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Private Sector Involvement and Investment in Nepal's Forestry:

Status, Prospects and Ways Forward

March 2014

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Abbreviations and Acronyms

A/R	Afforestation and Reforestation
AAH	Annual Allowable Harvest
AEC	Agro Enterprise Centre
ACOFUN	Association of Collaborative Forest Users of Nepal
ANSAB	Asia Network for Sustainable Agriculture and Bioresources
BDS	Business Development Service
BFI	Bank and Financial Institution
BIPPA	Bilateral Investment Promotion and Protection Agreement
BOI	Private Financing in Build and Operation of Infrastructures Act
CBO	Community-Based Organization
CCBA	Climate Community and Biodiversity Alliance
CDM	Clean Development Mechanism
CF	Community Forest
CFM	Collaborative Forest
CFUG	Community Forest User Group
CIAA	Commission for the Investigation of Abuse of Authority
CSIDB	Cottage and Small Industries Development Board
CSO	Civil Society Organization
CTEVT	Council for Technical Education and Vocational Training
DADO	District Agriculture Development Office
DFID	UK Department for International Development
DFO	District Forest Office
DNPWC	Department of National Parks of Wildlife Conservation
DoCSI	Department of Cottage and Small Industries
DoF	Department of Forests
DPR	Department of Plant Resources
EIA	Environment Impact Assessment
ES	Environmental Services
FAO	Food and Agriculture Organisation of the United Nations
FBE	Forest-Based Enterprises
FDI	Foreign Direct Investment
FECOFUN	Federation of Community Forestry Users, Nepal
FenFIT	Federation of Forest-based Industry and Trade, Nepal
FITTA	Foreign Investment and Technology Transfer Act
FMU	Forest Management Unit
FNCCI	Federation of Nepalese Chamber of Commerce and Industries
FPDB	Forest Products Development Board
FSC	Forest Stewardship Council
GMP	Good Manufacturing Practice
GoN	Government of Nepal
HAN	Hotel Association of Nepal
HANDPASS	Handmade Paper Association

HBTL	Himalyan BioTrade Private Limited
HEAN	Herbal Entrepreneur Association of Nepal
HNCC	Herbs and NTFP Coordination Committee
HPPCL	Herbs Production and Processing Company Ltd.
ICIMOD	International Centre for Integrated Mountain Development
IEE	Initial Environment Examination
JABAN	Jadibuti Association of Nepal
LHF	Leasehold Forest
LRP	Local Resource Person
MAP	Medicinal and Aromatic Plant
MDF	Medium Density Fibre
MIS	Market Information System
MFSC	Ministry of Forests and Soil Conservation
MPFS	Master Plan for the Forestry Sector
MRV	Monitoring, Reporting and Verification
MSFP	Multi Stakeholder Forestry Programme
NATTA	Nepal Association of Tour & Travel Agents
NEHHPA	Nepal Herbs and Herbal Products Association
NORAD	Norwegian Agency for Development Cooperation
NPC	National Planning Commission
NTB	Nepal Tourism Board
NTFP	Non-Timber Forest Product
NTIS	Nepal Trade Integration Strategy
NVC	National Vigilance Centre
OWP	One Window Policy
PES	Payment for Environmental/Ecosystem Services
PPP	Public Private Partnership
REDD	Reducing Emission from Deforestation and Forest Degradation
REDD+	Reducing Emission from Conservation, Sustainable Management and Enhancement of Carbon Stocks
REDD	Cell REDD Forestry and Climate Change Cell
RF	Religious Forest
SFM	Sustainable Forest Management
TAAN	Trekking Agencies' Association of Nepal
TCN	Timber Corporation of Nepal
VC	Value Chain
VCS	Voluntary Carbon Standard
WECS	Water and Energy Commission Secretariat

Foreword

The Multi Stakeholder Forestry Programme (MSFP) is pleased to produce this study-report on "Private Sector Involvement and Investment in Nepal's Forestry: Status, Prospects and Ways Forward". The study was commissioned to Asia Network for Sustainable Agriculture and Bioresources (ANSAB) and its consortium partners Nepal Herbs & Herbal Products Association (NEHHPA) and Enterprise Works (EW, USA).

The overall objective of the study was to develop a thorough understanding of the current status and future potential of private sector involvement and investment in the forestry sector of Nepal, and to develop appropriate interventions strategies - broadly for the forest sector as a whole and specifically for MSFP.

We would like to thank the study team members including field researchers who worked extremely hard to gather field-level information. Study Team Leader Dr. Bhishma P. Subedi and Deputy Team Leader Mr. Puspa Ghimire deserve appreciation for their substantive work in accomplishing this comprehensive study.

Our gratitude goes to all the contributors who have directly or indirectly supported in field study, shared valuable information, and participated in the meetings, interactions and workshops at local, national and international levels.

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EXECUTIVE SUMMARY

This study, conducted by Asia Network for Sustainable Agriculture and Bioresources (ANSAB) and its consortium partners on behalf of the Multi Stakeholder Forestry Programme (MSFP) of Nepal, assesses and analyses the current status and future potential of developing economically viable and socially and environmentally responsible forest-based industries leading to sustainable, green and inclusive development model in Nepal.

Goal and Objectives: The overall goal of this study was to develop a thorough understanding of the current status and future potential of the private sector involvement and investment in the forestry sector of Nepal, and to develop appropriate intervention strategies - broadly for the forestry sector as a whole and specifically for the MSFP. The specific objectives of this study were to:

i. Assess current status of the forest-based industries and private sector's engagement;
ii. Analyse investment climate in Nepal governing private sector's involvement and investment;
iii. Investigate investors' perspectives including their interests, requirements, opportunities, and constraints for increasing private sector's investment and generating employment; and
iv. Develop intervention strategies for MSFP and the forestry sector as a whole for promoting private sector's engagement and job creation in the forestry sector.

Scope and Methodology: This study provides an overall review of the forestry sector nationwide and is supported by detailed studies of 28 sampled districts (including seven MSFP initial-phase-districts) representing all nine eco-regions of the country. Twenty international forestry industry and private sector representations, from North America, Europe and Asia, were interviewed to provide the international perspective on Nepal as forest investment and supplier. The districts, enterprises and financial institutions were selected using multi-stage stratified purposive sampling procedure.

This study prioritized forest enterprises along four major subsectors, namely, timber, non-timber forest products, ecosystem services (especially ecotourism and carbon) and forest bioenergy. These subsectors were chosen since they either are significant in terms of volume or value of products, cover large geographical areas and population, have growth potential, and/or promote responsible green businesses.

The study is based on the available data and information, secondary and primary sources. The main methods of data collection included i) consultations and interviews with key stakeholders and experts at local, regional, national and international level, ii) focus group discussions, iii) surveys of domestic enterprises and financial institutions, iv) case studies, and v) review of literature and records.

The study–from data collection through analysis and recommendations—was guided by the research questions and study framework. This consisted of three major components - forest-based industries, value-chain dynamics and actors perspective, and investment climate. It followed a logic starting with

the current situation and opportunities and potential within the sector followed by constraints that hinder to realise the potential, and finally appropriate intervention strategies to achieve Nepal's desired model for forestry. Five concept papers have been developed to elaborate some of the recommended strategies.

Significance: In Nepal, there is yet no comprehensive analysis of the current status and prospects of the private sector involvement and investment in forestry, let alone the assessment of potential impacts and development of strategies to attract and retain responsible private investors. Therefore, this study was designed to address this knowledge gap and make strategic recommendations for attracting and retaining the responsible private sector, who would make long-term investments in forestry and earn a decent profit and social prestige while contributing to sustainable management of forest, enhanced local livelihoods, additional employment generation and economic growth.

The outcomes of this study provide the much-needed roadmap and pathways for promoting private sector's participation in Nepal offering useful evidence-based information, insights and strategies to stakeholders in aligning the private sector's objectives of 'maximizing profits from investing/financing in forests' with the enablers' objectives of 'sustainable use of forest resources, wealth creation, and equitable distribution'. The research outputs will be useful for the MSFP as well as for national and local governments, Nepal's development partners, private sector actors and others interested to develop plans and strategies for forest-based enterprises (FBE) promotion ensuring that the conservation and poverty reduction goals are achieved. The results and recommendations also provide direct inputs to Nepal's Forestry Sector Strategies, which is now in the process of formulation.

Major Findings

This study uncovers a number of new and important findings. The major findings are summarized below; its key findings are highlighted in the box below.

Forest and its Major Subsectors, Products and Services: In Nepal, forests and shrubs cover about 5.83 million ha, which is 39.6% of the total land area of

Key findings of this study

- There are some product and service value chains in Nepal's forestry sector that have comparative advantage and can be turned into competitive industries. Surprisingly, these are underexplored and unrecognized by the stakeholders including the government.
- Community forestry in Nepal has created a very good base - with very strong and effective institutions and robust ecological resources - for enterprise-oriented sustainable forest management.
- The private sector is interested and serious, but finds itself at the crossroads of whether to continue and expand the operations into a decent business or move out of the forestry business, if supply constraints are not addressed with improved governance of the sector.
- The main motivating factors for private sector are high return on investment, low risk and transaction costs, and stability of

business with good social image.
- In spite of the big and lucrative markets for the forest products, the producers are not getting enough incentives for increasing production. This is mainly due to policy challenges and high transaction costs.
- Nepal's forestry sector has a huge untapped potential of generating economic value of legally and sustainably produced forest products and services worth NRs 373 billion, a many-fold increase from the present value, creating 1.38 million full time job equivalents, and contributing to government royalty and national economy.

the country. These are among the most important natural resources of Nepal. Along with their critical role in rural livelihoods and environmental protection, the diverse range of forest ecosystems provide multiple products and services as a base for four main promising industrial subsectors, namely timber, Non Timber Forest Products (NTFP), ecosystem services and forest bioenergy.

For domestic markets, the study finds builder's joinery, furniture, veneer, plywood and construction timber as most promising options in timber. Large cardamom, medicinal herbs, essential oils, resin (rosin and turpentine), natural fibres, handmade paper and kattha are promising options in NTFP subsector. Regarding ecosystem services, carbon [especially Reducing Emission from Deforestation and Forest Degradation (REDD+) and afforestation and reforestation (A/R) under Clean Development Mechanism (CDM)] and ecotourism (especially in protected area and community forest-based) are promising options. The prioritised products for forest bioenergy include solid biofuel, especially bio-briquette wood pellets and firewood. For international markets, Nepal has a unique selling position (USP) for carbon, certified NTFPs and hand-carved woodcrafts.

Private Sector Participation and Investment: The core value of private sector is profit centric, and their participation and investment in the forest-based industries is found mainly in processing, manufacturing and trade with limited participation in production of forest products and services. It is estimated that about 41,062 forest-based enterprises, including forest producer groups, are formally operating in Nepal, of which 27,342 (over 66%) enterprise units are involved in primary production of goods and services. Among the rest 13,720, which are involved in processing, manufacturing and trade, the majority 9,869 are in timber followed by 2,140 in NTFPs, 1,676 in ecosystem services, and 35 in forest bioenergy.

The total estimated investment by private entrepreneurs is about NRs 32 billion in 2013 (excluding direct foreign investment in eco-tourism), of which the highest investment came from the timber processors and manufacturers with 59% of the total investment. The investment made in NTFP enterprises, ecosystem services (mainly ecotourism), and forest bioenergy is estimated to be about NRs 5.48 billion, NRs 6.56 billion and NRs 42.9 million respectively. There is a growing interest in purchasing voluntary carbon credits from Nepal from international organisations, as Nepal provides a unique story of social and environmental benefits, but the transaction of forest carbon is not well developed and limited to only a few voluntary transactions in fund-based markets.

Economic Growth and Employment Generation Potential from Forest-based Industries: Our assessment of the industrial growth potential based on the current situation of demand and supply and the projection for each subsector reveals that forest-based industries have very high growth potential, if the supply constraints are addressed with improved governance. Under the conservative scenario, the industries can generate economic value worth about NRs 88 billion whereas under the optimistic scenario, it could go over NRs 370 billion (see the table for details). The conservative scenario assumes the products and services are utilized with modest changes to the sector, taking into account the recent positive trends in investment. The optimistic scenario assumes forests are managed using science and at least some significant value chain improvements.

Presently, the private sector provides nearly 99,000 formal full time jobs per annum, whereas Community Based Organisations (CBO) including Community Forestry Users' Groups (CFUG) provide about 31,000 jobs making a total of 130,000 jobs. Our estimate under the conservative scenario is that the forest-based industries can generate over 400,000 sustainable, full time jobs and in the optimistic scenario it can go up to 1.38 millions (see the table below for the breakdown by the subsectors). This reveals a great potential for creating significantly more number of additional sustainable jobs in Nepal's forest sector that ranges from three to ten times higher than the present level depending on the performance. Transition of the informal workforce to formal employment opportunities could be done by involving it in enterprise-oriented forest management and production of goods and services as well as in other functions of the value chains.

Supply Potential of Forest Products and Services: The gap between the present formal annual supply, which is about 113,000 m^3 and the estimated domestic demand, which is 3.37 million m^3, of timber is very high. The annual domestic demand is projected to be 4.8 million m^3 in 2030 and the international demand especially in India is growing for Nepali timber products. Our analysis shows that the supply can be increased to at least 1.66 million m^3 just by applying minimal rate of conservative harvesting in most accessible forest only. In an optimistic scenario, in which available forests are scientifically managed and plantations are established in 200,000 ha, which is about two-third of the available non-forested land, Nepal's forests can supply as much as 9.18 million m^3 of timber.

Similarly, for other subsectors, there is a high scope to improve management,

Summary of Potential Economic Growth and Employment Generation from Forest-based Industries Under Conservative and Optimistic Scenarios

Subsector	Economic value (million NRs)		No of sustainable, full time jobs	
	Conservative	Optimistic	Conservative	Optimistic
Timber	55,127	270,697	206,725	812,090
NTFPs	11,635	58,173	87,259	290,865
Forest Carbon	4,235	13,572	37,054	118,755
Ecotourism	14,572	21,567	72,860	107,833
Forest Bioenergy	2,126	9,107	15,633	53,571
Total	87,694	373,115	419,531	1,383,114

Source: ANSAB study, 2013

introduce new species, grow more plants, and increase regular supply in a sustainable way to meet the current and future demand. Under the conservative scenario, where the products are utilized remaining in a very conservative side without much effort in increasing production and productivity, the current supply of NTFPs could be increased twofold. Under optimistic scenario, in which science, efforts and investment will be mobilized, increasing efficiency and effectiveness in every stage of the value chains, the supply could be increased by more than five times.

For ecosystem services (especially forest carbon and ecotourism), biodiversity rich Nepal has high potential for benefitting from forest carbon sequestration and expansion of ecotourism. While Nepal's community forests have significant potential to implement REDD+ projects geared towards cashing carbon, significant areas of barren lands or grasslands with scattered trees that cover about 1.6 million ha area are ideal for afforestation and reforestation activities. Our estimate shows that Nepal would be able to sell about 8.25 million tCO_2e per annum under conservative scenario and 19.5 million tCO_2e under optimistic scenario. For ecotourism, there is a good potential for expanding existing ecotourism products and developing new ones. The number of eco-tourists could be increased by at least 1.5 times under conservative scenario while 3 times in optimistic scenario.

In case of forest bioenergy, solid biofuels, such as bio-briquette and wood pellets, have very good growth prospect. Under the conservative scenario, the supply potential of bio-briquette and wood pellets are estimated as 34,764 tons and 75,000 tons respectively whereas in optimistic scenario, it would be 89,284 tons and 375,000 tons respectively.

Main Value Chain Actors: Major commercial producers in all four subsectors are government agencies, forest producer groups, and private companies and individuals. Mainly contractors and local collectors do the harvesting of timber, NTFPs and fuel wood. Likewise, the processing and manufacturing of timber products is carried out by saw millers, veneer producers, plywood producers, and furniture and handicraft makers that are mainly based in towns and cities. In case of NTFPs, the main actors for these functions are distillation enterprises, local enterprises (e.g. wild fibre, handmade paper), resin and kattha processing enterprises, and herbal products manufacturing enterprises, and handicrafts makers. In bioenergy, char producers and briquette makers are involved.

For the trade of all products except ecosystem services, district level and national level traders, wholesalers, retailers, importers and exporters are the major actors. In case of forest carbon, these include packagers, product verifiers, distributors and buyers while in eco-tourism various combinations of local businesses, such as travel and tour operators, hotel and other accommodation providers, and restaurants and food providers are involved. In case of forest carbon, there is a lack of actors to serve as an aggregator or a common regulator to ensure that the conditions are met to implement a deal.

Inter-firm Cooperation and Coordination: In all the studied value chains, except forest carbon, the firms are well organized horizontally into

associations and networks, especially at processing, trading and manufacturing levels. The main among these are Federation of Forest-based Industry and Trade, Nepal and commodity associations for veneer, plywood, furniture, NTFPs including herbs, herbal products and handmade paper, bio-briquette, trekking, travel, and hotel. While Federation of Community Forest Users, Nepal is quite strong and effective in safeguarding rights of producers and in policy advocacy, the horizontal integration of forest producers is generally lacking.

The vertical integration, except in ecotourism, bio-briquette and few specific NTFPs, is weak, and the value chain is dominated by a few big players based in major cities exhibiting an asymmetric power distribution. The limited access to information, technology, finance and market has created dependency of producers on buyers even when the profit distribution is skewed and trust among them is low. For example, the NTFP value chains that mainly involve trade of crude herbs mimic the vertical integration of the actors where the buyers determine the quantity, quality and price as well as investment in the form of advance payment through intermediaries to ensure the supply. Indian traders have been at the apex of crude herbs supply chain since long, whereas Tibetan traders have emerged to have a control over the business of a few herbs including *Ophiocordyceps sinensis* and *Paris polyphylla*.

The best practices of vertical integration, especially balanced power relationship, transparency, fair benefit distribution and trust, are found in Forest Stewardship Council (FSC) certified hand made paper, bio-briquette and essential oils value chains. In these cases, the lead firms are also found to provide access to technology, skill trainings and infrastructure maintenance.

In case of ecotourism, the government being an important actor is promoting the industry through policy including benefit-sharing mechanism. Similarly, the government and civil society organizations are supportive in improving governance and institutional reforms for the promotion of forest carbon - particularly through decentralization, strengthening of MFSC's institutional capacity, improvement of law enforcement and efforts to build confidence in government institutions. These are critical to the successful implementation of forest carbon projects in Nepal.

Value Chain Actors' Perspectives: Many of the opportunities presented in the assessment of industrial growth potential are known to private sectors. They see a good market potential and a huge scope to expand their businesses by increasing supply, although it is unexplored, by sustainable harvesting of overstocked forests and using improved technologies available in the neighbouring countries, especially in timber, NTFPs and forest bioenergy. Western Terai and lower mountains have high potential for increasing supply of timber. International actors see that Nepal's unique, indigenous, and genetically superior NTFPs, especially grown in high-mountains, and the high value timber products, especially wood flooring with distinctive grains, furniture veneers and hand-carved woodcrafts have comparative advantage in the world market.Nepal has an advantage for forest carbon and ecotourism with its unique biodiversity and community participation values.

However, in order to realize the opportunities in forest-based industries, while there are differences in emphasis and

specific contents, the actors in all subsectors at all levels perceive that the following constraints have to be addressed: a) weak governance and lack of law enforcement, bureaucratic hurdles and procedural delays, and insecurity; b) inadequate and uncertain supply of raw materials, limited effort on scientific forest management, and unpredictable policy decisions including bans and restrictions; c) difficulty to access the finance; d) lack of infrastructure specifically electricity and transportation; and e) inadequate business development services such as inputs and technologies, extension services, and business information.

The specific constraints faced by producers/forest managers in all subsectors except ecosystem services are: cumbersome legal procedure and unpredictable regulation on plantation and harvesting; insufficient extension services on plantation and scientific forest management; low level of technical and managerial capacity of producers; limited supply of quality planting materials, inputs and technologies; and difficulty in resource inventory and community forest handover. For processors and manufacturers, uncertainty of supply of raw materials, lack of knowledge on the utilization of by-products (especially in veneer industry), distance from forest to processing enterprises, high cost of production due to the lack of trained human resource and the use of less efficient technologies are the major constraints. The contractors and traders of timber are facing high security threats and very poor social image, discouraging them from making further investment. Inconsistent quality of the raw materials and lack of infrastructure, especially internationally accredited laboratories and warehouses are main constraints faced by the NTFPs exporters.

In case of carbon, the main constraints are the clarity on property rights, lack of awareness on carbon as an ecosystem service and its markets, limited capacity of producers, and highly disintegrated forests under different management regimes. While the ecotourism subsector has been struggling with the high upfront costs and very limited business expertise and information, forest bioenergy subsector is facing the lack of technologies for the conversion of biomass to energy, inconsistency in quality of products, and product development.

