainable forest cover increases, outperforming both CFM and forest protected area models. This research not only contributes to the ongoing discourse on effective forest management strategies but also sheds light on the transformative potential of community-driven initiatives in fostering long-term environmental resilience and enhancing ecosystem services within the Madhesh province of Nepal.

Key words: Forest restoration, forest cover, community forests, institutional analysis, sustainable coexistence

Governance and wellbeing outcomes of urban community forestry in Malaysia

Tapan Kumar Nath¹

¹ School of Environmental and Geographical Sciences, University of Nottingham Malaysia

Community participation in urban forest conservation is inadequate, especially in developing nations. However, these forests are necessary for sustainable societies and cities, one of the 17 UN sustainable development goals. Realizing the significance of these forests, urban communities in Kuala Lumpur have been struggling and coordinating informally with relevant government agencies towards conserving the remaining small patches of urban forests as urban community forests (UCF). Several community-based organizations (CBOs) have collaborated with various stakeholders for conservation of these declining green lungs in the Malaysian capital. This paper evaluates the governance and subjective and psychological wellbeing outcomes of three UCF in greater Kuala Lumpur by analyzing data from 320 respondents. About 80% of the respondents reported “agree to strongly agree” regarding CBOs role in effective management, coordination, collaboration, protection, and gazettement of UCFs. However, less than 50% of the respondents stated “agree to strongly agree” to nine items of governance related to the role of government agencies. For 50% of them, the role of CBOs is not recognized by government agencies. These divergent responses are also supported by the results of the Mann-Whitney U test. However, more than 80% of respondents emphasized a strong collaboration between CBOs and government agencies. Over 85% of respondents expressed “agree to strongly agree” about the importance of UCF for subjective (7 items) and psychological (7 items) wellbeing. Logistic regression results show that gender, age, and activities in UCF are significantly associated with the subjective and psychological wellbeing of respondents. As these UCF are highly significant for people's wellbeing, greater institutional support and effective collaboration among stakeholders are imperative.

Key words: Urban community forests, subjective wellbeing, psychological wellbeing, governance, Malaysia

Track 2: Forest ecosystem services and carbon trade

Market-based approach for sustainable forest management in Nepal

Rajesh Kumar Rai¹

¹ School of Forestry and Natural Resource Management, Institute of Forestry, Pokhara Campus

In the changing context, forestry sector in Nepal is attributed by low participation (voluntarily) of forest users and shift in demand for forest products from fuelwood and fodder to timber and small-wood. This is mainly due to the transitioning of rural economy from subsistence to market-based. In this context, it is crucial to design forest management strategies integrating economic principles and market-based mechanisms. This is because conventional practices of forest management by voluntarily participation of all forest users is three to four times higher than that of forest management hiring labor from the market. This will reduce the opportunity cost of carbon sequestration by almost half from USD 2.63/ton CO₂ to USD 1.11/ton CO₂. In addition, market-based forest management may help decide rotation age such as in Sagarnath Forest. Similarly, it introduces technology in forest management, which will narrow the gap between planned and actual area of forest management; and reduce timber volume loss due to conventional harvesting practices. In brief, it will contribute to improve forest management, reduce deforestation, expand forest management and reduce forest fire by increasing the utilization of wood in construction and energy.

Key words: Carbon, opportunity cost, forest fire, labor, technology,

Ecosystem service approach of valuing natural forests: A case of Panchase forest

Ananta Ram Bhandari¹, Udhab Raj Khadka², Keshav Raj Kanel³

¹ WWF Nepal, Kathmandu, Nepal

² CDES, TU

³ Independent Expert, Kathmandu, Nepal

Ecosystem delivers essential goods and services to the human society. Among others, services rendered from forests are crucial to sustenance of communities. This paper identifies ecosystem services and estimates economic value of natural forests provided by Panchase forest in the Central mid-hills of Nepal. Transect walk, focus group discussion, key informant interview and expert consultation was conducted to identify the ecosystem services. The economic value was estimated applying 'total economic valuation' framework considering both use and non-use values. Use values include consumptive, non-consumptive and indirect uses. Non-use values include option, existence, altruist, and bequest values. Market price method was applied to estimate the consumptive and indirect use values whereas, travel cost method was applied to estimate non-consumptive use values. Contingent valuation method was applied to estimate non-use values through 'willingness to pay'. The Panchase forest provides 17 types of ecosystem services including 6 provisioning, 6 regulating, 2 habitats and 3 cultural and amenity services. The total economic value of the ecosystem services provided by the forest was found to be USD 2.05 million per year. The contribution of consumptive use value, non-consumptive use value, indirect use value and non-use value was found to be 33%, 19%, 23% and 25%, respectively. The consumptive use value, which is recognized by the national accounting system, has only one third contribution to the total economic value of forest. This results in the undervaluation of economic contribution of forests in the national accounting system, thus affecting the country's economic decisions. Revisiting the current framework of national accounting system recognizing the value of forest ecosystem services in economic decisions is imperative.

Key words: Economic value, ecosystem services, protected forest, total economic valuation

Policy and governance frameworks for integrating community forests into REDD+: A pathway to sustainable forest management and climate change mitigation

Nabaraj Pudaisaini¹, Prakash Lamichhane²

¹ Joint Secretary (Tech) at REDD Implementation Center under Ministry of Forests and Environment, Singadurbar Nepal

² Research Officer at Climate Change Management Division under Ministry of Forests and Environment

The urgent need to combat climate change through conservation and sustainable forest management has led the world to initiate and accelerate Reducing Emission from Deforestation and Forest Degradation (REDD+). Nepal has initiated REDD+ program between 2009 and 2011 through innovative pilot projects with some of the Community forests user groups of midhill regions of Nepal. Despite some contradictions between central objectives of REDD+ and CBFM, REDD+ policy proposes to deliver multiple outcomes including emissions reduction, livelihood support and sustainable forest management, and thus appears largely compatible with Community Forestry (CF). An effective policy and legal framework may enable Nepal to merge REDD+ policy, forest management priorities and national economic development to combat current climate change problems. This paper highlights the significance of the policy and legal framework to define property rights, participation, balancing of rights and interests, benefit sharing, additionality and permanence during the implementation of REDD+ activities in community forests supported by the clear importance of equitable and meaningful participation in implementing activities to decision making processes is highlighted. Additionally, effective benefit sharing mechanisms and comprehensive policy documents remain crucial to motivate local communities to remain active in REDD+ activities. Moreover, an efficient mechanism, extending from the central level to users' groups, to facilitate the seamless transfer of information, address challenges, and ensure equitable distribution of benefits. Concluding that scientifically adopted sustainable forest management principles and well crafted policy and legal framework as an undeniable pathway to integrate community forests into REDD+ mechanism to minimize the climate change impacts from national level to the grassroots.

Track 3: Community forestry in changing socio-political context

Future of community forestry in changing contexts: Forest users' perspectives in the midhills of Nepal

Prabin Bhusal^{1,2}, Rajan Parajuli¹, Erin Sills¹, Sony Baral²

¹ Department of forestry and Environmental Resources, NC State University, USA

² Institute of Forestry, Tribhuvan University, Nepal

The Community Forestry (CF) program in Nepal is often lauded as a successful global exemplar of the participatory forest management model. While the CF program has reportedly achieved its initial goal of forest restoration in the Midhills of Nepal, there have been dynamic shifts in forest-people interactions due to rapid changes in the socio-economic, demographic, ecological, and political landscapes of rural livelihoods in recent years. This leads to concerns about the ongoing functionality and effectiveness of the CF program in the context of evolving governance systems and structures, the changing role of forest resources in rural livelihoods, and socio-economic transformations triggered by outmigration. We examine the perceptions of community forestry users about the future of community forestry. In a survey of CF leaders (N = 55) and households (N = 874), in Salyan and Pyuthan districts, the majority of respondents (80%) perceived good future prospects for CF, despite these challenges. We found that factors like long-term migration, crop raiding, land size, fuelwood dependency, operational plan implementation, and involvement of local government are crucial for the future sustainability of community forestry in the mid-hills of Nepal. This study offers insights for community forestry policymaking, emphasizing the need to align initiatives with evolving socio-economic and ecological contexts for long-term resilience and effectiveness.

Key Words: Socio-ecological system, Sustainability, Forest dependency, Policy change

Political parties and community forest governance: A case study of Chitwan district of Nepal

Sanjaya Mahato¹

¹ Department of Public Policy and Management, Kathmandu University

Drawing insights and evidences both from research and direct and indirect involvement of political negotiations in the selection/election of community forestry user groups in Chitwan, the paper argues that the increasing political party intervention in community forest management has added complex challenges and increased conflict for sustainable community forest management. For the community forest governance, political parties have been the key deciding actors for forming the community forestry governing bodies - executive committee of community forests. Moreover, community forest has been a forum to settle political party dispute by adjusting the political cadres in forest governing boards that transfer not only the intra political party disputes but also inter party political disputes in community forest governance (management). The intensity of political negotiation and conflict in community forest governance is dependent on the amount of resources of the community forest, population compositions of the catchment areas and local political leadership. The political party involvement in community forest not only controls people's participation in the selection of local community forest executive committee but also controls the users' participation in forming local forest policies thus adding complex challenges to sustainable community forest management and questions the overall future of community forestry in Nepal.

Key words: Governance, political party, community, forest

The changing mode of production and community forestry in neo-liberalizing mid-hills Nepal

Dilli P. Poudel¹

¹ Senior Researcher, Southasia Institute of Advanced Studies (SIAS), Nepal

In the 1970s, community involvement in community forestry (CF) of Nepal was stipulated as a mode of economic production, which was subsistence agriculture resourced by forest extraction. After the 1990s, outmigration was on the rise, resulting in decreased interest in agroforestry-based practices, while on the other hand, increased remittance income. The present community's mode of production is therefore shaped by the national neoliberalizing contexts and the interconnected global economy. The onset of emptying villages has compelled migrant families to either underutilize, or abandon previously cultivated farming land, eventually, reducing the previous CF practices. This raises the question of which "community" is using and managing CF at present, as the management is not determined so much by the CF rules but by the livelihood imperatives under rapid socio-economic changes. The existing literature and five years of exploration of mid-hills agroforestry practices suggest that the community pays little to no attention to managing local forests, depends more on remittance/alternative income, constantly seeks off-farm earning options, and is "confused" about the future use of forest for economic betterment. An updated understanding of the present sociology of community and CF, therefore, warrants envisioning the future CF considering the neoliberal contexts of rural Nepal. In this study, I analyze how the community's internal dynamics (e.g. off-farm, remittance, decreased forest dependency, wild animal attacks, changing society) are shaped by external factors (e.g. migration, markets, networks, delocalizing/multi-local households, politics, neoliberal economy, climate change). The findings of this study would be important to envision the future of CF governance in Nepal.

Key words: Sociology of community of community forestry, migration, decreased forest dependency, idle land, neoliberal economy, future CF

Forest governance and community engagement in the changing political and social context of Nepal

Mary Hobley¹, Yam Malla¹

¹ Independent Researcher

The paper looks at Nepal's historical and social context and its inter-relationships with community forestry (CF). CF grew during a very different period in Nepal's political and economic history. The present models were constructed during the 1980s and 1990s, based on the intimate relationships of forests and agriculture, with the livelihoods dependent on the sustenance of these relationships. Today, however, foreign migration and remittances are driving the agrarian change, with high levels of internal migration from rural to urban, and from the hills and mountains to the Terai. As migration drives change, so livelihoods change. The old systems based on these linkages are breaking down fast as new economic opportunities and relationship with natural resources develop. CF expanded when there were no elected governments and community forest user groups (CFUGs) filled the gap and in effect became mini governments, managing forests and decisions on resource allocation for development. CF became a breeding ground for political leadership. Consequently, the most influential of these local leaders moved into the newly elected local governments and have, in effect, left a vacuum in CF. The symbolic value of leadership in CFUGs has now decreased, as those who are politically ambitious can find their space directly in local government. The major changes in livelihoods, the declining dependence on forests, and the new political system will require CF to change to respond to new challenges and opportunities. CF has to be re-thought. Forests as a productive economic resource may continue to play a useful role in rural livelihoods, but only when there are conducive legal and regulatory frameworks to enable the development of forest enterprise and markets. This presentation will stimulate discussion to reconsider the current CF models and find ways to respond to the new dynamics.

Key words: Agriculture, change, community, context, economy, forest

Parallel Session 2

Track 1: Societal transition and community forestry

Shifting local interests in community forests: evidence from socio-ecological survey in the mid-hills of Nepal

Edwin Cedamon¹, Douglas Bardsley¹, Ian Nuberg¹, Naya Paudel²

¹ School of Agriculture, Food and Wine, The University of Adelaide, Adelaide, Australia

² ForestAction Nepal, Kathmandu, Nepal

A socio-ecological survey was conducted in five selected municipalities of Kavrepalanchowk and Sindhupalanchowk districts in November 2019 – February 2020 to develop an understanding of how perceived forest values and activities are changing in association with new risks and opportunities, with a particular focus on the increasing importance of private forestry systems in the Nepalese mid-hills. The survey found that silvicultural operations in community forests had declined within five years prior to the survey while it showed increased activities in private forests. The survey highlighted an increasing dependence of majority of households on private forests for their subsistence needs for timber, firewood, fodder/grasses for livestock, leaf litter and mulch. The shifting forestry interests can be attributed to: i) the advancing stage of community forest stand means that it does not need tending operations; ii) current regulatory requirements and costs are prohibiting silviculture operations on community forests; and iii) lack of labour to undertake collective forestry activities due to outmigration of working-age population. About a quarter of households in the survey area have private forests which is representing a typical mid-hills community. It was found that majority of private forest were grown on underutilised agricultural land. A strong positive association was found between household income and those who are engaged in private forestry. We argue that due to the growing private forestry and low technical forestry skills among landholders means an increase in demand for professional forestry services from an already stretched government forest officers, but it also presents a new opportunity for professional foresters in Nepal to service the emerging private forestry sector.

Key words: Smallholder, forest transition, agroforestry, Nepal mid-hills

Transitioning perceptions of forests in Nepal: lessons from a case study in the middle hills

Nicola McGunnigle¹, Douglas Bardsley¹, Ian Nuberg¹, Edwin Cedamon¹

¹ School of Agriculture, Food and Wine, The University of Adelaide, Adelaide, Australia

A shift in livelihood sources with out-migration from the middle hills of Nepal has resulted in forest succession on abandoned agricultural land. Participatory research with rural householders was undertaken to better understand drivers of land abandonment, intentions to utilise abandoned land, and perceptions of regenerating forest species identified on abandoned land. While the preference for the majority of households is to maintain agriculture production, a quarter of these households favoured agroforestry systems, while some 26% of households did not intend to re-utilise their land at all. Perceptions of changing land use and benefits associated with regenerating tree species shifted with time from land abandonment, evolving from early stage perceptions of loss of production land to acceptance and recognition of both direct and indirect benefits of trees. Increased human-wildlife conflict was identified as a significant concern with increased forest cover, as wildlife seek food sources outside of forests. Our research results suggest that adaptation to the changing socio-ecological landscape is a continuous process that needs to be addressed in stages. To navigate across spatial and temporal scales, change processes that are able to anticipate household needs and concerns could assist transition of the agrarian landscape, as well as co-evolution of community-led forests to meet broader needs within the socio-ecological system. Collaboration with community forest user groups that identifies community needs and challenges could shift the role of community forests to enhance biodiverse ecosystems and livelihoods through imagining diverse benefits of tree resources for wildlife management and livelihoods resilience.