Investment Climate: The government and international agencies, including donors have been investing to improve the investment climate through formulation or reform of policy and legislative frameworks, infrastructure development, organizational development, institutional reforms, grants and seed funding for community organizations, and developing and demonstrating business models. In the past decade, the government of Nepal invested NRs 43 billion (US $411.38 million) in addition to US $119.92 million from international donors through various forestry projects. These enabling investments have several positive outcomes, including development and reform of various policies, strategies, programs and production of experts in the forestry sector.

The factors influencing the risks, returns and transaction costs at various aspects of the business establishment and operation, such as access to resources, establishment of enterprise, employing workers, access to finance, complying with taxes, trading of forest products and services, and settling disputes and enforcing contracts, which in turn determine the profitability and social image of a business are

identified, and a detailed analysis of the present situation has been made to identify issues and possible actions for improvement. The main factors identified are: a) policy and regulatory environment governing the forest sector, b) institutional framework and political environment, and c) business development services including infrastructure and finance.

Policy and Regulatory Environment Governing the Forest Sector: Nepal has been trying to develop the policy and legislative provisions and institutional arrangements to create the investment friendly climate. For example, the provisions of bringing all necessary services in one place under One Window Policy (OWP); investment, repatriation, and technological rights under Foreign Investment and Technology Transfer Act (FITTA); security against nationalization of private properties under Private Financing in Build and Operation of Infrastructures Act (BOI); and signing Bilateral Trade Agreements and Bilateral Investment Promotion and Protection Agreement (BIPPA) with several countries are positive steps to attract investment.

There are provisions for concessions on Value Added Tax (VAT), income tax and excise duties to some forest-based industries. The Industrial Policy has a provision of providing assistance in technology, market, skills and research for industries based on NTFPs including herbs. The Trade Policy emphasizes institutional and physical infrastructure development relating to foreign trade, developing policy and institutional networks for the protection of intellectual property rights, and providing additional incentives to export oriented industries. Furthermore, the Nepal Trade Integration Strategy, 2010 (NTIS) has prioritized 19 commodities for the export, including for herbs, essential oils, handmade paper, and tourism. The engagement of local communities in forestry have developed successful community forestry programme, which became an exemplary forest management model reducing deforestation. Similarly, the leasehold forest programme is successfully involving poor and excluded communities in the management and utilization of forest resources.

The Herbs and NTFP Development Policy, 2004 (HNDP) and the various policies in renewable energy (including bioenergy) clearly highlight the role of private sector. The institutional reform in protected areas and buffer zone management also recognizes the role of private sector, which can play an active role for strengthening Payment for Environmental/Ecosystem Services (PES) system. Nepal has ratified more than 25 Multilateral Environmental Agreements and the private sector can get benefit from it, if Nepal takes steps to fully comply in practice.

However, in practice the space for the private sector is limited due to the problems in proper implementation of the existing policy and legislative provisions mainly arising from the contradictions, jurisdictional overlaps, inappropriate assignment of roles, weak coordination, and institutional inefficiencies as well as some gaps, especially implementation instruments, such as procedures and guidelines. There are malpractices that have created a bad social image for the entrepreneurs, especially in timber and some NTFP businesses.

Some of the main issues that need to be addressed are a) complexity and confusion in business registration steps; b) clarity on rights to harvest and process timber from private land, and contradictory provisions that arise from multiple agencies and procedures; c) complex procedures and high transaction costs in harvesting and utilization of forest products from private land; d) unclear basis for fixing and collecting royalties, prices and taxes on forest products, including charging royalties on NTFPs and VAT on timber grown in private land; e) irrational environmental regulations for community forest and NTFP businesses; f) anomalies in fixing size and grading of timber, depository system and stock holding time of timber; g) tariff and non-tariff barriers in trade, especially hurdles in transportation, multiple taxation, and confusion created due to multiple agencies issuing certificate of origin; h) tenure issue on non-forested public land, privately occupied non-registered land and ecosystem services; and i) access of the private sector to suitable leasehold forest land for industrial and commercial purposes.

Institutional Framework Governing the Forest Sector and Political Environment: A multitude of institutions, both in forestry and beyond, have been established to create enabling environment and contribute to increase returns and reduce the risks and transaction costs for the private sector. However, the issues including the inefficiency and ineffectiveness in delivering services, weak coordination, overlapping jurisdiction and authority, conflicting and contradictory provisions, and complex bureaucratic processes are challenging the growth of the private sector in forestry.

As reflected in their election manifestos, every major political party has considered forest as an important sector that needs to be developed for national prosperity and unlike in the past, there were no reported cases of widespread illegal felling during the recent constituent assembly election. But, the political parties are found to put unnecessary pressure in the transfer of government officials (encouraging bad governance), demanding donations and backing labour unions and informal groups making this sector unattractive for investment. Presently, the private investors are sceptical due to the long political transition, uncertainty on federal structuring, confusion over who the private sector should deal and negotiate with, and their implication on rights. The law enforcement is weak and the overall governance in the forestry sector needs to be improved if Nepal wants to attract and retain responsible investors.

Business Development Service (BDS), including Infrastructure and Finance: The required business development services to improve the investment climate include research and development, capacity building, supply of quality inputs and technologies, business advice and counselling, market information and product promotions, and networking and brokering. Apart from these, the study reveals four most important infrastructure needs for attracting investments, which are transport, electricity, Information and Communication Technology (ICT), and other supportive facilities, such as collection centres, warehouses, market infrastructures (wholesale/ auction centres), and laboratory facilities.

The proliferation of banks and financial institutions (BFIs), currently 283 in number with 2492 branches, provide a base for access to finance. However, the lending in forestry sector is still negligible. The factors affecting for low lending is attributed on the one hand to capacity constraints of Forest based Enterprises (FBE), which include

their informal and unorganized nature of business, financial illiteracy, inability to produce enough collateral, reputation of the sector in general, and on the other hand to BFIs' limitations, as they have very little knowledge and information about the sector and lack appropriate loan products.

Intervention Strategies

Nepal should define a goal for forest-based industry development that is owned by all of its key stakeholders. To achieve the potential that have been identified in this report, a two-pronged strategic approach is recommended. It consists of a) preparing base for private sector led value chain/ industrial growth in forestry and b) promoting industrial competitiveness and growth of most promising forest value chains.

Preparing the foundation for private sector led industrial growth in forestry would involve the following six strategies, which can be realized through collaborative efforts both from the forestry sector and beyond.

i) Define and promote multiple forestry development models for Nepal

Given the diversity of Nepal's forest, institutional landscape and participation of various stakeholders, multiple forestry development models for the development of forest-based industries are needed. Defining production systems for commercial purpose in both the natural forests and plantation forests and developing effective business models for different scenarios should be the first step. Then models are needed for various categories and sub-categories of the forest production systems.

ii) Map and zone forests by biophysical, land tenure, and product characteristics

Considering the complexities of Nepal's forests, three-dimensional model that include geography (including biophysical forest condition), management (including land tenure and ownership status), and products/services (including value chain requirements), is suggested while mapping and zoning the forests of Nepal. The further steps needed on this are the declaration of the suitable natural forest land as production forest areas and clusters of area suitable for plantation, prioritization of products or services, and development of business models.

iii) Address policy issues hindering forestry development

Through clearly defined legislation and effective enforcement mechanism, which would improve transparency, accountability, and anti-corruption measures and ultimately improve the forestry sector governance. The issues can be addressed through informing policy with science and participation from community and industry, eliminating policy contradictions between Forest Act and other regulations, improving policy provisions and practices on tenure and access arrangement, and facilitating enterprise establishment and operations to make it affordable.

iv) Address institutional and law enforcement issues in forestry

There is a need to align roles and responsibilities of institutions to promote the forest-based industries, for which establishment of some new intitutions, especially a private sector support unit and a separate entity within the Ministry of Forests and Soil Conservation (MFSC) or a division under Department of Forest (DOF) for managing production forests, and restructuring of DOF to streamline division of important roles and reallocate human resources to match the workload are suggested. Furthermore, it is suggested to improve law enforcement to address supply constraints and

develop and monitor timely, regular and transparent harvesting, auctioning and transportation procedures.

v) Promote to adopt standards for sustainable forest management and responsible business practices

More specifically, it is recommended to expand strategic certification and provide government support for industries to gain certification, strategically expand and advertise certification, continue to build sustainable forestry and good business practices models at the community forestry, private and government lands and develop a strategic plan for attracting and approaching responsible investors.

vi) Expand business development services (BDS) including infrastructure and finance

To strengthen the supply of BDS, it is suggested to support universities, training institutions and Civil Society Organisations (CSO) to develop training packages and curricula for the development of human resources in forestry business, support to improve government extension services re-orienting it in support of enterprise-oriented forest management, develop and mobilize local resource persons, facilitate to increase access to inputs and technologies, and strengthen Research and Development (R&D) in production, harvesting, processing, product development, and marketing. On the other hand, to stimulatethe demand of BDS, the recommended strategies are to raise awareness through training and meeting, provide a directory of relevant service providers to the entrepreneurs, and improve access to extension materials and markets.

Addressing the challenges related to infrastructure is beyond the scope of the forestry sector and the related programmes. However, coordination, networking and small support could be practical strategic steps to take. Developing risk mitigation measures in financing FBEs and helping bankers to understand the opportunities in Nepal's forestry sector are needed. In this situation, bankers need support to develop financial products and a minimum assurance of payback and incentives from the government for lending in this sector.

Value Chain Specific Strategies: Based on the dynamics of the value chains domestically and globally, specific interventions on the four subsectors – timber, NTFPs, ecosystem services (carbon and ecotourism), and forest bioenergy –are organized around the following three main categories: a) forest land management and production, b) harvesting and processing or consolidation, and c) governance and market promotion.

For timber, the emphasis should be on science-based management and sustainable harvesting of natural forest, and plantations and land management that allow for private sector investment and cultivation of key species. In natural forests, there should be proper utilization plan addressing the current hurdles due to poor governance in harvesting, transportation and trade. Plantation is possible both in non-forested public land and private land, but needs inputs, technologies and extension services along with the policy reform for hassle free environment for plantation, harvesting and trade of timber.

In case of NTFPs, the emphasis should be on sustainable harvesting from natural forests and commercial cultivation in private lands and non-forested public land. Value addition through processing and product development and diversification of markets are the much-needed areas of interventions in this subsector.

In early stages of the carbon market, developing appropriate institutional mechanism, capturing the insights and expectations of the stakeholders and building their capacity on carbon value chain functions are important. Significant interventions are needed for setting up the governance structure and market promotion. In case of ecotourism, development of ecotourism products and their advertisement for the emerging markets, promotion of new touristic area and targeting of new market segments are needed.

In the present global context and national capacity in bioenergy subsector, Nepal should focus on proven solid biofuel technologies; bio-briquette and wood pellets, to generate energy from forest biomass. Most importantly, with the proper resource management, harvesting and utilization, there is an ample scope to increase production and energy efficiency of fuel wood used in cooking.

1 INTRODUCTION AND METHODOLOGY

1.1 Background, Objectives, Scope, Methodology and Study Structure

Nepal's geography harbours unique and rich biodiversity providing a basis for producing a range of forest products and services. The study is an opportunity to assess, analyse and comprehensively understand the current status and future potential of developing economically viable and socially and environmentally responsible forest-based industry leading to sustainable, green and inclusive development in Nepal.

Building on the achievements of over 20 years of forestry work of the Government of Nepal (GoN) supported by the governments of Finland, Switzerland, and UK, the ten-year MSFP Programme is designed through a multi-stakeholder process to contribute to poverty reduction and tackling climate change in Nepal. The programme is an initiative of the GoN funded by the Government of Finland (GoF), Swiss Agency for Development and Cooperation (SDC), and UK Department for International Development (DFID). The overall objective of the MSFP is to improve livelihood and resilience of poor and disadvantaged people dependent on forest resources.

MSFP commissioned this study on private sector involvement and investment in forestry sector of Nepal by awarding ANSAB a contract through a competitive bidding process. The other partners in the study team include Nepal Herbs and Herbal Products Association (NEHHPA) and Enterprise Works – a Division of Relief International (EW-RI), USA.

Goal and Objectives: The overall goal of the study was to develop a thorough understanding of the current status and future potential of the private sector involvement and investment in the forestry sector of Nepal, and develop appropriate intervention strategies - broadly for the forestry sector as a whole and specifically for the MSFP.

The specific objectives of this study were to:

i. Assess current status of the forest-based industries and private sector's engagement;
ii. Analyse investment climate in Nepal governing private sector's involvement and investment;
iii. Investigate investors' perspectives including their interests, requirements, opportunities, and constraints for increasing private sector's investment and generating employment; and
iv. Develop intervention strategies for MSFP and the forestry sector as a whole for promoting private sector's engagement and job creation in the forestry sector.

The study was guided by the following four research questions explicitly reflecting the overall research focus on increased investment and jobs in the forestry sector via private sector involvement, which eventually is expected to increase the contribution of the forestry sector to the nation's total Gross Domestic Product (GDP):

i. What are Nepal's best forest products and service options to attract private sector involvement and investment?

ii. Given Nepal's goals to conserve its unique forest biodiversity and sustainably utilize the forest to alleviate poverty, what types of private sector involvement and investment should Nepal work on to attract? Is the investment climate favorable to attract the private sector?
iii. What do the targeted private sector actors look for in an investment? What are the models for their involvement and investment?
iv. Based on the above information, what are Nepal's opportunities and constraints to attract private sector involvement and investment?

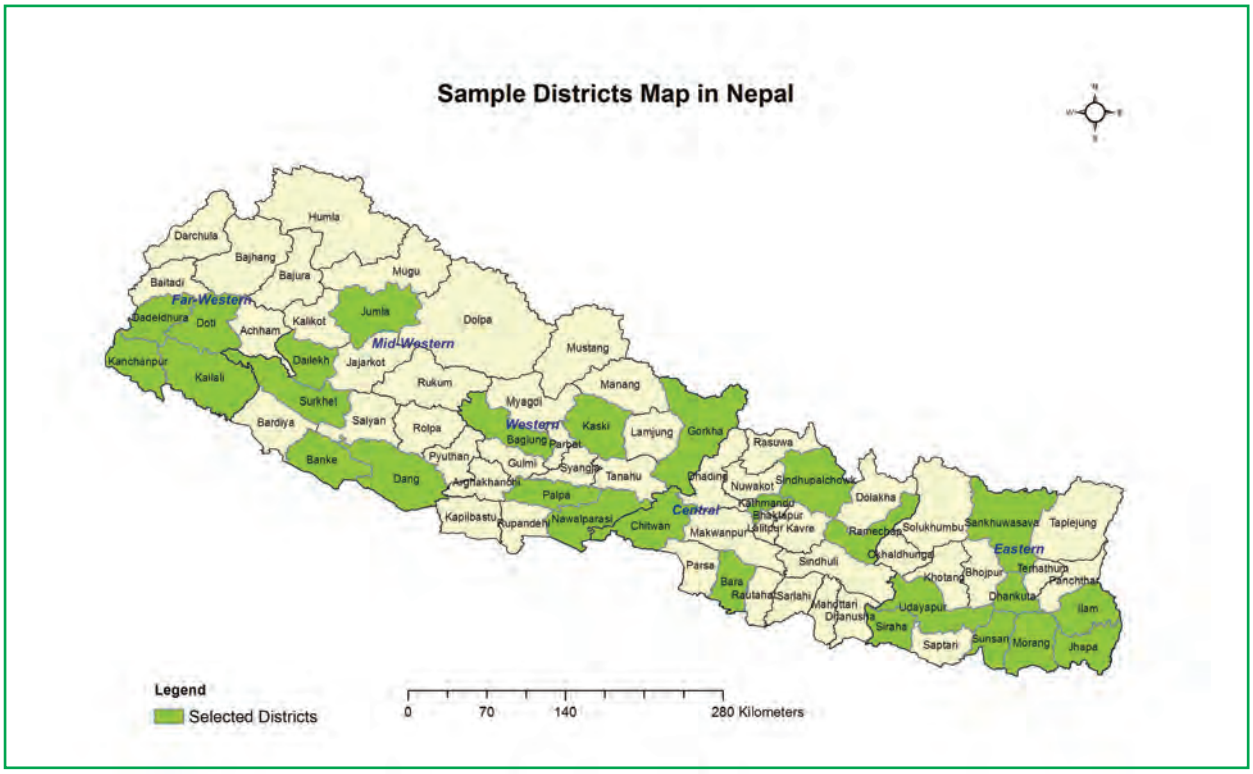
Scope and Methodology Overview of the Study: A study framework was developed to answer the research questions and undertake a systematic analysis of major elements organized under the following three components: i) assessment of the forest-based industries in Nepal, ii) investigation of value chain dynamics and actors' perspectives, both national and international; and iii) analysis of the investment climate. Each component for its subcomponents has its areas of inquiry and major methods that assess the current status and situation, help identifying the potential opportunities that are doable and within the reach of stakeholders and analyse the constraints and barriers that have limited the private sector investment and involvement. The study framework is shown in Figure 1.1 and the full methodology is presented in Annex A.

This national study is an important milestone for understanding private sector's involvement and investment in the forestry sector. The issues identified for analysis had local, regional, national, and international scales. The study provides an overall review of the sector nationwide and is supported by detailed studies of 28 sampled districts (including seven MSFP first-phase-districts) representing all nine broad eco-regions of the country (Figure 1.2). The districts, enterprises and financial institutions were selected using multi-stage stratified purposive sampling procedure. Twenty international forestry industry and private sector representatives were interviewed to provide the international perspective on Nepal.

Enterprises under four major forests subsectors, namely, timber, non timber forest products, ecosystem services (especially ecotourism and carbon), and forest bio-energy are prioritized. These categories of enterprises were chosen since they either are significant in terms of volume or value of products, cover large geographical areas and population, have growth potential, and/or promote responsible green businesses. Enterprises that did not meet such criteria remained out of the scope of this study.

Figure 1.1: Study Framework

Figure 1.2: Map Showing the Sample Districts in Nepal



Note: The map is developed based on the shape files provided by the Survey Department of the Government of Nepal, 2002.

This study is based on the available data and information, both formal and informal, secondary and primary sources. The main methods of data collection included i) consultations and interviews with key stakeholders and experts at local, regional, national and international levels, ii) focus group discussions, iii) surveys of domestic enterprises and financial institutions, iv) case studies, and v) review of literature and records. The lists of people and organisations, both at domestic and international levels, interviewed or consulted for the study and the places visited are given in Annex D.

Basic statistics related to forest resources, industries, trades and consumption are weak, and available statistics provide only a partial or imperfect picture. The team exercised scientific methods of triangulation of data meticulously to minimize the noises in the data. It has been a challenge to capture the forest products traded largely via informal market. The porous border with India and informal flow of NTFPs to China further reduce the reliability of forest products trade data. One of the objectives of the research is thus to delve into these issues and get closer to reality and develop a better understanding of informal sector and recommend strategies towards their formalisation.

Data and information were organised, processed and analysed with reference to three major components of the study - assessment of forest-based industries, investigation of value-chain dynamics

and actors' perspectives, and analysis of investment climate following a standard logic starting with the current status and situation through opportunities and potentials within the sector followed by constraints that hinder to realise the potentials, and finally appropriate intervention strategies considering all of the above. Five concept papers have been developed to elaborate some of the recommended strategies.

Report Structure: After this introductory chapter, the study findings are organized and presented in three chapters followed by a chapter on strategic interventions (See Figure 1.3).

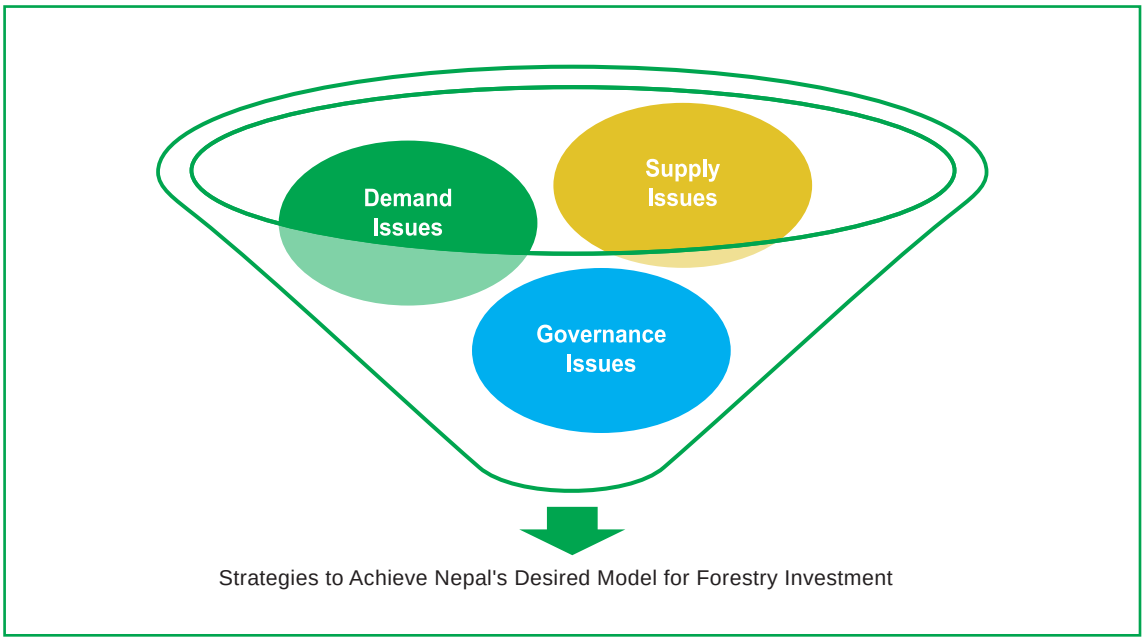
After a general overview of forest and forestry in Nepal, Chapter Two presents the assessment of forest-based industries focussing on involvement and investment of the private sector, employment generation, products and service options, demand, supply and growth potential.