Key words: Adaptation, forest succession, perceptions, sustainable livelihoods, Nepal

Socio-ecological transitions and emerging human-wildlife relations in the Nepalese Himalaya

**Dil Khatri^{1,2}, Dinesh Paudel³, Bishnu Hari Poudyal⁴, Sanjaya Khatri²,
Kristina Marquardt¹, Dilli P. Poudel²**

¹ Department of Urban and Rural Development, Swedish University of Agricultural Sciences, Sweden

² Southasia Institute of Advanced Studies, Kathmandu, Nepal.

³ Environmental Studies Department, Appalachian State University, USA

⁴ ForestAction Nepal, Kathmandu, Nepal

Wildlife encroachments into the farmlands are becoming a chronic problem in the Himalaya threatening the farm-based livelihood systems and rural livelihoods. This problem is particularly alarming in the mid-hills region of Nepal where community forestry programs have successfully restored the forest areas over the past decades and the region is going through a socio-economic changes including outmigration. These evolving dynamics have created new conceptual and empirical discourses on conservations, nature society relations and the conflicts between humans and wild animals, where some animals are becoming pests for farming communities. As a result, the historical co-existence and relationships between local (and indigenous) communities and ecosystems are threatened. By mobilising the concepts of forest transitions and agrarian changes we explore these new and emerging dynamics of growing wildlife problems by examining the nature, extent and drivers of the problems and provide critical insights to the effectiveness of current policies and practical responses. We argue that the growing wildlife problem has pushed farmers to seek alternative off-farm employments and the complex processes of socio-ecological changes have led to alterations in forest-people relations and new forms of forest-wildlife interactions. In part, the existing policy framework takes a blanket approach of conservation of wild animals irrespective of their population size and damage they cause to local communities, and overlooks the growing wildlife encroachment in farming landscapes. Further, the policy responses to address human-wildlife conflict is limited to distribution of symbolic relief and its effectiveness is questioned because of cumbersome bureaucratic requirements. We suggest for critical reflection and reimagining policy and practices that are informed by changing nature-society relationships in the Himalaya.

Key words: Human-wildlife interactions, rural livelihoods, forest transition, agrarian change, Himalaya

Acknowledging Nepal's community forest areas as OECMs: Exploring the potential

Ekraj Sigdel¹, Mahesh Poudyal², Naya Sharma Paudel³, Bir Bahadur Khanal Chhetri⁴

¹ WWF Nepal, Kathmandu, Nepal

² School of Anthropology and Conservation, University of Kent, Kent, UK

³ ForestAction Nepal, Kathmandu, Nepal

⁴ Institute of Forestry, Dean Office, Kathmandu, Nepal

The new CBD Global Biodiversity Framework Target 3 aims to expand the global coverage of conservation areas to 30% by 2030 – commonly referred to as the 30x30 target. There is a growing focus on new approaches, in addition to the traditional protected areas, to bring greater areas under conservation to meet these objectives - the most important of these being the other effective area-based conservation measures, commonly known as OECMs. There is an increasing interest in understanding whether areas covered by Nepal's community forests (CFs) can formally be recognized as OECMs given their global recognition for reversing ecological decline and supporting local livelihoods. We assess whether the areas covered by CFs meet the criteria for OECM and explore the challenges and opportunities of including them in OECM designation. The paper draws on in-depth interviews with 10 key policy stakeholders that includes scientific experts, academics, civil society organizations, government, and legislative parliamentarians, NGOs in Nepal and abroad by using policy process approach and adopting Kingdon's policy window framework. Findings suggests that community forests could potentially be designated as OECMs if: i) it helps ensure continued ownership of local people; ii) the management objectives integrate biodiversity in community forests policy and practices; iii) CFs continue to serve local interest and not simply become 'protected areas'; and iv) provides space for local community groups and civil society organizations in managing OECMs. We conclude that without clear prospects for socially just and equitable benefits to the communities managing the forests, it is hard to see community-level support for OECMs in Nepal.

Track 2: Community forestry and biodiversity conservation

Is buffer zone community forest contributed better forest products supply to forest users? Reflection from five community forests in Bardia national park buffer zone, Nepal

Keshav Raj Acharya¹, Thakur Silwal², Neelam C. Poudyal³

Institute of Forestry, Tribhuvan University, Nepal

² Institute of Forestry, Office of Dean, Tribhuvan University, Nepal

³ School of Natural Resources, University of Tennessee, USA

Buffer zones, the delineated area around protected areas, have biological as well as socio-economic buffering objectives. Forest area within the buffer zone have been managed as buffer zone community forests (BZCF) according to the tripartite agreement among concerned park office, buffer zone users' committee and local forest users in order to provide access to forest resources for the local people. This paper analyses the contribution of BZCF in meeting community needs for forest products in selected BZCFs in the buffer zone of Bardia National Park. The findings are based on household survey (n=305), key informants' interviews (n=10) and analysis of consecutive operational plans of the selected community forest user groups for last one decade. We have found that BZCF has contributed better forest coverage, however protection focused management policy, particularly on ban in cutting of green tree, has reduced the annual harvested amount by half of the prescribed amount on operational plans. Firewood demand was found to significantly decrease due to increase in use of alternatives, however timber was still found to be a major forest product demand. We found poor strength of community forest user groups under buffer zone due to: i) weak recognition as sub-committees of buffer zone user committee and lack of clear working procedure or guideline, and ii) local people were still dependent on park resources, that threatens the sustainability of community forestry on buffer zones. Management zone within buffer area has been recommended for increased forest product supply.

Key words: Buffer zone community forests, dependency, forest products, management zone, user committee

Role of community forestry in sustainable management of conservation landscape: Review of two decades of policies and practices

Bharat Gotame¹

¹ Integrated landscape management to secure Nepal's protected areas and critical corridor (ILaM) project, Kathmandu, Nepal

Community forest user groups has long been recognized as an exemplary institution of co-managing public resources for greater benefits of local communities. Also, community forestry has provided foundation for many other national initiatives like landscape management for biodiversity conservation. Nepal has adopted its first conservation landscape strategy two decades ago in Terai Arc Landscape and continuing its success where community-based resource management regime has been vital behind the impactful results in nature and society. Based on insights from various interaction with experts from government, civil society and private sector including author's own experiences working in bio-diverse landscapes, this paper attempts to diagnose the institutional dynamics of community user groups in buffer zone and corridor forest management. In context of federal system of governance in the country, where landscape level programs could be much effective to fulfill the goal of sustainable development and good governance, no vivid presence of community forest organizations was found engaged in the discourses and actions in doing so. It can be expected that community forestry institutions could have been forerunner in indoctrinating principle of cooperation and coordination with different layers of governments which will have long-run impact in deepening democratic norms and institutionalizing landscape management with wider consensus for sustainable practices across the government. Existing policies so far formulated by provincial and local governments could be steppingstones but not enough to revitalize the opportunities from community managed forests.