Chapter Three investigates value-chain dynamics and actors' perspectives covering the inter-firm cooperation and coordination and the actors involved at various levels of chain in all four major subsectors, both domestic and international, to draw and prioritize opportunities and constraints from their perspectives.

Chapter Four analyses the investment climate in Nepal covering the major factors both enabling and constraining, determining the profitability and social image of an industry (and thereby attractiveness) by influencing transaction costs, risks and returns from private investment at various levels of their operation starting from accessing raw materials through trading of final goods or services.

Chapter Five provides intervention strategies at two broad categories, which consist of a) preparing base for private sector led industrial growth in forestry in general and b) promoting industrial competitiveness and growth of the four promising subsectors.

Figure 1.3: Study Structure



1.2 Significance of the Study

In Nepal, there has been to date neither any comprehensive analysis and understanding of the current status and prospects of private sector involvement and investment in forestry nor the assessment of potential impacts and development of strategies to attract and retain responsible private investors. Therefore, this study was designed to address this knowledge gap and make strategic recommendations for attracting and retaining the responsible private sector, who would make long-term investments in forestry and earn a decent profit and social prestige while contributing to sustainable management of forest, enhanced local livelihoods, additional employment generation and economic growth.

The outcomes of the study in terms of information, analysis and evidence-based recommendations provide the much-needed roadmap and pathways for promoting private sector involvement and investment in Nepal. The research outputs will be useful for the national and local governments, international and national Non Governmental Organisations (NGO), private sector actors and other forest stakeholders to develop plans, projects, programmes, and strategies for forest-based enterprises (FBE) and value-chain promotion ensuring that the conservation and poverty reduction goals expected from forest resources are achieved. More specifically, the study results and recommendations provide direct inputs to Nepal's Forestry Sector Strategy, which is now in the process of formulation. These also serve as a knowledge base and reference for other relevant strategies and plans being reviewed and/or formulated by the government, for example, Nepal's Reducing Emission from Deforestation and Forest Degradation (REDD) Strategy, Nepal Biodiversity Strategy and National Conservation Strategy.

This study offers useful information, insights and strategies to stakeholders in aligning the private sector's objectives of 'maximizing profits from investing/financing in forests' with the enablers' objectives of 'sustainable use of forest resources, wealth creation, and equitable distribution'. The sorts of private sector involvement and investment that Nepal should work to attract are identified from the perspectives of the entire "industry" which include private sector actors ranging from individual producers or harvesters (including community forestry user groups) to the large-scale international companies, and other actors influencing their involvement. Expansion of other opportunities such as ecosystem services and bio-energy from the forests offer the private sector the added role of addressing climate change and biodiversity conservation.

High value was attached to feedback from actual forest communities and international industry actors and their experiences in working with each other. This approach is likely to provide more realistic information about the nature of capacity building and quality improvements needed to ensure increased private sector investment, along with a reality check of what has been achieved in Nepal given its constraints and opportunities.

This study will be useful in understanding the drivers of forestry sector development and factors for mainstreaming the private sector in the development of the forestry sector. The study results have established linkages between the resource base available for forest-based enterprise (FBE)

development, the investment climate (policies and regulatory framework, political environment, institutional framework, infrastructure, and access to finance and market), investor's perspectives (various typologies of producers, processors, manufacturers, and traders, and the banks and financial institutions) in order to increase economic returns from FBEs for the private sector, while promoting social equity and sustainable use of the forest resources. The analysis provides a clear picture of opportunities and constraints and interventions required to promote competitive forestry products and FBEs.

The awareness created by the study and facilitation of dialogues among/between various actors, including enablers, politicians and government staff, bank and financial institutions, and private entrepreneurs will help in exploring ways to mitigate the identified constraints and to identify innovative ideas to finance the forestry sector. It is also expected that the study results will be helpful in finding solutions in formalizing the informal forest sector at various levels. The synergy thus created is expected to attract the private sector in the forestry sector of Nepal for additional investment, ultimately generating additional decent jobs and increasing the contribution of the sector to the country's total GDP.

2 ASSESSMENT OF FOREST-BASED INDUSTRIES

2.1 Nepal's Forests, Forestry, Products, Services, Investment, Growth and Employment

This section presents the status of Nepal's forests, forest management regimes, the four promising forest subsectors, participation and overall investment of private sector, employment generation and growth potential. Current status and growth potential of each of the four main forest subsectors is presented in next sections.

2.1.1 Status of Nepal's forests

Forests and shrubs cover about 5.83 million ha, which is 39.6% of the total land area of the country (DFRS 1999). On the basis of physiography and dominant species, Stainton (1972) classified Nepal's forest into 35 types. Dobremez (1976) elaborated the classification into 75 vegetation types. Dobremez and his Nepali colleagues continued to refine the list of forest and vegetation types to come up with 198 types in 1985 (TISC 2002). The small country accommodates dense tropical forests of Terai (wet plains) in the south and subtropical broadleaf and coniferous forests at the middle to temperate, subalpine and alpine vegetation in the north in 6 phyto-geographical provinces and 11 bioclimatic zones. The following summary of vegetation is adapted from Subedi (2006), which is largely based on work carried out by a number of expeditions from Japan and other countries and a comprehensive account of the forest of Nepal by Stainton (1972).

The tropical vegetation (up to 1,000m) is mostly dominated by sal (*Shorea robusta*) in association with *Terminalia* spp., *Phyllanthus emblica, Lagerstroemia parviflora, Cassia fistula, Adina cordifolia, Syzygium* spp., and big lianas like *Bauhinia vahlii* and *Butea parviflora*. Silk cotton trees (*Ceiba pentandra*) are also common. In eastern Nepal, subtropical forests of true chestnuts and genus *Schima*, a member of the tea family, predominate in the subtropical zone (1,000-2,000m) while in western Nepal this zone is represented by chir pine (*Pinus roxburghii*). Evergreen oaks (genus *Quercus*) are common in the temperate zone (2,000-3,000m) in both east and west. Deciduous forests, such as of maples (*Acer* spp.) and horse chestnut (*Aesculus indica)*, are found at lower elevations in this range, while blue pine (*Pinus wallichiana*) predominates at higher elevations in the west. Also found in this altitude range are over 30 species of Rhododendron.

Up to the tree line in sub-alpine zone (3,000 m to 3,600 m) firs (*Abies* spp.), hemlocks (*Tsuga dumosa*) and yews (genus *Taxus*) predominate in the east, while Himalayan birch and silver fir are found throughout this altitude. In wetter areas, dwarf bamboo and rhododendrons are common; junipers are found in dry areas. The plant height gets reduced with the increase in altitudes; the vegetation becomes bushy and dwarf with the prevalence of mat or cushion forming plants. The alpine zone (above 3,600m) harbours hardy perennials and the annuals. Rhododendron bushes are the dominant shrubs along with the numerous alpine herbs. Above the tree line in meadows numerous species of medicinal and aromatic herbs are found across extensive areas of alpine tundra. Especially in western Nepal, these plants are often characterized by aromatic rhizomes, and include such commercially important species as jatamansi (*Nardostachys grandiflora*) and sugandhwal (*Valeriana jatamansi*), both of the valerian family.

Between the period of 1978/79 to 1994, Nepal has lost forest cover at a rate of nearly 1.7% per annum (DFRS 2014). Another analysis shows that the forest loss in Terai due to deforestation during 1991-2001 was 2.7% per annum (CBS 2008). This shows that the high value Terai forests are declining despite ban on production, whilst mid-hills forest cover has probably increased in the last 30 years despite the predictions of complete deforestation. A readiness preparation proposal (RPP) on REDD has pointed out nine major reasons for deforestation and forest degradation, namely high dependency on forest and forest products (timber, fuel wood and other NTFPs), illegal harvest of forest products, unsustainable harvesting practices, forest fire, encroachment, overgrazing, infrastructure development, resettlement, and expansion of invasive species.

2.1.2 Nepal's forest management regimes

Based on land tenure arrangement, forests of Nepal can be classified into national forests and private forests. Forests planted, nurtured, or conserved on any private land owned by individuals are private forests, and all other forests beside them are considered as national forests. As the registered private forests cover less than 0.01% of the total forest area, majority of the forests in Nepal are national forests. The national forests are all under the land ownership of the government of Nepal but divided into several management categories: government managed forest, protection forest, protected area system, and various types of community-managed forest (community forest, collaborative forest, leasehold forest, religious forest and buffer zone community forest).

Table 2.1 and Figure 2.1 present various forest management regimes and the forest area they occupy. In terms of area, government managed forest is still the largest (60% of the total forest land), followed by community forest (28%) and the forest within protected areas (10%). The rest – collaborative, leasehold, private and religious forests cover less than 2%.

Government Managed Forests: The area of the government managed national forests is about 3.43 million ha, and represents about 60% of Nepal's forest. This includes 8 protected forests covering an area of 133,685 ha, which have been designated to conserve the high conservation value forest outside the protected area system. In 2011, the government introduced the "National forest development and management programme" for proper management of government managed forests (DoF 2011b). This programme includes block

Table 2.1: Forest Areas Managed Under Various Management Regimes

Management regimes	Managed by	Area (ha)	Management units
Government managed forest	DoF	3,431,056	-
Forest within protected area	DNPWC	600,000	-
Community forest	CFUGs	1,700,048	18,133
Leasehold forest	LHF user groups	38,997	6,712
Collaborative forest	CFM groups	54,073	19
Religious forest	Religious groups	543	-
Private forest	Private individuals	2,361	2,458

Source: Data from DoF (2011a, 2013) and DoF records (March 2014)

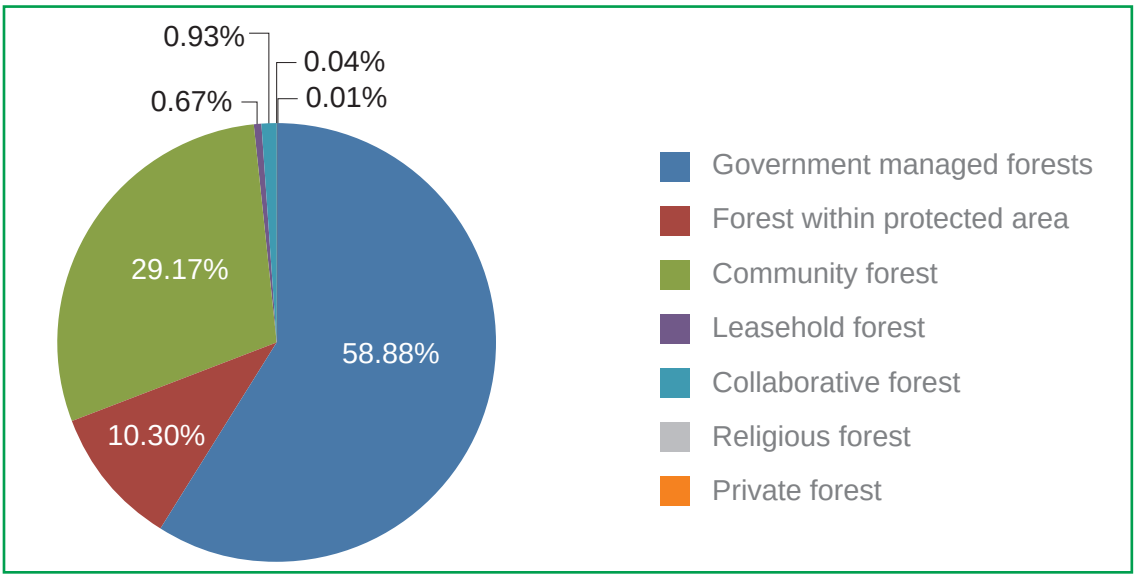
forest management, district forest plan and collaborative forest management. There are some projects of the government that have allocated about 34,000 ha of the government forests as the production forests for producing specific products demanded by industries, organizations or citizens. Sagarnath Forest Development Project in Mahottari and Sarlahi districts and Ratuwamai Plantation Project, Jhapa are the examples of production forest.

Forest within Protected Areas: Presently about 3.4 million ha, or 23.23% of the country's geographic area, has been managed by the government under the protected area system (DNPWC 2012). Of this, about 0.6 million ha is forest land and represent about 10% of Nepal's forest. The protected areas include 10 National Parks, 3 wildlife reserves, 6 conservation reserves, and a hunting reserve. While these areas are important for the protection of biodiversity, most of these also provide recreational and eco-tourism services.

Community Forests: Presently 18,133 community forest user groups (CFUGs) across the country, representing about 35% of the population, manage about 1.7 million hectares, which is about 29% of the total national forest (DoF record March 2014). Mid-hills represent the largest area of forest handed over to the communities, which is about 1.11 million ha. In Terai and High-mountains about 314,000 ha and 270,000 ha of community forests have been handed over, respectively. In terms of future prospect, while there are no recent estimates, the Master Plan for the Forestry Sector (MPFS) 1989 has identified that 61% of the total 5.83 million hectares of national forest has potential for community forestry, of which more than 55% is forested.

Leasehold Forests: About 39,000 ha, or about 0.7% of Nepal's forests has been handed over as leasehold forests to 6,712 leasehold user groups involving 40,000 households in 22 districts of Nepal. The Leasehold Forestry Programme has been implemented as a livelihood strategy for rural poor, landless, and marginalized households of the hilly region.

Figure 2.1: Forest Area under Various Management Regimes



Source: Data from DoF (2011a, 2013)and DoF records (March 2014)

Collaborative Forests: Presently, 19 collaborative forest management (CFM) groups in 9 Terai districts, have been managing 54,073 ha or about 0.9% of Nepal's forests (DoF 2013). The forests have been handed over as collaborative forests in order to address Terai specific issues, such as inclusion of distant users. The major actors in collaborative forest management are local forest users, district forest offices and local governments that work closely for sustainable management of the Terai and inner Terai forests.

Religious Forests: Only about 543 ha of forests are registered as religious forest. These forests refer to the patch of national forest allocated and managed by institution or a religious group and uses are limited to the religious purposes.

Private Forests: There are about 2,458 registered private forests in Nepal managing close to 2,400 ha or about 0.04% of Nepal's forests. All planted, nurtured or conserved forests in any private land that belongs to an individual as per the prevailing law are considered private forests (HMGN 1993). In reality, majority of the trees grown in private lands have not been properly accounted for. Not all private forests are necessarily registered as such, but private plantations occur in farming areas in the Terai and mid-hills in the uplands. Thus, the reported area under private forests may have been grossly underestimated.

2.1.3 Significance of Nepal's forests

Nepal's forests are known for their biological diversity and community practices, including community forestry. Nepal hosts a wide diversity of plant and animal species as a result of climatic and topographic variation maintaining rich biodiversity. For instance, Nepal has documented over 7,000 species of flowering plants, many of which are important for both subsistence and commercial purposes. The major products include fuel wood, timber, fodder, wild food, medicines, fibres and a variety of other NTFPs. Similarly, forests provide different ecosystem services, such as climate regulation, carbon sequestration, nutrient cycling and water regulation. These forest products and services significantly contribute the Nepalese economy and poverty reduction, but the accurate picture is not known due to the lack of systematic accounting.

Disaggregated data on contribution of forest sector to national GDP is not available in national accounting system. Combined with agriculture the contribution of the forest sector in the national GDP was 34.33% for the fiscal year 2012/13 (CBS 2013). Various authors have estimated the contribution of the forest sector to national GDP ranging from 3.5% to 27.55% (MFSC/FAO 2009; Acharya et al. 2009). Another estimate shows that the sector contributes about 9.45% of Nepal's GDP (DFRS 2008). The analysis of the budget allocation in the forestry sector over the past decades shows that the sector receives, on average, about 1.5% of the total national budget (MoF records 2004-2013).

The sector has also been a good source of revenue for the government. The forestry sector, on average, generated revenue of about NRs 550 million per year during 2004 to 2012 (see Table 2.2). The sales of timber and fuel wood shared an average of 63% of the revenue followed by 26% through issuance of entry permits to protected areas and 11% from royalties from NTFPs. A decline in timber revenue by 84.3% in 2010/11 is attributed to ban on timber harvesting issued for the year.

CFUGs and private forest owners have also been contributing to government revenue. For example, the royalty paid for timber and fuel wood sales by CFUGs and private forest owners from 2007/08 to 2011/12 was, on average, NRs 59 million and NRs 44 million per annum respectively (DoF records).

generation, and made a net income of NRs 412 million. As expected, the CFUGs in the Terai and inner Terai make the most while those in the high hills make the least. The sector's contribution to the livelihood of the people by providing sources of energy and other ecosystem services has not yet been properly accounted for.

Table 2.2: Annual Government Revenue from Major Forest Subsectors in Nepal (in NRs)

Year	Timber and fuel wood	NTFP	Protected areas	Total
2004/05	317,590,053	64,703,367	55,753,095	438,046,515
2005/06	258,864,432	51,640,926	64,581,876	375,087,234
2006/07	329,128,071	70,659,530	94,557,173	494,344,774
2007/08	397,580,425	77,510,788	117,898,991	592,990,204
2008/09	492,484,301	74,748,710	135,428,459	702,661,470
2009/10	526,191,501	49,842,330	140,383,399	716,417,230
2010/11	82,537,631	49,739,378	209,955,677	342,232,686
2011/12	456,568,650	21,061,511	258,525,499	736,155,660

Source: Data from DoF (2005-2012) and DNPWC 2012

In addition to the revenue to the government, Nepal's forests are a good source of income at community level. As shown in Table 2.3, the community forestry database shows that the registered CFUGs have made annual gross income of NRs 1.58 billion as of June 2013. They have spent NRs 1.17 billion, most of which goes for local economy and employment

In addition, many social benefits have been realized in Nepal especially with community forestry practices. Nepal's community forestry over the past three decades has achieved broad global acclaim as a successful model for community-based natural resource management that is innovative, people-centred and effective. For example,

Table 2.3: Yearly Income and Expenditure of CFUGs by Major Ecological Zones in Nepal as of June 2013

Zone	No. of CFUGs	Total gross income (million NRs)	Total expenditure (million NRs)	Total net income (million NRs)	Average income / CFUG (NRs)	Average expenditure/ CFUG (NRs)
High Hills	2,861	42	18	24	14,712	6,396
Mid Hills	12,883	458	281	177	35,530	21,774
Terai/Inner Terai	2,065	1,080	869	211	522,886	420,785
Total	17,809	1,580	1,168	412	88,719	65,585

Source: Data from DoF 2012b

UNEP (2010) has noted that Nepal's community forestry has contributed to the capacity building of community members in leadership development, participation in planning and decision making process, devising mechanisms for benefit sharing, participatory governance and its assessment, and strengthening of democratic exercise at the community level. As the community forestry guidelines mandate 50% women participation and inclusion of indigenous peoples, Dalits, poor and other marginalized groups in Community Forest Executive Committees, these groups have a clear stake in the leadership and decision making process. Nepal is widely seen as the exemplar and pioneer of community forestry. Community-based leasehold forest is also increasingly becoming an instrument for improving the livelihoods of the poor households.

2.1.4 Major forest subsectors, products and services

The study team categorized the Nepal's forest sector into four major subsectors- timber, NTFPs, ecosystem services (especially forest carbon and eco-tourism), and forest bioenergy. Important species and products have been identified and shortlisted for each subsector based on socio-economic impact and industrial growth potential. The industrial growth potential is assessed by examining the market demand and supply expansion potential. The main indicators used for the assessment of socio-economic impact are income and employment generation potential.

Timber: Our analysis of timber subsector shows that builder's joinery, furniture, veneer, plywood, handicrafts and construction timber are promising options. With regard to the international markets, the certified wood products from

Nepal was found to have a unique selling position (USP) that could be emphasized in promoting and selling the products. The major timber species identified according to physiographic zones by this study are listed in Table 2.4.