Key words: Conservation landscapes, community institutions, policies, and practices

Assessment of bird diversity and associated ecosystem services along the land use gradient in West Sikkim, Eastern Himalaya, India

Samjetsabam Bharati Devi¹, Pema Lepcha¹, Kishor Sharma²

¹ Department of Botany, Faculty of Sciences, SRM University Sikkim, Gangtok, Sikkim, India

² Biodiversity Collaborative, C/O: ATREE, Srirampura, Bangalore, Karnataka, India.

The environmental change has led to decline in biodiversity and ecosystem services, especially in the Himalayan region. Birds (an indicator taxa) plays a key role in the ecosystem providing various services. The present study was conducted to understand the effects of land use change on bird diversity and associated ecosystem services in the Eastern Himalaya, part of the Himalaya biodiversity hotspot. Bird sampling was done following open-width point count method along the land use gradient in West Sikkim, India during March to July, 2023. We recorded 92 bird species belonging to 31 avian families (>15% of Sikkim' avian diversity), well represented by specialists and conservation concern species. For total bird communities, family richness, species richness and abundance were highest in reserve forest and/or large cardamom agroecosystem. Along the land use gradient, there was decline in alpha diversity (for total birds, forest specialists and different ecosystem services provider groups), as well as pair-wise beta diversity (for total bird communities, and for birds providing invertebrate pest control and seed dispersal services). The bird composition showed three distinct assemblages: (a) reserve forest and khasmal forest; (b) large cardamom and mandarin orange agroecosystems; and (c) urban ecosystem. High values of multiple-site beta diversity for total bird communities (and different ecosystem service provider groups) were dominantly contributed by turnover components. Thus, the study suggests biodiversity conservation strategies focusing on reserve forests and community forests, and traditional agroecosystems, and sustainable development to conserve the bird communities, and provisioning of associated ecosystem services in the Eastern Himalaya.

Key words: Bird diversity, biodiversity conservation, eastern Himalaya, ecosystem services, land use change.

Protected areas co-management in Bangladesh: Past, present, and future

Sharif A. Mukul^{1,2,3}, Azharul H. Mazumder⁴

¹ Department of Environment and Development Studies, United International University, Dhaka, Bangladesh

² Tropical Forests and People Research Centre, University of the Sunshine Coast, Queensland, Australia

³ Department of Earth and Environment, Florida International University, Miami, Florida, USA

⁴ USAID Ecosystems/Protibesh Activity (Protibesh), Dhaka, Bangladesh

Protected Areas (PA) are the cornerstone of all conservation efforts in Bangladesh. The current PAs coverage is still less than 5% and many of them were declared after severe degradation. Besides, historically local people depend on PAs for their livelihoods in the country. In many cases, simply declaring PAs without rehabilitating local people brought limited success and caused conflict between local communities and the Forest Department (FD). To address that, co-management of PAs was introduced in the country in 2003 with the USAID-funded Nishorgo Support Project (NSP). Following NSP, there were several other projects (e.g., Integrated Protected Area Co-management/IPAC; Climate-Resilient Ecosystems and Livelihoods/CREL; and most recently USAID Ecosystems/Protibesh Activity), all aimed to enhance PA co-management capacity. One of the significant outcomes of such projects is a PA Management Rules, promulgated by the Government of Bangladesh (GoB) in 2017. Inadequate livelihood support and coverage, donor dependency, and a complex yet evolving governance system hinder the progress of PA co-management in Bangladesh. In our paper, we discuss the evolution of the PAs co-management system in Bangladesh, its limitations, and governance challenges. We also provide recommendations for better PAs co-management including avenues for possible financing and related mechanisms to secure the long-term sustainability of PAs co-management in the country.

Key words: Protected area, co-management, governance, livelihood, sustainable financing

Track 3 Community forestry and rural prosperity

Role of community forestry in rural development in Nepal

Damodar Sharma¹, Pashupati Koirala²

¹ PhD Scholar, Tribhuvan University, Nepal

² Forests for Prosperity Project, REDD Implementation Center, Kathmandu, Nepal

Community forestry is understood as a means of rural development through physical capital and ecosystem services by improving quality of life and economic well-being of rural people. This paper aims to improve understanding of the contribution of community forests (CF) to rural development by analyzing 12 cases in Rupandehi, Palpa and Parbat districts of Terai, mid-hills, and lower mountain, respectively. Both qualitative and quantitative data were collected, and 377 users were interviewed in addition to conducting focus group discussions. The larger CFs have been contributing much to physical capital formation than other assets, while the smaller CFUGs have been investing in human resources despite not having much fund. The municipalities have allocated about 34% to 45% in development projects as a co-management modality. The impactful investment is very less in improvement of quality of life such as human resources and employment generation. The larger CFs seem much reluctant to maintain transparency due to so called capturing by elites and timber merchants. The governance system needs to be strengthened for the long-term sustainability. In order for community forests to contribute to rural development, the provision in the Forest Act 2019 that stipulates spending of at least 50% on social development must be faithfully implemented. However, in lack of financial and technical capacity, smaller CFs have no choice but to merge them with other community forests.

Key words: Community forests, community forestry, rural development, benefit sharing, livelihood

Empowering local communities through community forest rights and exploring economic opportunities in Nepal

Sita Aryal¹, Arjun Chapagain¹, Sujan Khanal¹

¹ Federation of Community Forestry Users Nepal (FECOFUN), Bhaktapur, Nepal

Community forest user groups (CFUGs) have contributed significantly to the protection and management of forest areas in Nepal. However, their contribution is not adequately appreciated. Despite having successful outcomes of community forestry in Nepal, CFUGs lack full security of tenure over forests and land resources and are subjected to restrictions imposed by forest bureaucracy and their exercise of discretionary power in the interpretation of legal frameworks. This paper draws on the study conducted in June 2020 to December 2022 in 100 municipalities across Nepal. Coordination with three tiers of governments and civil society organizations (CSOs) were carried out to sensitize CFUGs, local communities and indigenous people (IPLCs). As a result, enactment of 100 Local Forest Acts was facilitated in addition to conducting rights and governance mapping in 1376 CFUGs, covering 317,072 hectares of community forest area in 35 municipalities. Likewise, 22 community forest-based enterprises were established benefitting 30 CFUGs, covering 4837-hectare area including 11,401 HHs. The interventions have played a significant role in strengthening the rights and establishment of good governance among CFUGs, and indigenous people and local government in selected municipalities. More initiatives are needed in the community forestry sector of Nepal to contribute towards securing, reviving, and continuing community forestry rights, and livelihood enhancement through forest-based enterprise development.

Key words: Community forest rights, forest-based enterprises, indigenous peoples, local communities

Role of NTFPs based micro-enterprises in livelihood improvement of forest user group: A case of mid-hills Nepal

**Sujan Rajbhandari^{1,3}, Yogendra Yadav¹, Prerana Shrestha²,
Reecha Basnet²**

¹ Institute of Forestry, Hetauda

² Kathmandu Forestry College, Kathmandu

³ Division Forest office, Palpa

Non-timber Forest Products (NTFPs) play a crucial role in supporting the livelihoods of the rural forest user groups in Nepal. The support has mainly been observed through micro-enterprise establishment. The paper draws on the research carried out in Pairakhet community forest of Beni municipality, in Myagdi. The paper primarily assesses the role in livelihood improvement of users from Sishnoo powder enterprise, by determining the cost-benefit Ratio of the enterprise. Primary data was collected through questionnaire survey, key informant survey, group discussion, direct observation. Secondary data were collected from published and unpublished books, journals, research reports, records of enterprises. The collected data were analyzed by using simple statistical tools and presented in various figures such as pi-chart, bar diagram etc. The qualitative data were analyzed using descriptive statistics, while the perception of the users towards impact of enterprise on economic condition was measured in Likert Scale. The results show that there were positive changes in the livelihood of entrepreneurs from the Sishnoo based micro-enterprise. It was found that Sishnoo based micro-enterprises had great potentiality of creating opportunities for rural employment generation, human skill development and capacity building. It is imperative to explore, design, and promote NTFP-based micro-enterprises development especially targeting the poor and marginalized communities in addition to organizing business awareness-oriented programs.

Key words: NTFPs, micro-enterprise, community forest, livelihood.

Posters

Navigating socio-environmental challenges

Aasha Khatri¹

¹Agriculture and Forestry University, Faculty of Forestry College of Natural Resource management

In context of growing socio-environmental issues, community forestry is a vital approach for managing natural resources in a sustainable manner. In order to mitigate environmental challenges, it is necessary that community forestry efforts be rejuvenated. We explore how community forestry is transforming in the face of shifting demographics, environmental uncertainties, and socioeconomic landscapes. Our study navigates the global context, analyzing successful models while addressing the limitations and emerging issues within community forestry frameworks. We underscore the need for adaptive governance structures, community engagement strategies, and innovative approaches to ensure the continued relevance and efficacy of community forestry. Through case studies and comparative analyses, we aim to contribute valuable insights to the international discourse on community forestry. Our research aims to inform policies, guide practitioners, and stimulate further academic inquiry into revitalizing community forestry practices.

Key words: Community forestry, socio-environmental crisis, sustainability, local governance, ecosystem restoration

Dependency of peri-urban people on forest resource: A case study in two micro catchments of Kaski district

Ashish Ghimire

This study provides a holistic perspective on the intricate relationship between peri-urban communities and forest resources in the Pudi and Hadi micro-catchments of the Kaski district. By comprehensively exploring various dimensions of dependency, the findings underscore the enduring importance of forests in meeting household needs while highlighting the need for equitable and sustainable management strategies. Household (HH) survey was conducted in the Pudi and Hadi catchments; a total of 160 households were interviewed, 82 from Pudi and 78 from Hadi with 15% intensity adapting stratified random sampling. The extraction of timber in the year 2022 was none in both watersheds. About 84% in Pudi and 90% in Hadi collected fuelwood. Similarly, 72% and 81% of HHs in Pudi and Hadi collected fodder, while 23% and 32% in respective catchment collected leaf litter. Descriptive statistics were used to analyze most of the collected data. Furthermore, multiple linear regression was used to determine which independent variables (catchment, HH's Size, income, landholdings, distance to forest, livestock unit, energy) have a statistically significant impact on the dependent variable (fuelwood and fodder consumption). The study identifies HH size ($P=0.042$) and livestock ($P=0.021$) influencing factors of fuelwood consumption, while Livestock ($P=0.020$) and Landholding ($P=0.030$) influenced the fodder collection in the peri-urban. The study suggests that people's dependency on forests is decreasing although, consuming different forest products is still prevalent. As the peri-urban landscape continues to evolve, the lessons learned from this study can guide future efforts to strike a harmonious balance between human livelihoods and forest ecosystems.

Key words: Ecosystem, fodder, fuelwood, Hadi, Pudi, stratified random sampling

Policy documents acknowledged in the forest literature of Nepal: A systematic review

Asmita Ghimire¹, Aastha Acharya¹

¹ Institute of Agriculture and Animal Sciences (IAAS), Tribhuvan University, Kirtipur, Kathmandu

Forest management policies in Nepal have undergone dynamic shifts over the past century in response to evolving needs. This study employs a systematic approach, utilizing Harzing's Publish or Perish software to extract relevant articles from the forest literature published in Nepal. The paper draws on review of policy documents acknowledged in the forestry literature of Nepal and study where they have been encouraging or discouraging the local people towards conservation. During the pre-1957 era, when the government was less focused on conservation of forests, the forest cover of the country was high as people were managing and utilizing forests as private resources. The review reveals the change in the landscape of Nepal's forest cover dramatically with the enactment of the Private Forest Nationalization Act in 1957, leading to accelerated deforestation due to stringent bans on encroachment and government claims over private and communal forests thus discouraging the people towards conservation. Subsequent policies aimed at curbing deforestation and fostering systematic forest management. The most successful approach identified is participatory forest management, which has effectively engaged communities in resource conservation. Initiatives such as community-based forest management and buffer-zone systems have facilitated community participation in decision-making, resource harvesting, and marketing. Despite governmental efforts, challenges persist, including social exclusion, unequal resource distribution, inadequate coordination with stakeholders, insufficient empowerment, and capacity building for community forest user groups (CFUGs), and suboptimal policy implementation. The paper underscores the imperative for sustained commitment to policy enforcement and collaborative engagement with local communities to achieve effective and equitable forest management.

Key words: Conservation, forest, Nepal, policy, review

Factors influencing household dependency on community forest in the Chitwan district, Nepal

Binayak Prakash Mishra

Community forests have an impact across ecological, social, and economic dimensions within the local communities where they are established. However, higher dependency on community forests has severely degraded them and raised questions about their sustainability. An investigation was carried out in Chitwan district, Nepal during 2023 to identify the factors influencing household dependency on community forest. Household survey was carried out with 120 respondents bordering Kumroj community forest, Baghmara community forest, Sitamai community forest and Gyaneshwor community forest. Further, key informant interviews and focus group discussions were carried out to gather primary information. Descriptive statistics and multivariate probit model was used to present the findings. Results revealed that age, education, rearing of livestock, contact with extension workers and off-farm income were statistically significant in influencing dependency on community forest. Hence, focus should be given to younger age group for the promotion of conservation activities. Access to quality formal education and non-formal education for those who have missed formal schooling can efficiently reduce forest dependency. Alternatives to feeding livestock, besides forest products, should be encouraged, like farming forage in private or leased land. Extension workers should facilitate the implementation of management strategies, and further diversification of income sources should be encouraged for sustainability of community forest.

Key words: Education, livestock, sustainable, forestry

Potentiality of Pangolin based eco-tourism in Cuchhekhola community forest user group

Deepa Dahal

Worldwide interest in wildlife-based travel is growing, and many times, certain species are crucial in advancing travel to particular areas. The Pangolin Park was established by the Chuchhekhola community forest user group (CFUG) in Makawanpur district, an undertaking considering that both Chinese and Indian pangolins are globally vulnerable species. Located in the Chuchhekhola CFUG, this park provides refuge for pangolins, especially the flagship Indian and Chinese species, which attract a lot of tourists who want to see them in their natural habitat. However, getting direct access to their natural habitat can be difficult, for this reason, the Pangolin Park was established to enlighten people about the significance of Pangolin and its link with eco-tourism. To obtain comprehensive data and proof of pangolin presence, field observations were carried out, depending on indicators like newly dug burrows or firsthand encounters using camera trapping. A count revealed 43 new, 157 new, and 346 old burrows, which were used to estimate the pangolin population. A population estimate of 2 inhabitants per ten hectares was computed using the data. In the outlying regions of community forest, a Chi-square test was utilized to evaluate the opinions of the locals regarding pangolins and the possibility of ecotourism. Since establishment of the Pangolin Park, it served as a platform for education and conservation of pangolins. International and national organizations are actively interested in learning more about and protecting this species. Being the main attraction, pangolins have the potential to be a flagship species for ecotourism promotion in Chuchhekhola.