Table 2.4: Major Timber Species of Nepal According to Physiographic Zones

Physiographic zones	Eastern	Central	Western
Mountain	Oak (*Quercus* spp.), blue pine (*Pinus wallichiana*), fir (*Abies* spp.)	Oak(*Quercus* spp.), blue pine *(Pinus wallichiana)*, deodar (*Cedrus deodara*)	Oak (*Quercus* spp.),deodar (*Cedrus deodara*), blue pine(*Pinus wallichiana*), walnut *(Juglans regia),* pangar (*Aesculus indica*)

Hills	Chirpine (*Pinus roxburghii*), alder(*Alnus nepalensis*), chilaune (*Schima wallichi*), katus (*Castanopsis* spp)	Chir pine (*Pinus roxburghii*), alder, chilaune (*Schima wallichi*), oak (*Quercus* spp.)	Chir pine (*Pinus roxburghii*), alder (*Alnus nepalensis*), oak (*Quercus* spp.)
Terai	Sal (*Shorea robusta*), sissoo (*Dalbergia sisoo*), karma (*Adina cardifolia*), jamun (*Syzygium cumini*), saj (*Terminalia tomentosa*)	Sal (*Shorea robusta*), sissoo (*Dalbergia sisoo*), karma (*Adina cardifolia*), saj (*Terminalia tomentosa*), jamun (*Syzygium cumini*), satisal (*Dalbergia latifolia*), botdhagero (*Largestromea parviflora*)	Sal (*Shorea robusta*), sissoo(*Dalbergia sisoo*), karma (*Adina cardifolia*), saj (*Terminalia tomentosa*), jamun (*Syzygium cumini*), bijaysal (*Pterocarpus marsupium*), satisal (*Dalbergia latifolia*), tooni (*Toona ciliata*)

Source: ANSAB field survey 2013

NTFPs: The most promising product options in NTFP subsector are large cardamom, medicinal herbs, essential oils and resin (rosin and turpentine). Other promising NTFPs include natural fibres, handmade paper and kattha. With regard to the international markets, Nepal's unique selling position (USP) was noted for certified NTFPs including medicinal and aromatic plant products. Commercially valuable NTFPs identified by this study according to different altitudinal zones are presented in Table 2.5.

Table 2.5: Major NTFP Species of Nepal According to Physiographic Zones

Physiographic zones	Eastern	Central	Western
Mountain	Yarsagumba (*Ophiocordyceps sinensis*), lauth salla (*Taxus baccata*), satuwa (*Paris polyphylla*), allo(*Girardinia diversifolia*), lokta (*Daphne bholua*), argeli (*Edgeworthia gardenerii*), chiraito (*Swertia chirayita*)	Yarsagumba (*Ophiocordyceps sinensis*), jatamansi (*Nardostachys grandiflora*), chiraito (*Swertia chirayita*), lokta (*Daphne bholua*), argeli (*Edgeworthia gardeneri*)	Yarsagumba (*Ophiocordyceps sinensis*), jatamansi(*Nardostachys grandiflora*), morel (*Morchella esculenta*),kutki (*Picrorhiza scrophulariiflora*), satuwa (*Paris polyphylla*), chiraito (*Swertia chirayita*), lokta (*Daphne bholua*), allo (*Girardinia diversifolia*), atis (*Aconitum heterophyllum*)

Hills	Chiraito(*Swertia chirayita*), wintergreen (*Gaultheira fragrantissima*), tejpat(*Cinamomum tamala*), chir pine (*Pinus roxburghii*), bamboo, khayar (*Acacia catechu*), large cardamom (*Amomum subulatum*)	Wintergreen(*Gaultheira fragrantissima*), tejpat(*Cinamomum tamala*), chir pine(*Pinus roxburghii*), allo(*Girardinia diversifolia*), chiuri (*Aesandra butyracea*), large cardamom(*Amomum subulatum*)	Chiraito(*Swertia chirayita*), timur(*Zanthoxylum armatum*), ritha (*Sapindus mukorossi*), chiuri(*Aesandra butyracea*), chir pine (*Pinus roxburghii*), tejpat (*Cinamomum tamala*), allo(*Girardinia diversifolia*), sugandhwal (*Valeriana jatamansi*), khayar (*Acacia catechu*)
Terai	Bamboo, khayar (*Acacia catechu*), chamomile (*Matricaria recutita*), lemongrass (*Cymbopogon* spp.), mentha (*Mentha arvensis*),citronella (*Cymbopogon* spp.), palmarosa (*Cymbopogon* spp.), kurilo (*Asparagus recemosus*)	Kurilo, bel (*Aegle marmelos*), bamboo, chamomile(*Matricaria recutita*), mentha (*Mentha arvensis*), *Cymbopogon* spp.(lemongrass, citronella, palmarosa)	Khayar (*Acacia catechu*), bamboo, Kurilo (*Asparagus recemosus*), rattan (*Calamus* spp.), chamomile, mentha, *Cymbopogon* spp. (lemongrass, citronella, palmarosa)

Source: ANSAB field survey 2013

Ecosystem Services: Ecosystem services include carbon, biodiversity, water, wildlife, tourism, and cultural and other services derived from healthy functioning ecosystems. Forest carbon and ecotourism are attractive ecosystem service options for investment and enterprise development in the country. Forest carbon has also the unique selling position in international markets that could be emphasized in promoting and selling the services. There is still a great deal of uncertainty and the 2015 Paris Conference of Parties (COP) is expected to determine the fate of Reducing Emissions from Deforestation and Forest Degradation in developing countries (REDD) plus conservation, sustainable management and enhancement of carbon stocks (REDD+) for harnessing carbon asset. If REDD process goes well and is implemented effectively at international level, our analysis shows that REDD+ is more promising in Nepal, while other attractive options include afforestation and reforestation (A/R) for producing carbon credits under Clean Development Mechanism (CDM).

Regarding the forest-based ecotourism, our analysis shows that protected areas scattered across the country are more popular among foreign tourists, thus it is promising for making investment in ecotourism activities around these areas. The other attractive option is community forest-based ecotourism activities, as the community forests have been popular among the domestic tourists in recent years for recreational activities. Some potential ecotourism products may

include forest safari, forest walk, wildlife and bird watching in protected areas, and picnic spots, view towers and recreation parks in community forests.

Forest Bioenergy: The priority products for bioenergy include fuel wood, beehive briquettes, pellets, charcoal and improved burners. Other attractive options include biomass electricity, sawdust briquette and pellets and biofuel (jatropha). The major species used for fuel wood in different regions in Nepal are listed in Table 2.6.

Briquettes and pellets could be made from weeds or unwanted forest biomass, agricultural crop residues, and residues from medicinal and herbal plant processing and municipal solid waste. This study has identified a number of plant species that are currently used in different regions of Nepal. These are listed in Table 2.7.

Table 2.6: Major Species Used as Fuel wood in Nepal According to Physiographic Zones

Terai	Hills	Mountains
Sal (*Shorea robusta*), sissoo (*Dalbergia sisoo*), Masala (*Eucalyptus* spp.), karma (*Adina cardifolia*), jamun (*Syzygium cumini*), saj (*Terminalia tomentosa*), Siris (*Albiziaspp*.), mango (*Mangifera indica*)	Chirpine (*Pinus roxburghii*), alder (*Alnus nepalensis*), chilaune (*Schima wallichi*), katus (*Castanopsis* spp), siris (*Albizia* spp.) oak *(Qurecus* spp.)	Laliguras (*Rhododendron* spp.), blue pine (*Pinus wallichiana*), oak(*Qurecus* spp.), bhojpatra (*Betula utilis*), dhupi(*Juniperus indica*)

Source: ANSAB field survey 2013

Table 2.7: Major Species Whose Residues Can be Utilized for Bio-briquette

Terai	Hills	Mountains
Banmara (*Ageratina adenophora*), lahare banmara (*Mikania micrantha*) titepati(*Artemisia capillaries*), lantana *(Lantana camera)*, eucalyptus, *Cymbopogon* spp. (lemongrass, citronella)	Timur (*Zanthoxylum armatum)*, sugandhakokila (*Cinamomum glaucescens*), banmara (*Ageratina adenophora*), titepati (*Artemisia capillaries*), wintergreen (*Gaultheria fragrantissima*), pine needles, mentha (*Mentha arvensis*), lantana (*Lantana camera*)	Lauth salla (T*axus baccata*), sunpati (*Rhododendron anthopogan*), dhupi (*Juniperus indica*)

Source: ANSAB field survey 2013

2.1.5 Private sector participation and investment in forest-based industries

The participation of private entrepreneurs in the forest-based industries is mainly found in processing, manufacturing and trade and to some extent production of forest products and services. Since no unified formal data on participation and investment of the private entrepreneurs in forest-based industries are available, the study team made estimates based on the analysis of existing databases available at Department of Industry (DoI), Department of Cottage and Small Industry (DoCSI), Cottage and Small Industry Development

Board (CSIDB), relevant commodity associations, ANSAB, and data obtained from this study's field survey.

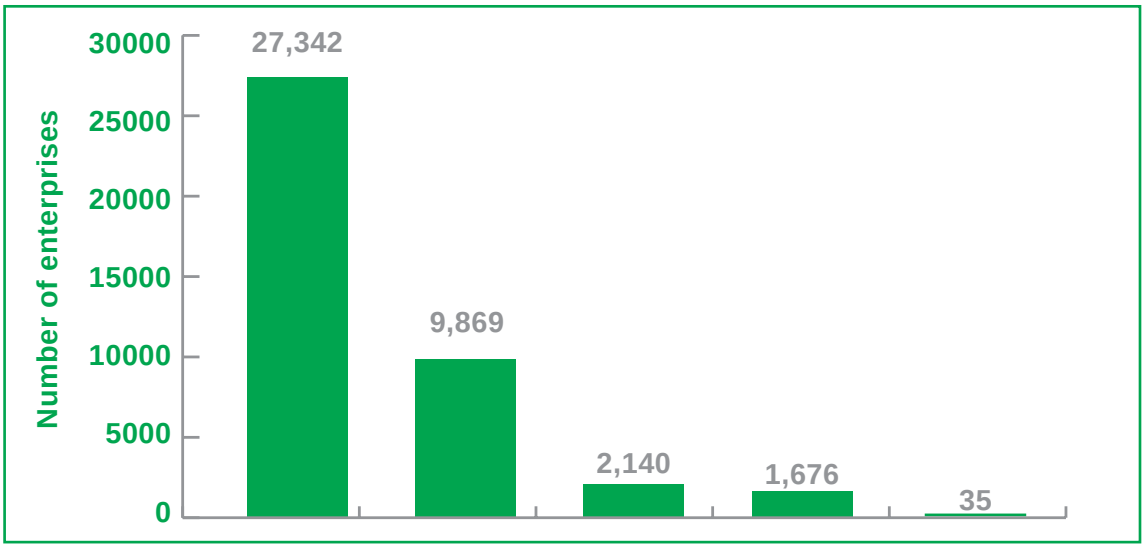
An estimated 41,062 forest based enterprises are involved in the major four forest subsectors i.e. timber, NTFPs, ecosystem services (includes ecotourism) and forest bioenergy. Figure 2.2 presents the involvement of the private entrepreneurs in primary production as well as processing, manufacturing and trade of the four major forest subsectors.

The total estimated investment by private entrepreneurs is NRs 31.89 billion (excluding direct foreign investment in eco-tourism), of which the highest investment came from the timber processors and manufacturers with 59% of the total investment (see Figure 2.3).

registered at DFOs or DoI (2,461), and NTFP cultivators (21), yet only enjoys 3% of total private investment. This is the top area where Nepal should prioritize greater investment, since without increased supplies and better quality of supplies; all other investment in the forestry sector will be constrained.

It is observed that CFUGs invest 20.87% to 80.96 % of their income on forests management (DoF 2012); however most of the CFUGs are operating at subsistence level. Assuming that CFUGs make 30% of their total expenditure for forest management, the investment made by the CFUGs in the production of primary forest goods and services comes to be about NRs 350 million. Similarly, leasehold, collaborative and other forest user groups have invested about NRs 86.5 million in forest management. The total investment by the private forests and NTFP cultivators including those registered at DoI is calculated to be around NRs 388 million. Among those registered at DoI, 12 enterprises received foreign direct investment (FDI) - one in teak (*Tectona grandis*) plantation (NRs 5.5

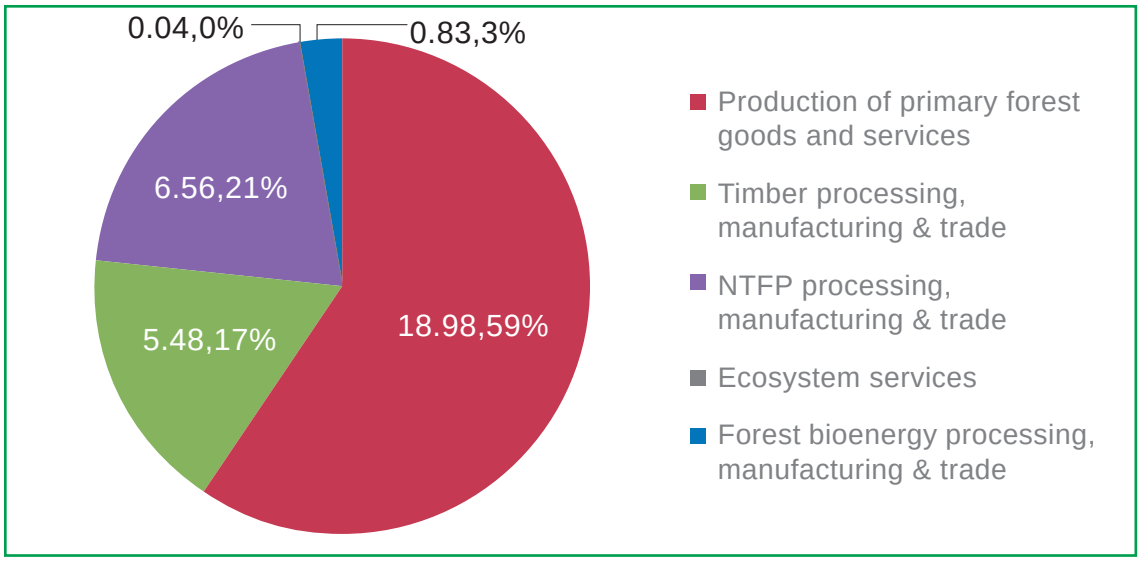
Figure 2.2: Number of Enterprises by Type of Forest-Based Industries



Source: Data from DoI 2013, DoCSI 2013 and ANSAB field survey 2013

Primary Production of Forest Goods and Services: The primary production function includes the products and services of the four major forest subsectors and involves 27,342 enterprise units including the forest producer groups (18,133), private forests

Figure 2.3: Private Entrepreneurs' Investment in Major Forest-based Industries (in billion NRs) – Excluding Direct Foreign Investment in Ecotourism

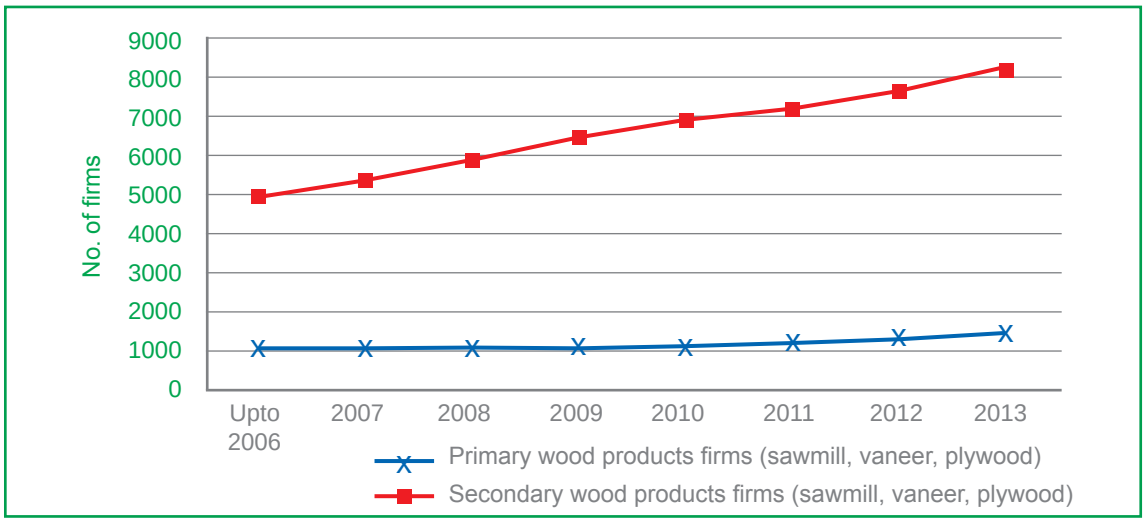


Source: ANSAB field survey 2013

million) and others in farming of NTFPs including organic herbs (NRs 79 million).

Timber Processing, Manufacturing and Trade: The major investors in timber processing, manufacturing and trade are sawmill, veneer, plywood, and furniture and woodcarvings operators. The number of registered enterprises is increasing (Figure 2.4),and at present there are 1389 saw millers, 200 veneer producers, 64 plywood producers and 8,217 furniture and woodcarvings makers, which make a total of 9,869 enterprises in this category (DoCSI 2013). This indicates that despite all the issues holding back investments in Nepal private sector sees enough promise in the timber industry to invest. Facilitating access to sustainable supplies of higher quality wood will spur greater investment.

Figure 2.4: Trend Showing the Number of Registered Timber-based Enterprises



Source: Data from DoCSI 2013

It is noted that over 80% of the enterprises are engaged in furniture and woodcarving indicating that these two industries are attractive and feasible for small and medium entrepreneurs in Nepal.

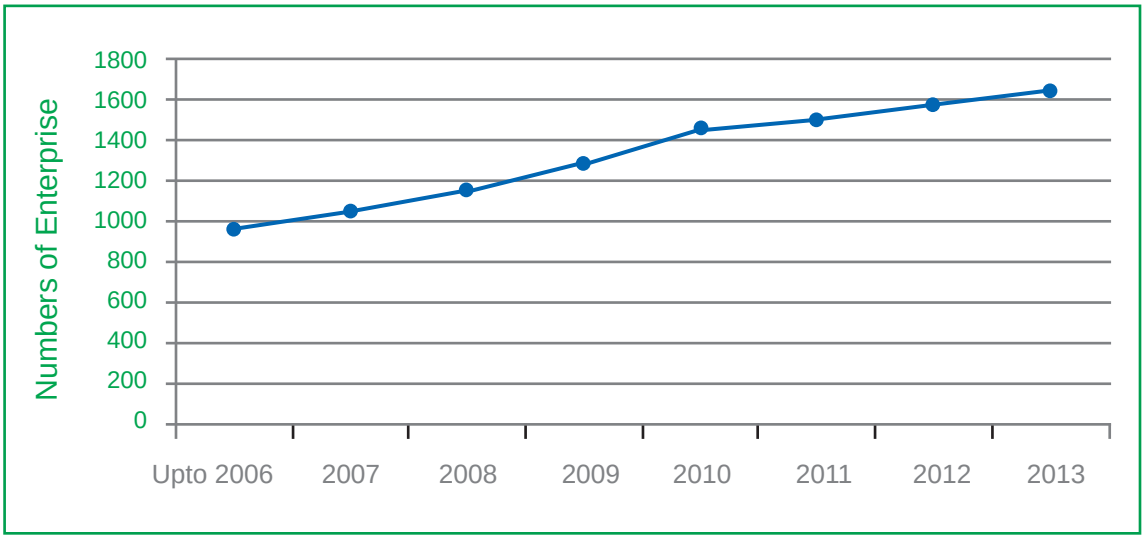
The total investment made by these timber-based enterprises is estimated to be NRs 18.9 billion. The investment by the importer of the furniture is not included in this estimation. Of the total firms registered in DoI, only two have accessed FDI - one saw-miller and another plywood-maker. Woodcarving is often reported in handicraft sector and also assisted by a variety of NGO-supported programs that help Nepal access fair trade and green markets. The primary processors are involved in trading either directly or through contractors, who act as their agents.

NTFP Processing, Manufacturing and Trade: In this category, a total of 2,140 enterprises are found to be involved, of which 1,647 are herbs processors and manufacturers registered at DoCSI or DoI; and the rest 493 are traders including exporters, which are registered at DoC to do trading of a variety of commodities including NTFPs. The processors and manufacturers are mainly involved in processing of medicinal herbs, spice and food, natural fibre, crafts, rosin and kattha. The traders mainly include district traders, regional traders and exporters. The data from DoCSI and DoI in the past 8 years shows that the number of registered NTFP-based enterprises is increasing from 968 in 2006 to 1,647 in 2013 (Figure 2.5).