Key words: Conservation, CF, CFUG, eco-tourism, potentiality

Floristic composition of a logged-over lowland dipterocarp forest in Southern Leyte, Philippines

Eduardo G. Espejon Jr¹

¹ Northwest Samar State University – San Jorge Campus, San Jorge-Samar, Philippines

A comprehensive assessment to determine species composition of a logged-over dipterocarp forest in Kahupian, Sogod, Southern Leyte was conducted as contribution in documenting vegetation in remaining dipterocarp forest patches of the Philippines. The species composition was described by way of methodology. The study had three sampling sites where ten plots per sites were taken, at plot size of 20m x20m and total area of sampled stands of 1.2ha. A total of 154 species, in 60 families and 104 genera, were recorded in the inventory. Of these, 131 are tree species and 23 are non-tree. The 131 tree species belong to 44 families and 84 genera. The 23 non-tree species were in 17 families and 22 genera. The highly represented tree families were the Dipterocarpaceae, with 13 species. Tanguile (*Shorea polysperma*), mayapis (*Shorea palosapis*) and white lauan (*Shorea contorta*) were the most frequently dominating and widespread within the site. The Jaccard similarity index in comparing the 3 sampling sites was 0.39 to 0.44, which indicated less than half of the species occurred commonly in any two sites. This suggests high variation in species composition from site to site and that intensive and extensive data collection is needed before a final assessment on floral diversity in Southern Leyte should be attempted.

Spatial and temporal distribution of forest fires in Madhesh Province of Nepal

Gunjan Adhkari

Increased forest fire events in Nepal have adversely affected the lives, economic investments, and livelihoods of local people, alongside, posing significant catastrophic effects on environmental concerns, especially, ecosystems and communities. This research aims to provide information on understanding forest fires, their trends, seasonal variability, distribution, and relation with various multi-spatial criteria along with their risks within the Madhesh Province and identify potential fire related dangers and vulnerabilities. The MODIS points were incorporated in Analytic Hierarchy Framework (AHP), a multi-criteria decision analysis tool, for analyzing the fire incidents, to assess forest fire risk zones and vulnerabilities. Additionally, the research employs topographic, climatic, biophysical, and anthropogenic factors to create a fire risk map using the weighted linear combination approach. The LULC map obtained from ICIMOD and OCHA websites, the land surface temperature obtained after processing MOD11C3, and slope, aspect and elevation from processing DEM, were used. Throughout the research period (2001-2022), 5974 fire incidents were reported in the study area. The results showed that 24% of the province is at high risk for fire, covering almost 90% of the forest area of the province. The findings of the study will be valuable to local, state, and federal governments, policymakers, forest fire managers, researchers, and land planners in building a landscape-level forest fire management plan, and also aid in the creation of national and regional strategic plans.

Key words: GIS, MODIS, Risk assessment, Multi Criteria Decision Analysis (MCDA)

Provisioning ecosystem services of Shankarnagar community forest in Tilottama Municipality, Rupandehi

Karuna Kafle¹

¹Tribhuwan University, Kathmandu, Nepal

In Nepal, community forests are a part of national strategy for livelihoods improvement and environmental protection. Community managed forests provides vital ecosystem services for local communities. The report demonstrates an assessment of provisioning ecosystem services among the users of Shankarnagar community forest of Rupandehi, Nepal. A sample of 71 households was surveyed using systematic random sampling method. Household questionnaire survey method and key informant interviews were adopted to assemble the data about the ecosystem services, perception of people towards the services and community forest and willingness-to-pay by people for conservation of forest. The result showed six major provisioning ecosystem services i.e., fuelwood, timber, fodder, wild foods, medicinal plants, ornamental plants was found in Shankarnagar. Among those, the utilization of fuelwood (i.e., 73.3%) and timber (i.e., 64%) were the most important provisioning services. The household income source and education status of the user group played an important part in resource usage. People's perception includes an idea, belief, opinion, view based on the aspect or ability to notice that are not observable to other people. The people of community are aware of their responsibility for the management and conservation of the forest. All the (i.e. 100%) respondents were willing to pay for the management and conservation of Shankarnagar. This paper provides useful information on assessment of provisioning ecosystem services of Shankarnagar community forest, people's perception towards ES and CF and their willingness to pay for the conservation of forest.

Key words: Community forest, ecosystem services, provisioning services, people's perception, Willingness to pay

Climatic trends, impacts and livelihood vulnerability assessment: A case study from Mohana watershed, Kailali district of Nepal

Milan Adhikari¹, Amrita KC¹

¹Institute of Forestry-Hetauda, Tribhuvan University, Hetauda, Nepal

Climatic trend is a long-term shift in a particular climate characteristic, such as temperature, precipitation, or wind, over various time scales, ranging from decades to centuries. These shifts can have significant ecological, economic, and social impacts. Change in climatic trends stands as one of the most pressing challenges facing the world today, and its impacts are already being felt in Nepal. The Mohana Watershed in Kailali, Nepal, offers a microcosm of this global phenomenon, highlighting the severe consequences of climate change on vulnerable communities. The watershed has witnessed extreme weather events, erratic rainfall patterns, and rising temperatures. These changes threaten the region's fragile ecosystems, disrupt agricultural practices, and exacerbate water scarcity, disproportionately affecting local communities that depend heavily on the watershed's natural resources. The region's vulnerability is further compounded by land degradation and deforestation, which reduce soil fertility, increase soil erosion, and diminish the watershed's productivity. These interconnected challenges underscore the urgent need for comprehensive assessment and mitigation policies. This study aims to bridge existing research gaps and contribute to the development of evidence-based policies and strategies for climate change adaptation and sustainable development in the Mohana watershed. By understanding the region's vulnerabilities and impacts of climate change, we can work towards building resilience and ensuring the long-term sustainability of the watershed and its communities.

Beyond plantation: advancing forest restoration in community forests

Muna Bhattarai¹, Rahul Karki¹, Lila Nath Sharma¹

¹ForestAction Nepal, Bagdol, Lalitpur, Nepal

Forest restoration is a highly prioritized international environmental agenda at the backdrop of environmental challenges like biodiversity loss, climate change and desertification. Conventionally, plantation of trees in degraded area has remained a key strategy to restore degraded forest and sequester atmospheric carbon. Nepal's community forestry has been considered as a successful restoration program. This program has prioritized plantation and tree protection since its infancy which still continues. However, the analysis on how a planned and informed restoration activities have existed in practice is missing. In this context, taking a case of community forests (n=22) in Jalthal remnant forest, we analyse whether restoration practice is need based and informed by ecological data. We reviewed management plans of community forests, assessed forest restoration sites and species planted, analyzed forest nurseries, analyzed restoration activities, and discussed with forest leaders and regulatory authorities to restoration activities. We found that forest restoration in community forest is short term, sporadic and unorganized. In general, restoration has been equated as increasing tree density and cover. Restoration activities have prioritized trees while other facets of forest biodiversity and ecosystem services are seemingly overlooked. Restoration is rarely informed by ecological data and is generally governed by conventional practices of plantation. Exotic species has often been used in restoration sites that can easily support natural regeneration. Restoration informed by ecological data and recent scholarship in the subject matter would indeed help community forests in achieving wider environmental goals.