The total investment by these enterprises is estimated to be NRs 5.48 billion, most of which came from the processors and manufacturers. The 25 enterprises registered with DoI alone accounts for NRs 1.47 billion including the FDI equivalent to NRs 297 million. The industries receiving FDI are herbal body care, herbal food supplements, herbal pharmaceuticals, processing of taxus resin, taxus powder and essential oils.

Ecosystem Services Including Ecotourism: The total number of enterprises working in ecosystem services is estimated to be 1,676, of which 1,674 are ecotourism related and two are in forest carbon. About 78.65% of the estimated investment of NRs 6.56 billion in this sector is in ecotourism enterprises while NRs 1.4 million is in forest

Figure 2.5: Trend Showing the Number of Registered NTFP-based Enterprises



Source: Data from DoCSI 2013 and DoI 2013

carbon related enterprises. The investment in ecotourism is estimated considering mainly the participation of trekking agencies and hotels and assuming that 50% of the total investment in travel and tourism is related to ecotourism sector of Nepal.

The transaction of forest carbon is not well developed in Nepal. The recent development includes some voluntary transactions by some private companies and donor-funded projects (fund based markets). Our calculation of the private investment in carbon subsector is based on two forest carbon projects in which private sector is involved. The Bardiya Green Project is a collaborative effort of Yeti Airlines, Tiger Tops Karnali Lodge and Brindapuri Community Forest that invested NRs 1.07 million since June 2010 for three years. In another initiative, Ace Development Bank purchased 2,800 tons from the Dhading-based community organization - Rural Mutual Development (RMD) for NRs 0.36 million in order to offset their annual carbon emission of 250 tons of greenhouse gases. However, there is a growing interest in purchasing voluntary carbon credits from Nepal from international organizations, as Nepal provides a unique story of social and environmental benefits.

Forest Bioenergy Processing, Manufacturing and Trade: A total of 35 enterprises are involved in this category. Of this 29 are involved in bio-briquette production, most of which are community based; two each in community-based gasification and liquid biofuel, and one each in marketing of briquettes and production of char using improved charring retort. The total estimated investment of these enterprises is NRs 42.9 million. In this calculation, the investment in trading of fuel wood and by-products from wood processing are not included as the majority of the formal participants are from timber-based businesses in order to avoid double counting. The informal fuel wood trade in the rural areas, mostly done by individuals and sold in local markets, is unaccounted and not included in this estimate. The increasing trend in investment in bio-briquettes is observed due to greater awareness and market demand especially from urban areas. Similarly, the establishment of gasification units is just initiated, but shows good prospects given the current energy crisis. The investment in liquid biofuel enterprises is shaky with the two established units not functioning properly due to the high cost of production, competition with subsidized fossil fuels, and insufficient supportive role of the government.

Foreign Direct Investment (FDI) in the Forestry Sector: Overall, foreign investment of NRs 75.14 billion (just under US $800 million) was committed for 2,335 ventures up to 2011-12 (DoI 2013). Of those, 114 ventures were in agriculture and forestry, 20 in wood and wood products, 48 in paper and paper products, 191 in the tourism sector, and 629 hotels and resorts. Of late, Chinese private sector is increasing their investment in ecotourism development in Nepal and Indian in NTFPs processing (MoF 2013).

2.1.6 Range of international buyers and investors

For decades, buyers of forestry products, both timber and NTFPs had little or no regard for sustainable harvesting and either looked the other way when it came to illegal harvesting or were active supporters. As environmental and social activist groups worked to expose the impacts of these illegal practices on the forest and local people, laws such as the Lacey Act[1]

[1]The U.S. Lacey Act is one of the world's primary legislative examples of wildlife preservation and forest conservation. Originally passed in 1900, the Act makes it a federal crime to poach game in one state with the purpose of selling the bounty in another. On May 22, 2008, the U.S. Congress approved a new amendment to the Lacey Act, making the policy capable of combating both wildlife crime and illegal logging.

forced companies to stop these practices. Yet stopping these practices meant that companies had to know their supply chains and source of products. Twenty years ago for NTFPs almost all industry members could not trace their ingredients back to the forests and communities from which they were harvested; timber products was not much better. Business placed orders with distributors who could have long supply chains. For example for essential oils from Nepal, a trade study done by Enterprise Works documented that the raw herbs changed trader hands on average six times before being distilled and another four times before being blended into a final product.

Twenty years ago, issues such as child labour, animal cruelty, organic products, biodiversity conservation, and sustainable forestry were just starting to get press attention. A few consumers were starting to demand their products meet social and environmental goals being articulated by a range of NGOs. Boycotts against retail stores started to take root and consumers in Western countries became a movement to force companies to change their business practices. Progressive companies embraced the trend and invested in knowing their supply chains better, all the way to the source forests and communities. These were the companies that were already championing the Corporate Social Responsibility (CSR) movement. Other companies resisted, but still had to find ways to comply once laws were passed.

This change has meant a blurring of lines between buyers who used to be only profit motivated and willing to disregard laws and regulations and companies who take corporate social responsibility very seriously. Both types of buyers/investors have to find ways to adhere to stricter forestry and social regulations and secure high quality stable, sustainable supply of forest products at competitive pricing or return on investment.

Figure 2.6: Types of Buyers and Investors

Individual Buyers and Investors

- Drive the demand for sustainable and socially responsible products
- Influence their investment funds to include socially responsible investments in their portfolios, forestry sector an important component in many of these funds

CSR Companies with Active Roles in their Supply Chains

- Will often visit the forests and communities
- Source directly or work with a few trusted suppliers who visit the forests; sometimes make direct investments
- Want the highest quality, strong documentation, certification, and great story

Institutional Investors

- Some have greater emphasis on CSR and willing to take small reduction on expected investment return if strong environmental and social benefits can be documented
- Include big multi-national players such as JP Morgan, Acumen Fund, all of which look for local political stability

For Nepal as a supplier and potential place to invest it must also meet these higher standards to be competitive and attract reputable investors. In the Nepal context we are looking at forestry schemes that factor in community forestry and standards and certifications that support transparency and sustainable forest management. One of the less discussed benefits of certification is the introduction of a global market-driven enforcement for improved forest management. Certification schemes also invest their own money to advertise and promote the certification, which indirectly becomes advertising for those that are certified. Buyers and investors from individuals to corporations seek out and are more likely to trust a certified product, enterprise, or investment over one that does not have certification[2].

Based on the overall findings of the study, it is recommended that Nepal target CSR companies for buying relationships and forestry investment. A mechanism that can be considered is public private partnerships in which grant funds are available from bilateral and multilateral institutions to help develop and foster a private sector investment. These types of investments typically include an NGO that assists with the community development and safeguards social issues (indigenous people, women, intellectual property, labour rights, etc.). Funding from the European Union, United States, International Finance Corporation (IFC), and other funds are available for public-private partnership investments.

Institutional investors have always had a segment of their portfolios globally in the forestry sector. As Nepal stabilizes politically, this form of investment income could help to get significant plantations started on private and/or government lands that have been denuded and are not suitable for food crops. During the investor interviews, the forestry sector was identified as a growth area globally, but Nepal was either not known or investors noted there would need to be greater political stability before these type of investment funds would be possible.

As Nepal attracts forestry investments, it will need to apply the most demanding requirements to all investments at a given forest area. If Investor A demands biodiversity conservation and use of endemic species, then this has to be adhered to and not mixed in mono-culture of an exotic species for another investor.

When it comes to buyers, the expectation is that they want it all – high quality, proof of adherence to sustainable forestry, social well-being, regulations (legal coverage), and a great story (see Figure 2.7). Gone are the days where a great story could sell a product. Many of the buyers interviewed noted that Nepal has the advantage of a “great story”. While most consumers have not visited Nepal, it is one of the top exotic destinations that many people wish they could visit. It has a mystic with Mount Everest, snow-capped mountains, rich culture, and warm friendly people. These are marketing aspects that can help sell all the targeted forest products, such as hand carved wood products, certified wood veneers, flooring and NTFPs, noted in this study.

Nepal could attract more buyers if it organized the information and success stories it already has in trading essential oils, handmade paper, and wood

[2] These conclusions come from participating in the Natural Products Industry Expo over an 18 years period and tracking the trends on certification and consumer-led social and environmental responsibility. Unpublished studies, completed for private industry clients and industry associations, done by consultant Ann Koontz, in 1995, 2002 and 2010 were used to generate this trend summary.

handicrafts. During this research it was found that Nepal's forestry sector has within it FSC certification, organic certification, cradle to cradle certification, wildlife friendly certification and has been featured by Body Shop, Aveda, major fashion magazines in Europe, US, and Japan. It has respected academics and researchers who have independently verified improvements in Nepal's forests and biodiversity as well as documented significant social gains for poor communities and women living and working with the forest. These represent trusted third party sources that add credibility to Nepal as a potential supplier of forest products and good investment opportunity. Figure 2.8 gives suggestions and website with more on how to organize and present Nepal's forestry products and services.

2.1.7 Present status of employment in forest-based industries

Disaggregated data on employment in Nepal's forestry sector are not available in the national accounting system. A recent study estimates that the forest sector provides about 1.658 million full-time jobs per annum, which represents 9.23% of the total economically active population of Nepal (ERI 2011). But 91.3% of this is informal employment and mostly unpaid engagement in the collection of forest products for domestic use. Only 8.7% is formal employment, of which about 90% of the jobs are paid. Of the total formal employment (about 145,000), the private sector contributes to 68% (about 98,500 full time equivalent person per annum) followed by community-based organizations (CBOs) (21.68%), government (7.75%), civil society (2.39%), and academic institutions (0.18%).

Since the employment in the government, civil society and academic institutions, although very important, are not directly dependent on forest-based industries, the employment through the private sector and CBOs are of direct concern for the future strategies to increase gainful employment. The employment through private sector includes the estimates for timber and NTFPs industries derived

Figure 2.7: Buyers' Expectation in Nepal

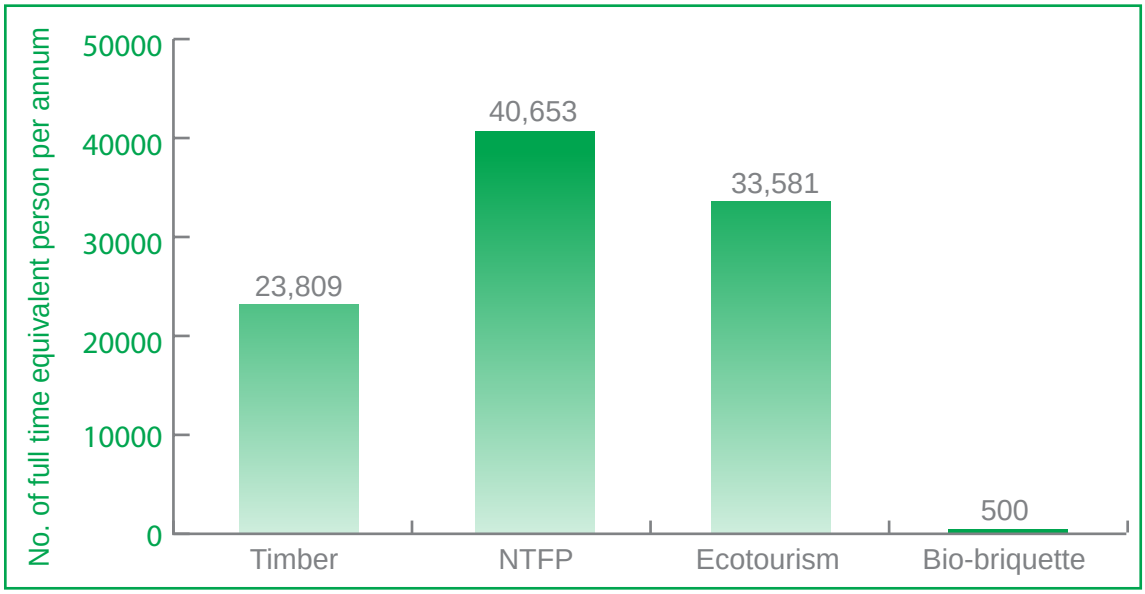
Figure 2.8: Presenting Forestry Products to Buyers

Types of Information and How Buyers want Information

- Clean, well communicated, professional data (think spreadsheets, verification reports, great images)
- Trusted party they can reach and follow-up with easily (a phone and email they can reach
- May not know what they want, prepare for iterative process and potential field visits
- www.enterpriseworks.org

from the total production record of the Department of Forests and that generated through businesses directly serving tourists of protected areas and 20 forest related consulting firms (see Figure 2.9).

Figure 2.9: Formal Full Time Jobs Provided by Various Forest-based Industries, Excluding CBOs



Source: ERI 2011 and ANSAB survey 2013

Community-based organisations (CBOs), particularly community forest user groups (CFUGs), leasehold forestry, buffer zone forest management committees and collaborative forest management groups involved in production functions provide about 31,000 full time equivalent jobs, contributing to local employment to some extent (ERI 2011).

This study identified bio-energy and forest carbon as potential subsectors to generate employment. We found that the forest carbon as an industry is in the beginning phase and its present contribution to employment generation is not accounted for. While, the bio-briquette industry using forest biomass as raw material presently provides about 500 full time jobs and could be accounted for the forest based employment generation. Including this figure to the total employment shows that the private sector and community-based forest management groups formally provide close to 130,000 full time jobs in forest related activities in Nepal. The difference between the 145,000 and 130,000 jobs is the deduction of government, academia, and civil society attributed forestry jobs that are not tied to private investment.

Disaggregated figures for employment in forestry through private sector in terms of occupational categories, gender and ethnic groups provide an interesting pattern. In terms of occupational categories, 86% are elementary unskilled forest workers and the rest 14% are skilled and include technical and managerial staff. In terms of gender, only 25% are women. The Janajati group represent the

largest category with 55% followed by Brahmin/Chhetri with 33%, dalit with 7% and religious minorities with 4%.

2.1.8 Economic growth and employment generation potential from forest-based industries

The study team has estimated the potential economic growth and numbers of sustainable jobs that can be created from forest-based industries based on the market opportunities and supply potential as determined by this study (see Sections 2.2, 2.3, 2.4, 2.5). It is done in two different scenarios – conservative and optimistic. The conservative scenario assumes the products and services are utilized with modest changes to the sector, taking into account the recent positive trends in investment. The optimistic scenario assumes forests are managed using science and at least some significant value chain improvements are made (see the detailed assumptions under supply potential). The spatial dimension in this study includes the existing forest areas and the areas that can be brought under plantation in Nepal. The temporal dimension depends on the performance. For example, the potential as outlined under conservative scenario could be achieved within 3 to 5 years that under optimistic scenario could be achieved within 15 to 20, if the suggested interventions are properly implemented.

Our estimates show that the forest based industries can generate more than NRs 87 billion creating more than 400,000 sustainable full time equivalent jobs under the conservative scenario. And it can go up to more than NRs 370 billion creating about 1.4 million jobs in optimistic scenario (see Table 2.8). We have assumed that an increase in income by NRs 40,000 per annum is equivalent to the creation of one sustainable full time job. The specific assumptions we have made for each subsector are described below while we present the economic value and employment opportunities for the subsectors.

Table 2.8: Potential Economic Growth and Employment Generation from Forest-based Industries in Two Different Scenarios

Subsector	Conservative Scenario	Optimistic Scenario
Timber		
Economic value (NRs million)	55,127	270,697
Number of sustainable, full time equivalent jobs	206,725	812,090
NTFP		
Economic value (NRs million)	11,635	58,173
Number of sustainable, full time equivalent jobs	87,259	290,865
Forest Carbon		
Economic value (NRs million)	4,235	13,572
Number of sustainable, full time equivalent jobs	37,054	118,755
Ecotourism		
Economic value (NRs million)	14,572	21,567
Number of sustainable, full time equivalent jobs	72,860	107,833
Forest Bioenergy		

Economic value (NRs million)	2,126	9,107
Number of sustainable, full time equivalent jobs	15,633	53,571
All Subsectors Combined		
Economic value (NRs million)	87,694	373,115
Number of sustainable, full time equivalent jobs	419,531	1,383,114

Assumptions

- Forest products and services are utilized with modest changes to the sector under the conservative scenario
- Forests are managed using science and at least some significant value chain improvements are made under the optimistic scenario
- An increase in income by NRs 40,000 per annum is equivalent to the creation of one sustainable full time job equivalent
- Specific assumptions for supply potential for each subsector are described in supply potential (see Sections 2.2, 2.3, 2.4, 2.5)

These potential numbers reveal a huge scope for generating significant economic growth and number of additional sustainable jobs in Nepal's forest sector. The informal workforce could be diverted to formal employment opportunities by involving them in enterprise oriented forest management and production of goods and services as well in other functions of the value chains.

Timber: Under conservative scenario, it is estimated that a total volume of 1.66 million m^3 (58.64 million cft) of timber per year can be sustainably harvested and sold generating NRs 55 billion and correspondingly over 200,000 sustainable, full time equivalent jobs. Under optimal scenario a total annual harvest volume of 9.2 million m^3 can be produced, which can generate over NRs 270 billion creating 812,090 sustainable full time equivalent jobs. Our study shows that under present timber value chain, the share of expenditure for labour is about 15% of the market price. In optimistic scenario the whole chain is expected to be efficient resulting the labour costs going down to 12% because of improved technologies and governance practices.

NTFPs: Under conservative scenario, NTFP based industries can generate NRs 11.6 billion providing 87,000 full time jobs equivalent per annum whereas under optimistic scenario, it can generate about NRs 58.2 billion providing over 290,000 full time jobs. We assumed that 90% of the total NTFP trade value is attributed to export and the remaining is consumed domestically. Under the most conservative harvesting, we assumed that NTFP trade value would increase by two folds because of cultivation and local value addition of NTFPs. We also assumed that 25% of the total value throughout the chain goes to labour as wage. Under optimistic scenario, we assumed that NTFP trade value would increase by 10 times because of expanding cultivation and processing of some marketable NTFPs and increasing emerging cultivated items. This is evident from the differences that we observed in some commercialized cultivated NTFPs with the application of science and technology in production and processing and improved marketing, such as shiitake mushroom, large cardamom, essential oils. We also assumed that 20% of the total value throughout the chain goes to labour as wage because of efficiency in technology and improvement in governance.

Forest Carbon: In conservative scenario, the total economic value of forest carbon will be NRs 4.2 billion generating 37,000 full time jobs equivalent per annum, whereas in optimistic scenario, the total economic value of forest carbon will be about NRs 13.6 billion per year

generating nearly 120,000 full time jobs. We estimate these values by taking the yearly volume of the carbon sequestered by Nepal's forests under conservative and optimistic scenario. Under conservative scenario, we assume that about 15% of the total carbon sequestrated under normal ongoing activities is traded at the price of US $5.9/tCO$_2$e, the average market price of voluntary carbon in 2012 at international market. For the carbon sequestered in optimistic scenario, we assume that about 30% of the total carbon is traded at US $8/tCO$_2$e, because of the increased recognition of Nepal's carbon as speciality product. For the employment generation, we assume that about 35% of the total sales go for employment.

Ecotourism: Under conservative scenario, the economic value of ecotourism will be NRs 14.6 billion generating 73,000 full time equivalent jobs per annum. Whereas in optimistic scenario the economic value will be as high as NRs 21.6 million generating 108,000 full time jobs. With the total number of tourists involved in ecotourism activities calculated under conservative and optimistic scenario, we have also used the average expenditure of the tourists for estimating economic value of and employment from ecotourism. The available tourism data show that about 0.8 million international tourists and 0.12 million domestic tourists visit different parts of Nepal. Each international tourist spends 13 nights with about US $40, daily expenditure and domestic tourist spends 5 nights with about NRs 1,000 daily expenditure. Considering the above projected growth in all three factors (number of tourists, length of stay and daily expenses), it is assumed that the overall income from tourists involved in ecotourism activities will increase by 10% under conservative scenario because of new ecotourism product development and additional ecotourism activities. In optimistic scenario, it is expected to increase by 20%. For the employment generation, we assume that 20% of the economic value of ecotourism under each scenario goes to creating employment at local level.

Forest Bioenergy: This industry can generate a total economic value of NRs 2.1 billion with about 16,000 full time jobs equivalent under conservative scenario. Under optimistic scenario, we estimate NRs 9.1 billion with about 54,000 sustainable full time equivalent jobs through increased use of biomass, enhancing the quality of forest health condition and shifting use of it in industrial sector. The estimate of the forest bioenergy is done considering the trade value of solid biofuels, especially bio-briquette and wood pellets, which are emerged as promising products. The economic value and employment is not calculated for fuel wood because this industry is largely operated informally and has a very little growth prospect. It is assumed that in case of bio-briquette 40% of the total value throughout the chain goes to labour as wage, whereas in case of wood pellets, it is 25%.

2.2 Current Status and Growth Potential of Timber-based Industries

Based on the detailed analysis of the current situation of demand and supply as well as projection of future demand and supply potential, this section assesses the timber subsector for industrial growth potential in the country. The current demand and supply are analysed based on the available relevant information and government records. An assessment of the supply potential is made under different scenario of timber harvesting. It includes the supply potential under conservative harvesting rate, scientific management and plantations in about two-third of available non-forested land,

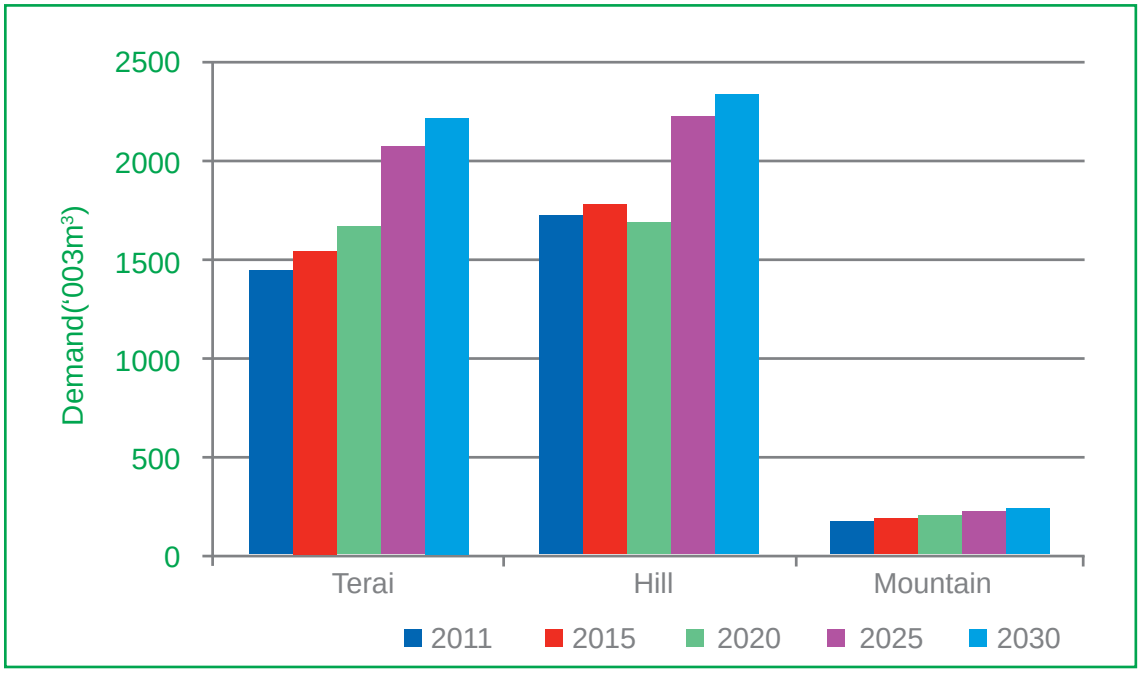
and more optimistic rate with scientific management and plantations in total available non-forested land.

2.2.1 Assessment of current and future demand

The major end products that are in demand include furniture, veneer sheets, plywood, construction timber and builders' joinery. Federation of Forest based Industry and Trade, Nepal (FenFIT 2013) estimates the current domestic demand by wood based industries to be about 2.3 million m^3 in Nepal. A most recent study estimates the domestic end consumer demand for household construction, repair and furniture use in 2011 to be about 3.37 million m^3 (Kanel *et al.* 2012). By comparing the number of households based on the successive population data, and the timber demand associated with house construction, repair and furniture use, the study has projected the domestic end consumer demand to reach 4.8 million m^3 in 2030 (see Figure 2.10). Data on international demand for timber based products from Nepal is unknown. However, this study found that the demand for Nepal's veneer sheets and plywood is increasing, especially in India. As Nepal lies between two of the fastest growing economies in the world, both with a great appetite for veneer, ply and processed wood, there is a good prospect of international market.

Timber demand will increase in all ecological regions but at different rates. Two major factors, population growth and urbanization, are responsible for the increased demand. Looking at the trend, the continuous growth is estimated in Terai. One of the main reasons for this is the increasing population with high rate of population growth and increasing immigration of people from hills. In case of hills, demand will moreover remain constant till 2020 and increase after that. This might be due to increase in population in hilly urban cities.

Figure 2.10: Timber Demand Projection through 2030 in Different Ecological Regions



Source: Data from Kanel et al. (2012)

Demands for furniture, construction timber and builders' joinery have increased with increase in construction works especially in the urban areas. With more people being conscious about creating an aesthetically pleasing ambience in their home, the furniture industry has seen an upsurge in the demand for imported furniture which according to Nepal Furniture and Furnishing Association (NFFA) has taken more than 60% of the country's current furniture market share. Similarly, because of the increase in furniture making work, use of particleboard and fibreboard, especially medium density fibre (MDF) has been increasing, most of which is fulfilled through import. With increase in furniture making along with construction work, demand for plywood and veneer sheets have also increased. The veneer sheets and plywood are also being exported mainly to India and the export quantity is increasing.

The price varies according to location, species and size. For example, the producer's price for best quality sal (*Shorea robusta*) timber is NRs 49,440, which in Kathmandu is sold at NRs 211,886/m^3 to end consumers. The details on present price structure for major species are given in Annex B. It was observed that the price of sal timber went up when there was limited supply due to ban in harvesting of timber and increased government royalty in 2010.

2.2.2 Assessment of supply situation and trend

The top ten timber species according to the available resource growing stock assessed by Forest Resource Assessment (FRA) (2010) are ranked as follows: *Shorea robusta*, *Quercus* spp., *Terminalia alata*, *Pinus roxburghii*, *Abies spectabilis*, *Rhododendron* spp., *Alnus nepalensis*, *Schima wallichi*, *Tsuga dumosa*, and *Adina cordifolia*. The total growing stock of forests in the country was 647 million m^3 in 2005 (FAO 2010), and it has reduced over the last two decades (see Table 2.9 for details). Of the total growing stock, Shorea robusta shares 28.2% with 182.4 million m^3 in 2005 and is in a decreasing trend when compared to 2000 (195.6 million m^3) and 1990 (241 million m^3).

Table 2.9:Growing Stock of the Ten Most Common Timber Species

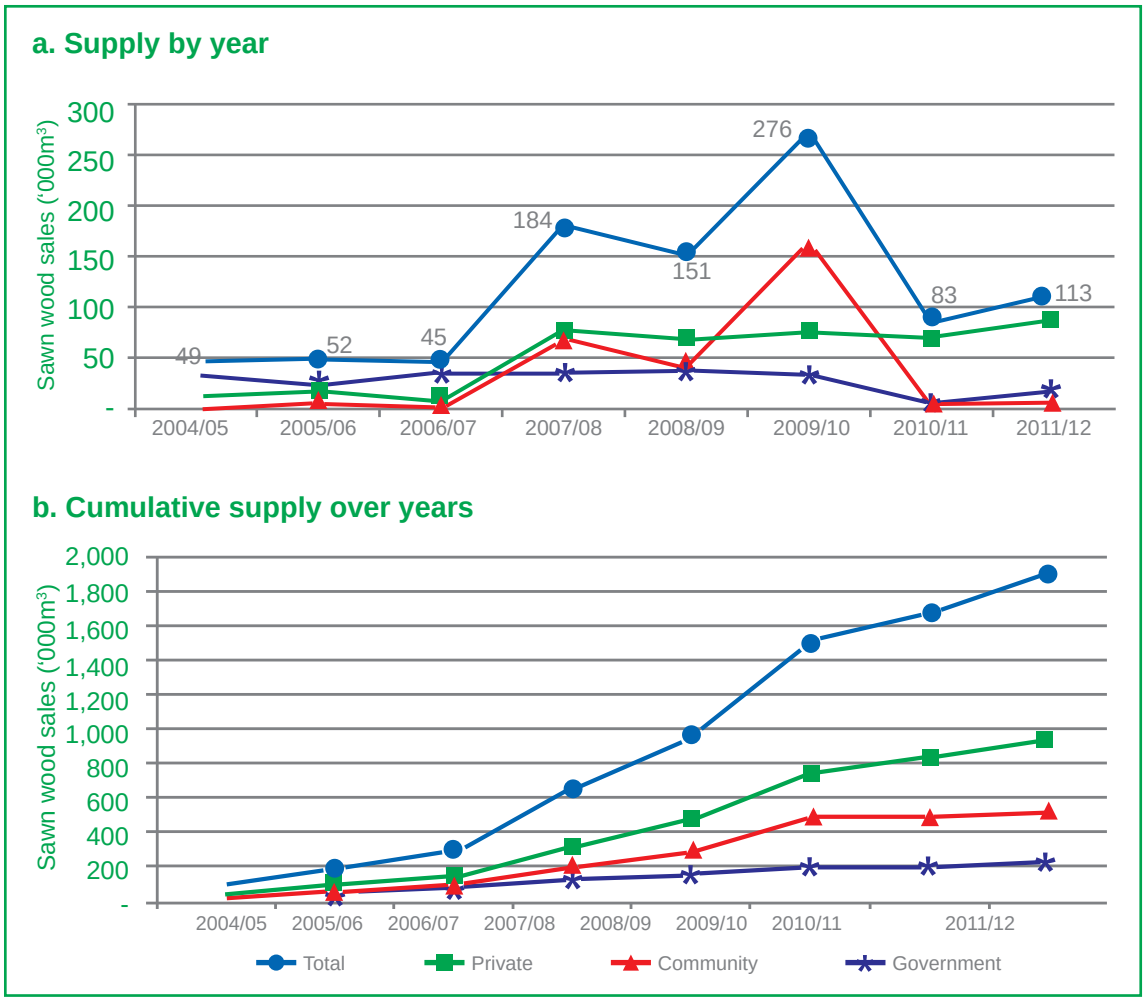
Species	Growing stock (million m3)		
	1990	2000	2005
Shorea robusta	241	195.6	182.4
Quercus spp.	80	64.5	60.1
Terminalia alata	65	52.7	49.1
Pinus roxburghii	54	43.7	40.7
Abies spectabilis	38	30.5	28.4
Rhododendron spp.	37	29.8	27.8
Alnus nepalensis	25	20.1	18.7
Schima wallichi	17	13.9	13
Tsuga dumosa	16	13.2	12.3
Adina cardifolia	15	12.5	11.7
The remaining	268	217.5	202.8
Total	856	694	647

Source: FAO 2010 and FRA 2010

As shown in Figure 2.11,on average about 160,000 m^3 of timber per year was supplied to market from various forest regimes through formal channels during the past five years from 2007/08 to 2011/12 fiscal year. But the yearly fluctuation in supply is very high which ranges from 83,000 m^3 to 276,000 m^3. This quantity, however, does not cover the internal consumption of community forest user groups and the quantity of the species that are not levied royalty as per the forest regulation. Our analysis shows that private forest and tree growers have emerged as the leading suppliers, who accounted for about 48% of the total sales during the past five years. The percentages of the total supply from the government and the communities have remained as 17% and 35% respectively. Over the past five years (2007/08 to 2011/12), community forests, on average, supplied 57,220 m^3 of timber per year, which ranges from 4,250 m^3 in 2010/11 to 164,590 m^3 in 2009/10.

This field study shows that private forest and tree growers supply most of the timber from trees outside forests (TOF) rather than forests and these are mostly used by veneer industries. Timber from government sales mostly comes

Figure 2.11: Timber Supply from Various Forest Regimes from 2004/05 to 2011/12



Source: Data from Kanel et al. (2012)

from the government managed forests in Terai and inner Terai regions, and the supply situation in Eastern and Western Terai are different. The supply from the western Terai is much higher.

The fluctuation of sales was mainly observed in sales from community and government managed forest whereas the sales from private forests and tree growers were more stable and have been increasing steadily. There was a sudden increase in timber sales in 2007/08. One of the reasons for this is the development of record keeping system of sales from community and private forests, which was not practiced before 2006/07 (DoF 2007). There were sudden reductions in supply during 2010/11 and 2011/12, which was mainly due to the imposition of ban on wood removal from the government and community managed forests for the investigation of irregularities. This has restricted the sale of even the harvested timber resulting to stock piling of huge quantity of unsold timber in the Terai and inner Terai regions (see Figure 2.12). As the timber was not sold in time, it has resulted to the degradation in the quality and even decaying of the timber.

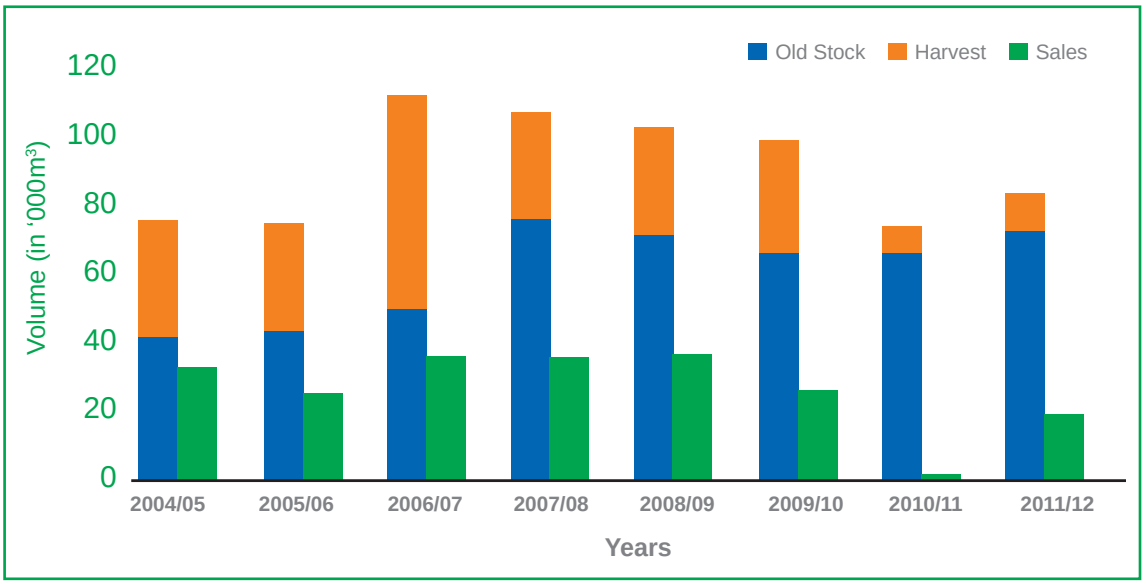
The timber species used in top export timber products include:

Plywood/Veneer: Teak (*Tectona grandis*), simal (*Bombax ceiba*), uttis *(Alnus nepalensis*), *Eucalyptus* spp., mango *(Mangifera indica)*, tooni *(Toona ciliata)*, jamun *(Syzyzium cumini*), satisal (*Dalbergia latifolia*).

Woodcarving: Okhar (*Juglans regia*), satisal *(Dalbergia latifolia*), sissoo (*Dalbergia sisoo*), haldu (*Adina cardifolia*), khamari (*Gmelina arborea*), champ (*Michaelia champaca*), deodar (*Cedrus deodara*), saj/asna (*Termialia tomentosa*), etc.

As Figure 2.13 shows the value of the import of most of the wood products exceeds their export during 2009 to 2012 with the total import on average being three folds higher than the export. While both the import and export are growing, the import is

Figure 2.12: Yearwise volumes of the previous stock, harvest and sales of timber from government managed forest (Terai and inner Terai)



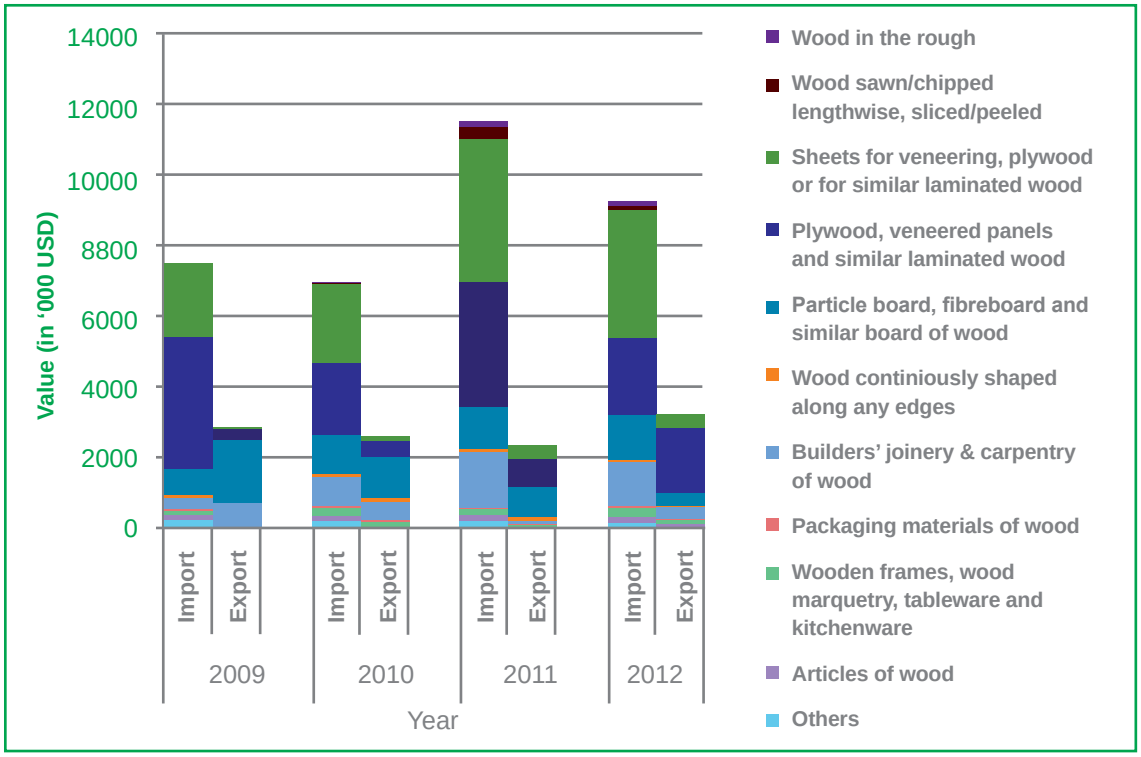
Source: DoF (2005-2012)

increasing at faster rate during the period. The average annual growth rate (AAGR) for import is 13% as compared to 6% for the export. It has been observed that there was a sudden increase in the import in 2011, which coincides with ban on harvesting and sale of timber from government and community-managed forests. Veneer sheets, plywood, particle board and fibre board, and builders' joinery has remained the major products for both import and export. Veneer sheets and plywood are the topmost imported products having 38.9% and 23.9% shares of total import value (US$ 9.24 million) respectively whereas plywood alone has captured 57% of the total export value (US $3.2 million) in 2012. The detailed data on this are presented in Annex B.

The trend during the period is that the import of wood logs, sawn wood, veneer sheet, particle board and fibre board, builders' joinery,and other finished products is on rise and of plywood and wood mouldings (wood continuously shaped along any edges) is going down. Whereas the export has been increasing for veneer sheet, plywood and other finished products and decreasing for particle board and builders joinery. For example, for plywood and other similar panels, the import value was decreased by nearly 40% between 2009 and 2012, while the export value of these products increased by five folds during the same period. The export of wood logs, sawn wood and fibre board is not observed.

While Nepal's almost all (99%) trade of veneer sheets occurs with India, the particle board is mainly imported from China. For plywood and the builders'

Figure 2.13: Nepal's Import and Export Value of Wood and Wood Products from 2009 to 2012



Source: Data from TEPC 2013

joinery, the major trade partners are India and China. For some finished products, Nepali market highly depends on import. For example, according to NFFA, imported furniture has taken more than 60% of the country's current furniture market share, of which 75% is from China alone. The furniture traders often cite the high manufacturing cost leading to the high price of the domestic furniture as a reason for the increase in demand of the imported furniture.