Unraveling the volume puzzle: Comparing different formulas for estimating tree and log quantity in Nepal

Pawan Karki¹, **Shambhu Dangal**², **Edwin Cedamon**³

¹ EnLiFT2, RECOFTC, Nepal

² Senior Advisor, RECOFTC, Nepal

³ School of Agriculture, Food and Wine, The University of Adelaide, Adelaide, Australia

Accurate estimation of tree and log volume plays a pivotal role in a wide range of applications within the field of forestry, encompassing forest inventory, biomass assessment, and forest management. The effectiveness and reliability of volume estimation formulas have recently become a topic of extensive deliberation among forestry officials and a diverse array of stakeholders. This study conducts a comparative analysis between the recently proposed Huber and allometric equation with Quarter girth formula and a formula based on form factor to estimate the volume of standing trees and logs. Field measurements of 168 felled trees from felling coupes and randomly selected 1192 logs were examined in this study. The findings reveal a decrease of approximately 0.8% in timber volume and a substantial increase of 78.6% in firewood volume when utilizing the allometric equation in comparison to the previous formula based on form factor. Similarly, the application of Huber Formula resulted in a 27.34% increase in volume when compared to the Quarter Girth Formula. ANOVA revealed highly significant differences in the average volume per tree between the four formulas (p -value = 0.00004), and further analysis using Tukey HSD indicated that the quarter girth and old formula for standing trees differed significantly from the new formula for standing timber, while other formula combinations did not show significant differences. Timber losses in the felling and bucking stage with Quarter girth and Huber formula were 37.06% and 19.86%, respectively. Similarly, paired t-test at 5% level of significance revealed that there was significant loss in both tree felling with both the formulas.

Key words: Timber volume, Quarter girth formula, Huber formula, harvesting loss

Impact of silviculture system on regeneration status and species diversity: Reflection from far-western lowland, Nepal

Prakash Ojha¹, Sandip Mahara²

¹ Division Forest Office, Gulmi

² Institute of Forestry, Pokhara

Adoption of the silviculture system aims to enhance regeneration of the desired species. Irregular shelterwood system was initiated in *Shorea robusta* dominated forest under different forest management regime including community forest in lowland forest of Nepal. This study was conducted in 2023 to compare the regeneration status and species diversity between two different management practices (scientific forest management and conventional management) in Patela community forest in far-western lowland, Nepal. Different 27 sample plots were established across three scientifically managed blocks covering the equal area of 2.14 hectare in the uniform distance of 50 meter. Equal sample plots were established on conventionally managed blocks. Important value index, Sorenson's similarity indexes, and distribution patterns of each species were calculated in both management blocks to compare the species diversity. Shapiro-wilk test was performed to check the normality of regeneration count and a two-sample t-test was employed to examine the significant differences in the mean count of plant species. Present study revealed that conventionally managed forest block has higher species diversity however the number of seedlings was significantly high in the scientifically managed forest blocks. The important value index analysis indicated that *S. robusta* was dominant tree species in both management types followed by *Terminalia tomentosa*, however there was higher number of *Shorea robusta* regeneration under scientific forest management blocks. The study concludes that irregular shelter-wood system is effective for regulating *S. robusta* forests in the western lowlands of Nepal.

Key words: Important value index, silviculture system, *Shorea robusta*, species diversity, sustainable forest management

Local perception and prioritization of ecosystem services from community forest: Case study of Kalidamar Bahunijhora community forest in Mahottari district of Nepal

Pratap Rijal, Rabin KC

Ecosystem services provided by forests are crucial for enhancing the well-being of individuals, the overall ecological balance, and economic prosperity. Previous researches have concentrated on the technical facets of economic assessment, such as quantification of biophysical elements through modeling and mapping, or monetary valuation. However, there has been limited consideration given to the social dimensions in these studies. Taking a case study of Kalidamar Bahunijhora community forest in Bardibas, local users' and other stakeholders' perception on the valuation of forest-based ecosystem services was investigated based on their age, sex, and education status. Key informant interviews, focus group discussions, and field observation were conducted in 83 households. The collected data were analyzed using MS Excel and SPSS and interpreted accordingly. The study found that local users and other stakeholders identified fifteen forest-based ecosystem services: nine provisioning, four regulating, and two cultural services. While all community forest users' groups prioritize timber, fuelwood, and collection of food as the top three services, flood control, and hunting services were valued as having the lowest priority. Various factors influenced the diverse priorities assigned to different services. Disparities in perception and ranking are the result of traditional beliefs, insufficient understanding of ecosystem services, appreciation of aesthetic value, and the pursuit of material benefits. Notably, differences in rankings were observed among regional managers, national experts, and forest users. The reasons for these differences and their policy implications are discussed, and ways of reaching a consensus between the users are suggested.

Key words: Ecosystem services, community forest, perception, priorities

Effects of invasive alien plant species on biodiversity and importance value index in three altitudinal ranges: A case study of five community forest of Jajarkot district

Prerana Shrestha¹

¹ Division Forest Office, Gulmi

The expansion of invasive alien plant species (IAPS) has affected grass species and seedling across Nepal. However, there is inadequate evidence generated in this regard. This study was objectively conducted to assess the distribution of IAPS along with its effects on the native species and to identify the factors affecting the occurrence in three different altitudinal ranges. A preliminary survey, including 40 key informant interviews was conducted to identify areas prone to IAPS invasion. Participatory resource mapping aided in pinpointing potential invasion hotspots. A total of 120 plots were established across three altitudinal ranges: <1000m (31 plots), 1000-2000m (74 plots), and >2000m (15 plots), using simple random sampling. Quadrat plots (1m*1m) assessed IAPS, grass, and tree regeneration in invaded forest areas. Spatial techniques, biodiversity indices, importance value index, and principal component analysis analyzed the data. Results indicated the highest Shannon-Weiner index for IAPS (<1000m: 1.25), grass (1000-2000m: 1.51), and regeneration (<1000m: 1.81). Simpson index peaked for IAPS (>2000m: 0.75), grass (>2000m: 0.37), and regeneration (1000-2000m: 0.27). Evenness index highs were observed for IAPS (<1000m: 2.09), grass (>2000m: 1.80), and regeneration (<2000m: 2.11). IAPS had higher Importance Value Indices (IVIs) across all altitudinal ranges (57.32, 59.33, 55.96). Factors influencing IAPS occurrence included tree removal, canopy cover, distance from roads/settlements, climate change, and grazing. Climate change facilitated IAPS invasion at higher altitudes. The study highlighted IAPS as a significant threat to native species, particularly impacting the lower belt more severely in Jajarkot district, while upper belts experienced a rising invasion trend.

Key words: Invasive alien plant species, native species, effects of invasive species, community forest, distribution

Human-wildlife conflict: how do communities respond to the crisis?

Sajjan Regmi¹

Wildlife can pose a direct threat to the safety, livelihoods and wellbeing of people. In Nepal, human-wildlife conflict (HWC) involves human casualties, wildlife killings, livestock depredation, crop raiding, and property damage. Despite increasing clashes, there's limited research on victims' adaptation strategies. This study investigates responses and mitigation activities by park authorities and organizations around Parsa National Park. A five-year analysis (2017-2022) of HWC data identified major conflict-inducing animals and revealed a concerning surge in conflicts, especially in Manahari, Makawanpur district, and Thori, Parsa, as per the 2022 hotspot mapping. A questionnaire survey of individuals affected from HWC formed the basis for understanding responses, adaptation strategies. Key informants, including the mayors and officers of Parsa National Park, provided crucial insights. The study shows increasing HWC, particularly involving wild elephants followed by leopards and tigers. This conflict alters local crop priorities and livestock practices in Manahari and Thori. Few people have already migrated while many are thinking of urban migration unable to coexist with wildlife, which are hindered by financial constraints. Improved goat sheds, supported by the Zoological Society of London, and park-installed electric fencing in Ramauli, Makwanpur, as well as loans for cow rearing to poor communities by Himalayan Nature, are activities supported by the park that have been implemented in limited communities, showing less effectiveness. Majority of people seems tired and hopeless fighting these never-ending battles. The findings emphasize that addressing HWC requires a comprehensive approach. Collaboration among rural municipalities, the Park, and community forest user groups is crucial for implementing effective adaptive measures.