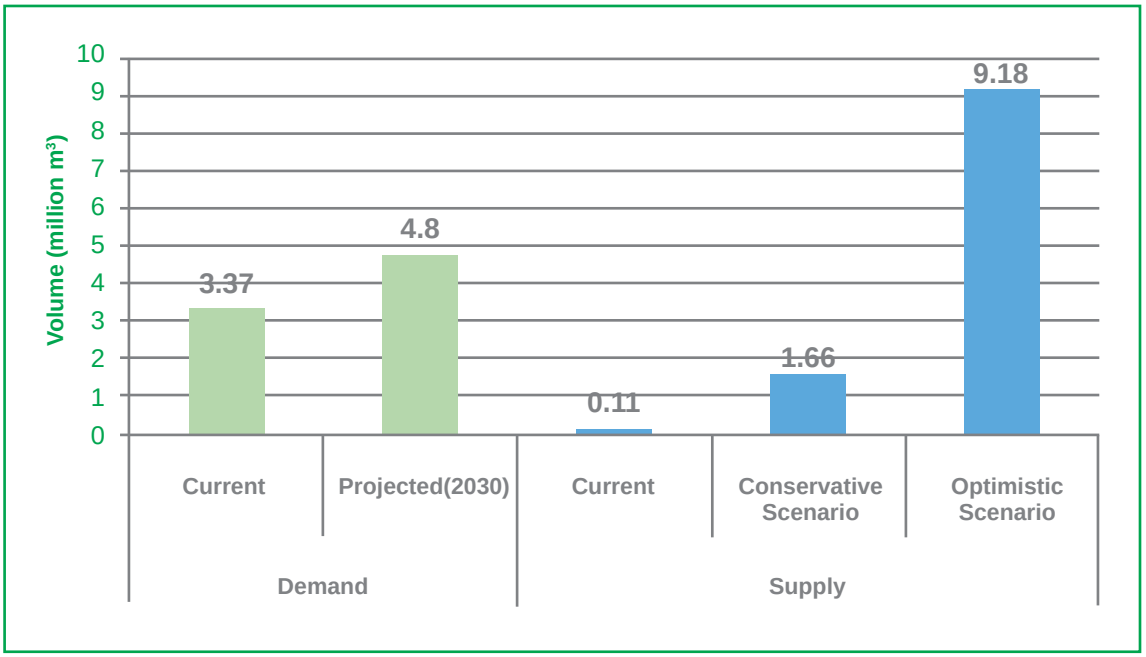
2.2.3 Supply potential

Figure 2.14 presents the timber demand and supply situation and their projection in two different scenarios in Nepal – conservative and optimistic. As it is very clear from the graph that there is a huge gap between the current domestic demand and supply. In fiscal year 2011/12, the total demand for timber was 3.37 million m^3, which is much higher than the formal supply volume of 113,000 m^3 in the same year and the average for the past five years, which comes to be 160,000 m^3. It is important to note that even with this lowest level of formal supply, Nepal is losing its forest both in terms of area and standing stock.

There is no any comprehensive study on estimation of growth potential of timber based industries in Nepal. Our estimate based on available literature and experience shows that approximately 4 million ha of forests could be utilized for commercial timber production (see Table 2.10).

Our analysis shows that there is a great potential for increasing supply of timber by applying sustainable harvesting practices and scientific management. The details on sustainable annual supply potential from Nepal under the conservative and

Figure 2.14: Current and Potential Demand and Supply of Timber in Nepal



Source: Demand data from Kanel et. al 2012; current supply data from DoF 2012

Table 2.10: Potential Forest Area for Timber Production

Forests/Land use	Area ('000 ha)	
	Total	Potential
Government managed forests	3,480	1,900
Forest managed by Forest Product Development Board	16	16
Community forests	1,665	1,700
Collaborative forests	39	39
Leasehold forests*	39	39
Private forests	2.4	300
Total forest land		3,994

*Note: Although leasehold forest is currently not for timber production purpose, harvesting of low level of timber along with other products is a possible option.

optimistic scenarios are presented in Table 2.11 and Table 2.12 and briefly discussed below. Under conservative scenario, the annual sustainable supply volume of timber can be increased to 1.66 million m^3, which is more than ten times the average formal supply volume at present. Under optimistic scenario, the figure can go up to 9.18 million m^3, which is over ninety folds increase from the present supply. This shows that Nepal can produce surplus timber meeting the domestic demand if proper steps are taken. Interestingly, Nepal has not tapped even the minimum potential, which the country needs very badly.

The conservative scenario assumes the products are utilized with modest changes to the sector, taking into account the recent positive trends in investment. Under this scenario, the estimate we have used is from previous work (Pandey *et al.* 2010) assuming that the minimal rate of conservative harvesting is done in part of the accessible forest only (see Table 2.11).

Table 2.11: Potential Timber Supply from Forests of Nepal Under Conservative Scenario

Region	Reachable forest area ('000 ha)	Total stem volume (million m3)	Total annual increment (million m3)	Total annual allowable cut (million m3)	Total annual harvest (million m3)
Hill	897.9	177.58	2.66	1.07	0.53
Terai	1,224.1	187.98	2.82	1.13	1.13
Total			5.48	2.20	1.66

Assumptions:

- Average incremental growth rate is 1.5% (for slow growing species the least value recommended is 1% and for the fast growing species, it is about 3%)
- Average allowable cut for all wood species is assumed to be 40% of the annual increment (the recommended least value for this is 40% for the poor site and 60% for the average site)
- For hill region, 50% of the allowable cut is considered to be a realistic volume for harvest.

Source: Pandey et al. 2010

The optimistic scenario assumes the available forests are managed using science and private plantations are established in 200,000 ha, which is two-third of available 300,000 ha of non-forested land. The detail on the supply potential by type of forest and ecological regions and additional assumptions are presented in Table 2.12.

Table 2.12: Supply Potential of Timber from Nepal's Forests Under Optimistic Scenario

Region	Forest types	Area (ha)	Mean annual increment (m3/ha/yr)	Annual allowable cut (m3/ha/yr)	Total annual harvest (million m3/yr)
Hill	Community forests	1,095,555	3	1.2	1.31
Hill	Leasehold forests	18,000	1	0.4	0.007
Hill	Government managed forests	2,931,445	3	1.2	3.52
Terai	Community forests	300,339	7	2.8	0.84
Terai	Collaborative forests	39,457	7	2.8	0.11
Terai	Government managed forests	637,204	7	2.8	1.78
All	Private forests	200,000	10	8	1.6
Total					9.18

Assumptions:
- Mean annual increment (m^3/ha/yr) is estimated for the well managed forests based on available studies (Puri *et al*. 2012, LFP as cited in Kanel *et al.* 2012 pp 10, Yamazoe *et al.* 1989 and Khanal 1996 and ANSAB previous project reports). For detail, refer Annex B.
- Annual allowable cut (m^3/ha/yr) is taken as 40% of the mean annual increment. For private forest, annual allowable cut is considered to be 80%.

The supply figure could go up by another 40% to 50% if all the available forest land is scientifically managed and plantation is established in most of the available non-forested land.

2.3 Current Status and Growth Potential of NTFP-based Industries

2.3.1 Assessment of current and future demand

The world market for both medicinal herbs and essential oils is growing and the prospect[3] in the world markets for such natural products is very positive. According to a study, annual world trade of medicinal plants in late 1990s was US $10 billion (Freese 1998). As estimated by FAO (2010), at least US $18.5 billion worth of NTFPs were traded globally in 2005. Similarly, a recent study by International Trade Commission (ITC) (2013) estimates an increase in trade of major medicinal plants and extracts in global markets from US $19.5 billion in 2008 to US $32.9 billion in 2013, with an annual growth rate of 11% that is much higher than the GDP growth rates of most of the developing countries. China is the biggest exporting country in the world for medicinal herbs followed by India and Germany with of US $560 million, US $130 million and US $120 million respectively in 2010.

Nepal's share in the world market for medicinal herbs is around 0.2 per cent (MoCS 2010), and there has been corresponding increase in business

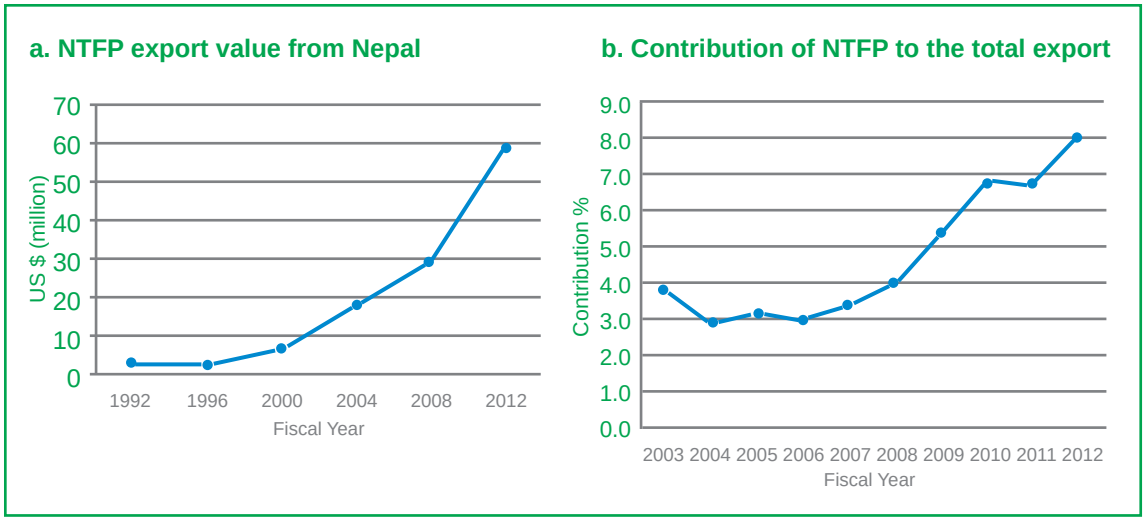
[3] See for example ITC (2007a)

volume and value in the country. Although there are variations in estimate of quantity and value of NTFP trade, the trend is very clear. The volume of trade for most of the commercial NTFPs is increasing and the value is increasing significantly. The government records show that more than 13,000 tons of NTFPs were traded in 2010 (DoF 2011), which was 3,350 tons in 1990 (DoF records).In 2012, the traded volume was about 11,680 tons, which also include large cardamom and essential oils (DoF 2013). Several studies show that the government records include only a portion of NTFPs traded, as informal transactions are common and the record keeping system is poor. Furthermore, these studies confirm the increasing trend of business. For example, the annual harvesting and trading of NTFPs was 10,000 to 15,000 tons with an export value of US $8.6 million in early 1990s (Edwards 1996) and 20,000 tons worth of US $18-20 million in late 1990s (Kanel 1999). Some other estimates show that NTFP trade involved an annual transaction of US $26 million in 1995 (Subedi 1997) and US $ 35.7 million in 2002 (Subedi 2006).

The increasing trend of annual value of trade is also demonstrated by the NTFP export value during the past two decades. The NTFP export from Nepal increased to US $59 million in 2012 from US $2.76 million in 1992 (Figure 2.15).The contribution of NTFPs to the total export from Nepal has also doubled in last decade with a contribution of about 4% in 2003. The data indicates a sign of growth in Nepal where numbers of NTFPs based traders and industries are also increasing each year. India is the main market for NTFPs from Nepal. Some percentage of the products is currently exported to Europe, North America and some other Asian countries.

The demand of Nepal's NTFPs is also expected to increase in future. Nepal Trade Integration Strategy (NTIS) 2010 has identified some new markets, especially from the Middle East and Gulf regions as well as the South Asian,

Figure 2.15: NTFP Export Value from Nepal and Its Contribution to the Total Export



Source: Data from MoF 2002 and MoF 2013

Southeast Asian and East Asian regions for cardamom, medicinal herbs, essential oils and handmade paper.

2.3.2 Assessment of supply situation and trend

The taxonomy of NTFPs is rich in Nepal, which include medicinal and aromatic products, spices and flavour, wild mushrooms, fruits, dyes and tans, fibres used in handicrafts, herbal teas, brooms, leaf plates, rosin, turpentine, gums, edible fats and oils, personal care products (e.g., shampoos and creams), and bamboo and rattan products (Subedi 2006). More than 1,000 species of plants in Nepal are of known uses, out of which over 700 are medicinal, 440 wild food, 30 spices, 71 fibre yielding, and over 100 fodder indicating that many of the plant species have more than one economic uses. Regarding the commercial use, while some earlier studies reported that more than 100 types are collected for commercial purposes (Edwards 1996, Subedi 1997), a more recent study records 161 NTFP species in commercial trade in Nepal (Subedi 2006). Major commercially valuable, indigenous

Table 2.13: Major Commercially Valuable, Indigenous NTFPs of Nepal by Altitudinal Zones

Altitudinal zone	NTFPs species
Tropical (upto 1000m)	Wild asparagus *(Asparagus recemosus)*, tulsi*(Ocimum tenuiflorum)*, khayar*(Acacia catechu)*, bel*(Aegle marmelos)*, harro*(Terminalia chebula)*, barro*(Terminalia bellirica)*, amala *(Phyllanthus emblica)*, sikakai *(Acacia rugata)*, tendu *(Diospyros melanoxylon)*, sarpagandha *(Rauwolfia serpentina)*, neem *(Azadirachta indica)*, haldu *(Haldina cardifolia)*, jackfruit *(Artocarpus heterophyllus)*, babul *(Acacia arabica)*, amaltus*(Cassia fistula)*
Subtropical (1000 -2000m)	Lokta*(Daphne bholua)*, argeli *(Edgeworthia gardenerii)*, chiraito *(Swertia chirayita)*,wintergreen *(Gaultheria fragrantissima)*,timur *(Zanthoxylum armatum)*, pipla *(Piper longum)*, tejpat *(Cinamomum tamala)*, wild asparagus *(Asparagus recemosus)*,rudraksha *(Elaeocarpus sphaericus)*, ritha *(Sapindus mukorossi)*, majitho*(Rubia manjith)*, gurjo*(Tinospora sinensis)*,bhyakur *(Dioscorea deltoidea)*, bajradanti *(Potentilla fulgens)*, sugandhwal *(Valeriana jatamansi)*, sugadhkokila *(Cinamomum glaucescens)*
Himalayan and trans-Himalayan	
Temperate (2000 -3000m)	Atis*(Aconitum heterophyllum),* chiraito *(Swertia chirayita)*, sugandhwal*(Valeriana jatamansi)*, nirmasi*(Aconitum gammiei)*
Sub-alpine (3000 -4000m)	Chiraito *(Swertia chirayita)*, morels(*Morchella esculenta*), padamchal(*Rheum austral*), satuwa (*Paris polyphylla*), sunpati (*Rhododendron anthopogan*), juniper (*Juniperus indica)*, lichens (*Parmelia* spp.), laghupatra (*Podophyllum hexandrum*), lauth salla (*Taxus baccata*), panchaunle(*Dactylorhiza hatagirea*)
Alpine (above 4000m)	Kutki *(Picrorhiza scrophulariiflora)*, jatamansi (*Nardostachys grandiflora*), yarshagumba *(Ophiocordyceps sinensis)*

Source: Adapted from Subedi 2006

NTFPs of Nepal by altitudinal zones are given in Table 2.13.

There is no comprehensive inventory data for NTFPs at par with timber species, except in some areas where some development programs or projects have provided support. At national level, in terms of land space, the forests (29%), shrub lands (10.6%), meadows (grass lands) and non-cultivated inclusions, covering over 50% of the total geographical area of the country constitute the biological resource base for the provision of NTFPs in Nepal (Subedi 2006). The Master Plan of Forestry Sector has identified 61% of the total forests having potential for community forestry, providing a high prospect for rural communities to be engaged in NTFP-based enterprise activities in the country.

Our detailed analysis of major 20 major commercial NTFP species, that cover about 90% of the total traded volume and value, has shown that Nepal has good prospects in terms of NTFP production, supply and income generation to a significant number of

Table 2.14: Availability, Supply, Income and Potential Production of Top 20 Commercial NTFPs

SN	NTFP species	Availability (number of district)	Annual supply in 2012 (tons)	Trend (last 10 years)		Annual trade value in 2012 (million NRs)
				Supply	Price	
Crude herbs						
1	Chiraito *(Swertia chirayita)*	50 (20)	85	↑	↑	42
2	Kutki *(Picrorhiza scrophulariiflora)*	32 (8)	22	↓	↑	13
3	Ritha *(Sapindus mukorossi)*	15 (9)	284	↑	→	7
4	Satuwa *(Paris polyphylla)*	10	48	↑	↑	125
5	Timur *(Zanthoxylum armatum)*	30 (10)	17	↑	↑	2
6	Yarsagumba *(Ophiocordyceps sinensis)*	21 (9)	0.5	↑	↑	922
Essential oils						
7	Chamomile *(Matricaria recutita)*	12	1	↑	↑	22
8	Wintergreen *(Gaultheria fragrantissima)*	17 (5)	3	↑	↑	9
9	Jatamansi *(Nardostachys grandiflora)*	27 (14)	0.2	↓	↑	7
10	Lemongrass (*Cymbopogon* spp.)	9	15	↑	↑	21
11	Mentha (*Mentha arvensis*)	9	20	↑	↑	32
Wild food and spices						
12	Large Cardamom (*Amomum subulatum*)	38 (8)	6,026	↑	↑	3,013
13	Tejpat/Dalchini (*Cinamomum tamala*)	13	305	↑	↑	15
14	Morel Mushroom *(Morchella esculenta)*	5	0.1	↓	↑	2

Plant fibbers						
15	Allo (*Girardinia diversifolia*)	50 (20)	40	↑	↑	16
16	Lokta *(Daphne bholua)*& *Argeli (Edgeworthia gardenerii)*	32 (18)	235	↓	↑	587
Bamboo and rattan						
17	Bamboo*	50 (14)	3.5*	↑	↑	245
Others						
18	Khayar *(Acacia catechu)*	34 (15)	552	↓	↑	36
19	Khotesallo *(resin) (Pinus roxburghii)*	35 (32)	2,704	↓	↑	162
20	Rudrakshya *(Elaeocarpus sphaericus)*	5	261	↑	↑	10
	Grand Total	10,619			5,288	

Note:
- Figure in the parenthesis for the districts available denotes the number of districts where the NTFP species are available in commercial scale.
- The annual supply or trade volume is taken from the annual record of DoF (2012), MoAC Year Book (2012) for cardamom and publications of ANSAB and MEDEP for allo and bamboo, chamomile, lemongrass and mentha.
- The annual supply or trade volume of chamomile, lemongrass and mentha in 2012 are based on the estimate from HBTL, an essential oil exporter.
- Price trends are derived from ANSAB database on Market Information Service (MIS).
- Supply trends are derived from the records of DoF, MoAC, TEPC and consultation with oils exporters.
- The trade value of each species is estimated by multiplying trade volume and market price for the same year (2012) and it is also assumed that out of the total trade value, the selected 20 species covers 90% share (both domestic consumption and export).
- The annual trade value of jatamansi consists of both oil and marc.
- Export value of handmade paper and its products, kattha and cutch and resin and turpentine are taken for the estimation of annual trade value of lokta and argeli, khayar and chir pine respectively.

Source: ANSAB (2005, 2006, 2009, 2011 and 2012), DoF records (2003-2013), DFRS 2010, MEDEP 2010, MoAC 2012 and the study team's estimations.

people in the country. Table 2.14 provides the summary of the analysis.

Of the twenty species, chiraito followed by chir pine is the most widely spread species whereas rudrakshya (utrasum bead), morel and wintergreen found in limited regions of the eastern, western, and eastern and central hill respectively. Out of twenty species, chiraito, ritha, satuwa, timur, chamomile, lemongrass, mentha, large cardamom, tejpat, argeli, bamboo, khayar and rudrakshya are cultivated species.

Analysis of annual supply and market price of the twenty species over past 10 years show that the supply of large cardamom, argeli, chiraito, chamomile, lemongrass, mentha, rudrakshya, ritha, and satuwa is in increasing trend, which also come from private land. Supply of kutki, morel, lokta and argeli, jatamansi, khayar and chir pine, almost all of which are from natural forests, is unpredictable and is in decreasing trend. The market price of almost all of the NTFPs is increasing.

In terms of volume, the top five traded species in 2012 are large cardamom, chir pine, khayar, ritha and tejpat/dalchini. Whereas large cardamom, yarsagumba, lokta and argeli, bamboo and chir pine are the top five species in terms of trade value.

A brief assessment of the selected NTFPs by category is presented below.

Crude herbs: The Nepal's export value of medicinal herbs in fiscal year 2012/013 was about NRs 1.2 billion. The export trend over the past decades shows that India is an established market for low value high volume products, whereas overseas countries buy the high value low volume products. More than 90% of the crude herbs are exported to India, with the remaining sent to other countries, such as the United States, Europe, Middle East and China. The supply trend, during the past few years, shows that the export of some high value crude herbs to China is increasing through both legal and illegal channels[4]. For example, the export of some NTFPs including chiraito, ritha, satuwa, and rudrakshya to China has been initiated recently.

Essential oils: Since the past few years the production and export of essential oils has been increasing. Nepal produces about 70 tons of 16 different essential oils annually, out of which 64.2 tons was exported in 2012/13, which was 37.4 tons in 2011/12. The export value of essential oils in fiscal year 2012/013 was NRs 87.03 million, which is 13.3% higher than that in 2011/12. These essential oils are mainly exported to the EU (71%), India (11%) and USA (10%). Besides, Singapore and Australia are the most potential and attractive markets for essential oils. Available data shows that Nepal is in the 64th position for exporting essential oils at global level (Sharma and Shrestha 2011).