Key words: Human-wildlife conflict, Parsa National Park, adaptation strategies, mitigation activities, park authorities

Assessment of forest aboveground biomass using multispectral remote sensing imagery: A case study from community forests of Pudi Watershed, Kaski, Nepal

Sandeep Mahara

The accurate estimation of spatially explicit forest aboveground biomass (AGB) provides an essential basis for sustainable forest management and carbon sequestration accounting. This study mapped the forest AGB using Sentinel-2 (S2) images based on random forest (RF) and Kriging algorithm in the community forests of Pudi watershed in Pokhara-33, Kaski. Field data was collected within 38 permanent sample plots (established by IOFPC), distributed across eight community forests of watershed to measure the plot-level AGB (Aboveground Biomass) based on equations provided by Sharma & Pukkala, 1990. The spectral bands and vegetation indices (VIs) derived from processed S-2 data were utilized to statistically link with field-based AGB. The results showed performance of RF model with r^2 of 0.72 and RMSE of 28.71 t/ha. The minimum, maximum, and mean values of the in situ AGB was calculated at 106.78 t/ha, 442.83 t/ha, and 293.22 t/ha, respectively, whereas, for predicted AGB was 416.56 t/ha, 163.5 t/ha, and 298.3 t/ha respectively. Ordinary Kriging algorithm was used for spatial interpolation of predicted biomass based on RF model results, thus, providing essential AGB map to estimate the carbon sequestration potential. This study reveals the efficiency of the Sentinel-2 imagery coupled with the use of non-parametric model I.e. random forest (RF) in the context of this study, in significantly measuring the AGB of subtropical forests in Nepal.

Key words: Sentinel-2 MSI, Machine Learning, Vegetation Indices

The journey of wood from log to sawn timber: Diagnosis of saw milling, utilization and carbon storage

Sushil Subedi

The estimation of the volume is a critical aspect of forest management. Accurately determining the volume of tree or log is important for its proper valuation. The Community Forest Inventory Guideline 2061 has provisioned to use Quarter girth formula to calculate log volume. However, the new Forest Regulation 2079 has provisioned Huber's formula to calculate the log volume. In this study, sawn timber recovery, residue utilization, formula relevance for log volume calculation, and carbon impact from log utilization was studied. The results show that the mean recovery percentage of sawn timber was found to be 58.81%. The analysis revealed a significant difference in the average sawn timber recovery percentage among logs of grades A, B, C, and D for *S. robusta* ($p < 0.05$). The LSD test indicated that the average recovery percentage of grade A and grade B logs are not statistically different ($p > 0.05$), while the other pairs showed significant different. Regression analysis also showed a significant positive relationship between the diameter of the log and the volume of sawn timber obtained ($p < 0.01$). Huber's formula resulted in 27.32% higher log volume than the Quarter girth formula, leading to a corresponding 27.32% increase in the cost price. However, this approach is less practical for the current utilization scenario. Likewise, *S. robusta* stores and emits more carbon than *P. roxburghii* due to its higher density. On an average, 5.56kg of carbon is stored in different forms of furniture, for each cubic feet of log sawn in the mill and on an average, 15.605 kg of CO₂ equivalent is emitted in atmosphere in making different forms of furniture. Developing appropriate technology, infrastructure, and management skills can utilize sawmilling residue to create derived products with market demand and value similar to clean lumber.

Exploring the relationship between diameter and length in two bamboo species indigenous to Nepal

Sushila Sapkota¹

¹ Institute of Forestry, Pokhara

Bamboo, a member of the Poaceae (Gramineae) family, is renowned for its ecological and engineering significance. Accurately quantifying bamboo biomass and carbon content is essential, yet measuring its intricate length or height poses a challenge due to its complex dimensions. Despite the significance of bamboo in Nepal, prior research has not addressed the correlation between diameter and height variables. This study investigates the relationship between diameter and length in the Bambusa and Dendrocalamus groups found in Nepal. Field data were collected from 650 sample plots established by the FRTC, utilizing circular plots with a radius of 56.42 meters. A multiple linear regression model was developed with length as the dependent variable and dbh (diameter at breast height), base, and height up to culmination as independent variables, using 80% of the data for training. The normality and variance of datasets were assessed using the Shapiro-Wilk test and Classical-Levene's test. Regression coefficients were tested using Welch's two-sample t-test. The resulting equations for the Bambusa and Dendrocalamus groups revealed the best fit when all three variables were simultaneously considered. This study highlights the need for further research into the volume calculation of culms, biomass estimation, and related areas.

Key words: Bamboo, Dependent Variables, Independent Variable, Linear regression model

Pattern and correlation of human-wildlife conflict: Insights for its mitigation

Sweta Karki¹

¹ Kathmandu Forestry College, Kathmandu, Nepal

Human-wildlife conflict (HWC) is a major ecological challenge whose information on spatiotemporal patterns and correlates facilitates effective mitigation planning. This study attempts to correlate HWC with distance from nearby forests, Land Use Land Cover, and available plants species along with quantifying economic losses. Data were collected through sign surveys, quadrat mapping, household (HH) surveys, location mapping, and related literature. Spatial, economic, and statistical approaches were employed for data analysis while Kernel density estimation and Getis-Ord G_i^* statistics for mapping conflict hotspots and risk zones. The highly increasing trend of HWC resulted in a dispersed distribution of crop damage and clustered livestock depredation revealed by Moran's Index (Z -score= 2.634584), especially in built-up areas. Kernel density per unit area ranged from -1.505 to 3.250 with five risk zone categories from very low-risk to very high-risk zones. The critical distance of leopard predation was 0.4-0.6 kilometers from the forest's center. There was high floral density (Simpson's index=0.833), however, only 13.058% of the area's preferential species (*Schima wallichii*), highlighting the need to plant foraging species. Average annual monetary loss per HH accounted for NRs 28,879 for crop damage and NRs. 2,614 for depredation peaking during the summer monsoon (Pearson $\chi^2= 48.057$, $df= 33$, $p= 0.044$). Everyone followed, shouted, and threw stones to deter away conflicting animals but only with 7% effectiveness. This study suggests insufficient food availability as a major cause of HWC in the area.

Key words: Spatiotemporal, crop damage, livestock depredation, conflict hotspots, risk zones

Green enterprises: A pathway to women's economic empowerment

Usha Thakuri¹, Srijana Baral¹, Kanchan Lama¹

¹ Forest Action Nepal, Kathmandu, Nepal

Women's role in using the forest for subsistence is largely studied but there is paucity of studies on the role of non-timber forest products on economically empowering women. This research is carried out to assess how green leaves enterprises can pave the pathway to women's empowerment. Using the results of leaf inventory, we examine the potential green job creation from the enterprise and how engaging women in the process leads to economic empowerment. Sal Leaf and Thakal inventory (169 plots) was carried out in four community forests in Nawalparasi, where women (n= 20) were engaged in the sampling design, inventory process and in getting the plan endorsed and approved from the government. Besides, Key informant other women (n= 30), workshops (n=2) and informal observations and discussions were carried out to assess the women's empowerment. The result illustrates that the annual harvestable yield of Sal leaves (3 CFs) and Thakal leaves are 207020.75 kg and 5089.35 kg respectively, which can generate employment of 448031 days/year. Furthermore, engaging women in the inventory process has helped to prepare gender sensitive CFOPs incorporating the need and interest of both genders. Women engaged in the inventory process expressed the enhanced knowledge and technical forestry skills have improved their social status. It has secured their access to and control over the resources of their choice. Engagement in these enterprises has increased their income and shifted the inter-household power relations too. Thus, even the minor forest products when utilized sustainably has capacity to economically empower women.

Key words: Non-timber forest products, inventory, Sal and thakal leaves, economy



Program



EnLiFT Website



Relevant Publication