Wild food and spices: Nepal is the largest producer of large cardamom and has a share of 50% in the world export. The recent export trend of Nepalese large cardamom to India and other markets is very encouraging. About 90% of the Nepalese production is exported mostly to India (which is then often re-exported to Pakistan or UAE), and the remaining goes to Pakistan, UAE, Singapore and Afghanistan. The exported value of large cardamom was NRs 3.85 billion in 2012/13, 10% higher than that in 2011/12. Other major spices being traded within and from Nepal include cinnamom leaf and bark. About 100 ton of cinnamom leaves and 450 kg of oil is consumed yearly within the country. Marc of cinnamom leaf and powder of cinnamom leaf and cinnamom bark are supplied to India.

Plant fibres: Built on the traditional skills, Nepali handmade paper-making has been practiced due to an abundant supply of lokta resources. The argeli plant, a close family of lokta plant but which grows in lower altitudes than the latter, also offers a promising alternative. Dolakha, Ramechhap, Parbat and Myagdi are the major handmade paper producing districts. Nepalese handmade paper is popular for its strength, durability and resistance to insects, and the demand is growing. The export value of Nepali handmade paper and paper products was nearly NRs 550 million (about US $5.5 million) in 2012/13, which is 2.9% less as compared to that in 2011/12 and 20.5% higher than that in 2010/11. It is the fifth largest export product in the handicraft category, contributing about 9 - 11% to the total export for this category. The products are exported to 60 countries, with major importers being USA, UK, France, Japan and Switzerland.

Likewise, Nepal supplies a good volume of allo in national and international markets. The records of DoF show that allo bark trade ranged from 15 to 65 tons

[4]From field survey (crude herbs includes yarsagumba, satuwa, chiraito and rudrakshya)

in the past ten years, which worth NRs 8-32.5 million annually (DoF). In recent years, some entrepreneurs have diversified the product from the traditional pure allo fabrics to blended fabrics (with silk, cotton, and hemp) for making it more attractive to customers. The main export destinations of Nepali allo products are USA accounting for nearly one third (31.9%) of the total export value of NRs 4.8 million, followed by Sweden (21.2%), Japan (17.9%), France (6.7%), Australia (6.5%), and Italy (5.9%)[5].

Bamboo: The major portions of the bamboo culms are used for house construction in Terai and as construction material (such as scaffold, support post, ladder) for concrete house in cities, especially in Kathmandu. While Himalayan Bamboo Industries based in Hetauda has initiated production of bamboo housing, panels and parquets, small-scale bamboo enterprises produce handicrafts, mats, baskets, hand fans, rickshaw hood frames and incense sticks. Most of the collected bamboos harvested in different parts of the country goes to major cities. For example, it was observed during this study that bamboos collected in eastern region are supplied to Kathmandu markets. There is no official cross border trade of bamboo and its products, and only a few products such as baskets are supplied to India in insignificant amount.

Others (resin, kattha and rudrakshya): According to an estimate an annual volume of about 60,000 tons of pine resin (khoto) are available in 35 hill and mid-hill districts of Nepal (DFRS 2004). The DoF records for past 12 years show that annual khoto trade ranged from about 1,888 to 8,009 tons worth NRs 57 to 360 million[6] in the past ten years (DoF record 2014). Whereas, the permission has been given to 15 registered resin-tapping companies to collect about 40,438 tons of resin annually (DoF 2007).

Nepal has around 30,000 ha of khayar-dominated forests in Nepal. However, khayar collection from national forest is banned in Nepal. Therefore, khayar is supplied solely from privately owned forests. Khayar is an important species for the production of kattha and cutch, which are regularly exported to India. While almost all kattha from Nepal is exported to India, Nepali betel industry is importing very low quality kattha at cheap price from India. The DoF records show that annual khayar trade from Nepal ranged from 120 to 7,753 tons worth NRs 145 million to 1.22 billion in the past 10 years in Nepal.

Rudrakshya is another high value NTFP mostly grown in the eastern region of Nepal with an annual trade value of about NRs 10 million in 2012. In 2013, the trade value of rudrakshya has increased by more than threefold. It is extensively cultivated in Sankhuwasabha and Bhojpur districts.

2.3.3 Supply potential

In terms of supply potential, under conservative scenario, the annual sustainable supply volume of NTFPs, excluding bamboo, can be increased to 24,285 tons, which is more than double the traded volume in 2012. Under optimistic scenario, the figure can go up to 62,295 tons, which is more than five times the traded volume in 2012. This growth is projected based on our assessment of the scope of increasing productivity and production in existing forests and expanding cultivation and processing of some marketable NTFPs in Nepal.

Some prominent examples of successful cultivation in various altitudinal

5 Nepal Overseas Trade Statistics 2007/08, Trade and Export Promotion Centre, Nepal.
6 The quantity of trade for pine resin was calculated assuming the price of NRs 30 per kg.

zones since last two decades include atis, chiraito, satuwa, sugandhawal, large cardamom, timur, ritha, rudraksha, tejpat, chamomile, citronella, lemongrass and mentha. There is also a good prospect for increasing production of some valuable NTFPs, such as large cardamom and fibre by improving production techniques. In addition to expanding the area and production of currently cultivated items, there is also a possibility to increase supply by promoting emerging crops, such as Shiitake mushroom (*Lentinula edodes*).

Table 2.15:Supply Potential of NTFPs Under Conservative and Optimistic Scenarios

Category of NTFP Species	Supply Potential (tons)	
	Conservative Scenario	Optimistic Scenario
Crude herbs		
Essential oils	80	137
Wild food and spices	9,772	20,896
Plant fibres	528	995
Bamboo and rattan	7*	22*
Others	12,430	37,686
Grand Total	24,285	62,295

Note:
*Bamboo's production quantity is in million clumps.

2.4 Current Status and Growth Potential of Forest Ecosystem Services-based Industries

2.4.1 Assessment of current and future demand of forest carbon

Because of the infant nature of the carbon value chain, the product consumption is not well developed, and in practice it is limited to very few voluntary transactions by some private sectors and donor funded projects (fund based markets) in Nepal. As presented in 2.1.5, there are few initiatives from the private sector in enhancing forest carbon and buying carbon credits that, although involved a low volume of transaction, provide a good initiation for voluntary purchase of carbon credit in Nepal.

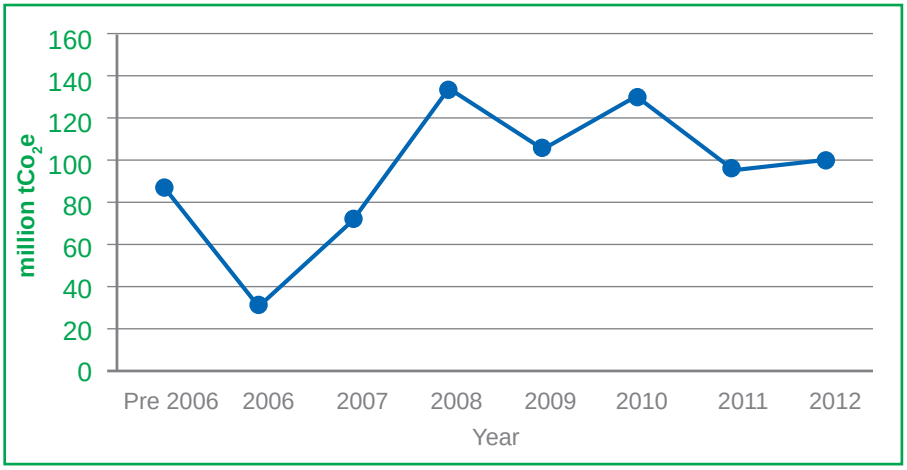
At international level, although there is a variation in volume of carbon traded over the past few years, millions of tons of carbon are traded. As shown in Figure 2.16, the transacted volume has increased from 2006 with the maximum volume of 135 million tons of carbon dioxide offsets (million tCO_2e) transacted in 2008. The transacted volume decreased to 97 million tCO_2e in 2011 that slightly increased by 4% in 2012. The high offset demand in 2010 and before was due to the sizeable transaction of offsets generated through the voluntary Chicago Climate Exchange (CCX)[7]. The major buyer of the offset volumes were the private sector that accounted about 90% of the transacted volume with corporate social responsibility and industry leadership being primary motivations for offset purchases (Peters-Stanley et al. 2013).

[7] Chicago Climate Exchange (CCX) was North America's only voluntary, legally binding greenhouse gas (GHG) reduction and trading system for emission sources and offset projects in North America and Brazil. CCX started trading in October 2003 and ceased trading carbon credits at the end of 2010, although carbon exchanges are still facilitated.

In terms of market value, it was US $523 million in 2012, a decrease by 11% from as offset prices fell slightly for most project types (Table 2.16). The voluntary actors paid a volume weighted average price of US $5.9/tCO$_2$e, slightly down from 2011 rate of US $6.2/tCO$_2$e, but significantly higher than the United Nations' regulatory Clean Development Mechanism (CDM) carbon offset price of less than a US $1/tCO$_2$e. Declining prices were most apparent in the high priced offsets range (US $10+/tCO$_2$e) where the volume of offsets contracted at these prices fell by 46% (Peters-Stanley *et al*. 2013).

World Bank (2012) reports that the potential demand of Kyoto assets (CDM and Joint implementation (JI)) from industrialized countries is 1,644 million tCO$_2$e over 2008 - 2012, with approximately 65% of demand coming from the private

Figure 2.16:Historical Carbon Offset Demand by Transacted Volume



Source: Peters-Stanley et al. 2013

Box 2.1: Carbon Markets at International Level

There is no global carbon market yet, but rather a dispersed set of regional markets at varying jurisdictional levels. The current carbon markets are comprised of four main systems:

- Emissions trading or cap-and-trade systems for energy intensive business sectors and governments
- Kyoto mechanisms such as the CDM, both on a public and private level
- Domestic offset schemes
- The voluntary carbon market

sector and 35% from governments. However, the supply was not enough and 290 million tCO$_2$e were not fulfilled and remained as residual demand. Thus, there are opportunities for REDD projects to fulfil these gaps. In addition, REDD projects could provide voluntary actors who are channelling their financial resources into carbon reduction projects.

The global market for carbon emission is expected to increase in the future, and the demand of the forestry projects for the emission reduction will be high. Based on the recent years' average growth rate for voluntary offset demand (13% from years 2008-2012), Peters-Stanley *et al.* (2013) estimates 2020 carbon market value at US$ 1.6 billion. Similarly, based

Table 2.16: Historical Transaction Volumes of All Voluntary Carbon Markets

Types of markets	Volume (million tCO2e)		Value (US $million)		Average Price (US $/tCO2e)	
	2011	2012	2011	2012	2011	2012
Voluntary offsets contracted over- the-counter	93	98.5	572	515.7	6.2	5.9
Voluntary offsets traded on an exchange	2	2.3	4.2	6.3	–	–
Historical transactions tracked and added in 2012	1.8	–	10.9	–	–	–
Voluntary carbon markets total	97	101	586.5	523	6.2	5.9

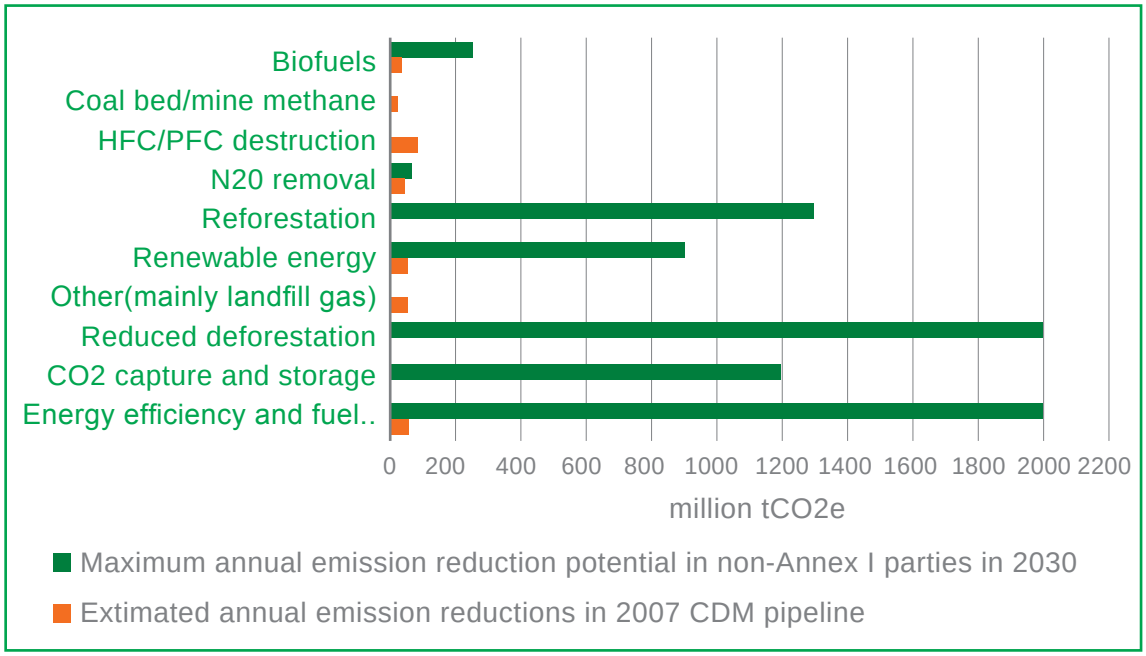
Source: Peters-Stanley et al. 2013

on the voluntary carbon market's historical average price of US$ 5.9/tCO$_2$e, they have reported that the market value at US$ 2.3 billion in 2020.

The Energy Modelling Forum of the Stanford University estimates that carbon market will have a value of US $107 billion per year with market potential of over 6,400 million tCO$_2$e per year in 2030. The Forum also estimates that half of this volume will be purchased from the developing countries. Regarding the demand for forestry projects, UNFCCC (2007) estimates that reduced deforestation and reforestation together account for 42% of the sources of carbon credits in 2030 with no projects in 2007 as shown in Figure 2.17.

The increasing demand of carbon emission reduction at international level shows that the demand of forest carbon from Nepal will be high. Our consultation with forest carbon buyers at international markets indicates that they are interested in forest carbon of Nepal, as the country provides a great story to tell on community forestry, poverty alleviation, reforestation, food security, biodiversity, women in forestry, etc. in favour of their CSR

Figure 2.17:Annual Emission Reduction by Project Types in 2007 and 2030



Source: UNFCCC 2007

goal. It makes Nepal's potential forest carbon a strong competitor in the markets indicating its demand will increase in the coming years.

2.4.2 Supply potential of forest carbon

There are limited studies estimating forest carbon stock and supply in Nepal. In a detailed analysis using National Inventory Data (DFRS 1999) for total stem volume and stem densities to estimate the carbon stocking in tree stems, Subedi and Singh (2008) estimated total forest carbon stored in tree stem biomass of Nepal's forests to be approximately 460 million tCO_2e. Assuming the similar volume of carbon stored in forest soil, the study found that that the total forest carbon pool to be about 920 million tCO_2e in Nepal. The figure could be updated with the most recent FRA data.

Nepal possesses potential for increasing carbon stock and generating carbon credits, because of the existing carbon stock and the potential of plantation. While Nepal's forests including community forests and some national forests have significant potential to implement REDD+ projects geared towards cashing carbon, considerable area of barren lands or grasslands with scattered trees that cover about 1.6 million ha area are ideal for afforestation and reforestation activities.

Our estimates are that Nepal will be able to sell about 8.25 million tCO_2e per annum under conservative scenario and 19.5 million tCO_2e under optimistic scenario (Table 2.17). The details on the supply potential under each scenario are discussed in the following paragraphs.

Under conservative scenario, the estimate we have used is from Subedi and Singh (2008) assuming that Nepal's forests sequester about 55 million tCO_2e (15 million tons of carbon) annually under normal ongoing activities. This includes the yearly carbon sequestration from all forests including reviving community forests, and the least disturbed forests in national parks, sanctuaries and other protected areas. We assume that Nepal will be able to trade about 15 per cent of this volume or about 8 million tCO_2e annually.

The optimistic scenario assumes that carbon sequestered in Nepal's forest will increase with improved forest management and additional measures adopted by communities. Under this scenario, we have used the data from the recent three year data based on REDD+ pilot project implemented by International Centre for Integrated Mountain Development (ICIMOD), ANSAB and Federation of Community Forestry Users, Nepal (FECOFUN) in 112 community forests in three watershed of different geographic regions of Nepal. The carbon data for four years from the project shows that forest carbon has increased at an annual rate of 9.2, 10.6 and 15.5 tCO_2e/ha in Kayerkhola

Table 2.17:Annual Forest Carbon Sequestration and Supply

Conservative scenario	Optimistic scenario	
Forest carbon sequestration (million tCO_2e/year)	55	65
Tradable supply (million tCO_2e/year)	8.25	19.50

Assumptions:
- Under conservative scenario, Nepal's forests sequester about 55 million tCO_2e per year with 15% of this carbon going for carbon trade annually.
- Under optimistic scenario, Nepal's forest could sequester about 65 million tCO_2e per year with 30% of this going for carbon trade annually.

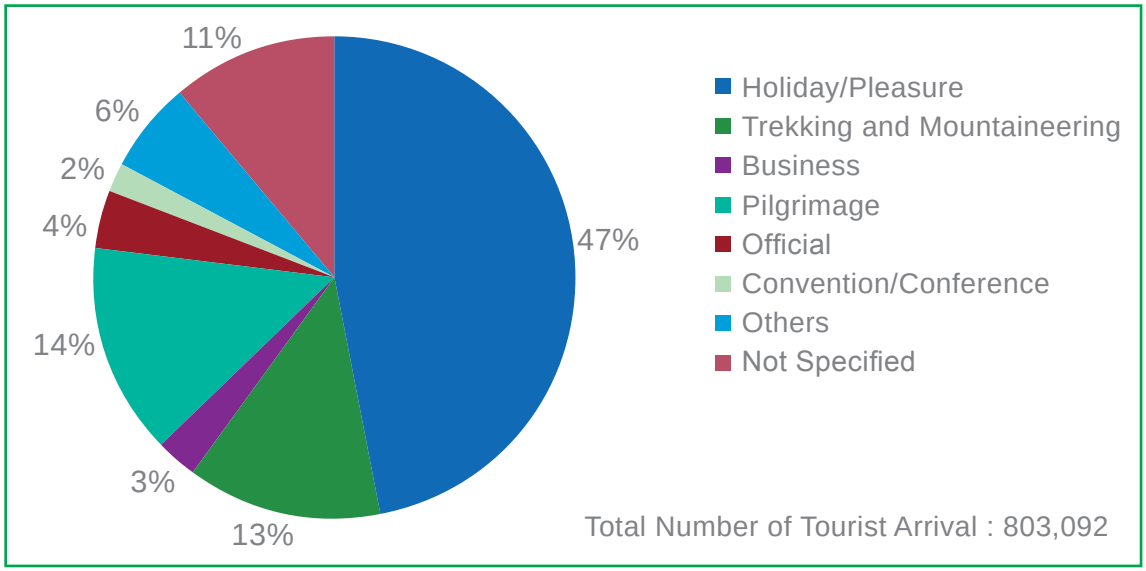
watershed of Chitwan district, Charnawati of Dolakha district and Ludikhola of Gorkha district respectively. This shows that Nepal's forest can sequester, on average, 11.77 tCO_2e/ha annually. With this rate the existing forests of Nepal can sequester a total of 68.59 million tCO_2e annually.

The volume could be even more because of the availability of 1.6 million ha of barren lands or grasslands with scattered trees and considerable area of some other existing land use modalities, such as pro-poor leasehold forestry and agroforestry in private lands, where afforestation and reforestation activities could be carried out. But considering the ongoing harvesting of forest products by communities, we assume that about 65 million tCO2e per year. Assuming about 30% of this carbon can be traded annually,this comes to be about 19.5 million tCO_2e per year.

2.4.3 Assessment of current and future demand of ecotourism service

Nepal has benefited significantly from the fast growth of tourism in the past ten years. The tourism industry has remained one of the largest industries in the country and has diversified into many categories, such as adventure tourism, rural tourism, religious tourism, and nature tourism. From the fact that a foreign tourist normally spends thirteen days in the country and practices activities associated with the different categories of tourism, it is clear that these activities tend to boost one another. Although there is no data available on forest-based ecotourism activities in the country, consultations and available literature showed that a good percentage of tourism activities are related to some form of ecotourism, such as bird and wildlife watching, home stay, forest walk, wildlife viewing and hunting and nature guided walks (especially based on protected area), mainly offered by forests. Gurung and De Coursey (1994) estimated that as many as 80% of international tourists in Nepal were involved in some form of ecotourism.

Figure 2.18:Tourist Arrival by Purpose of Visit in 2012



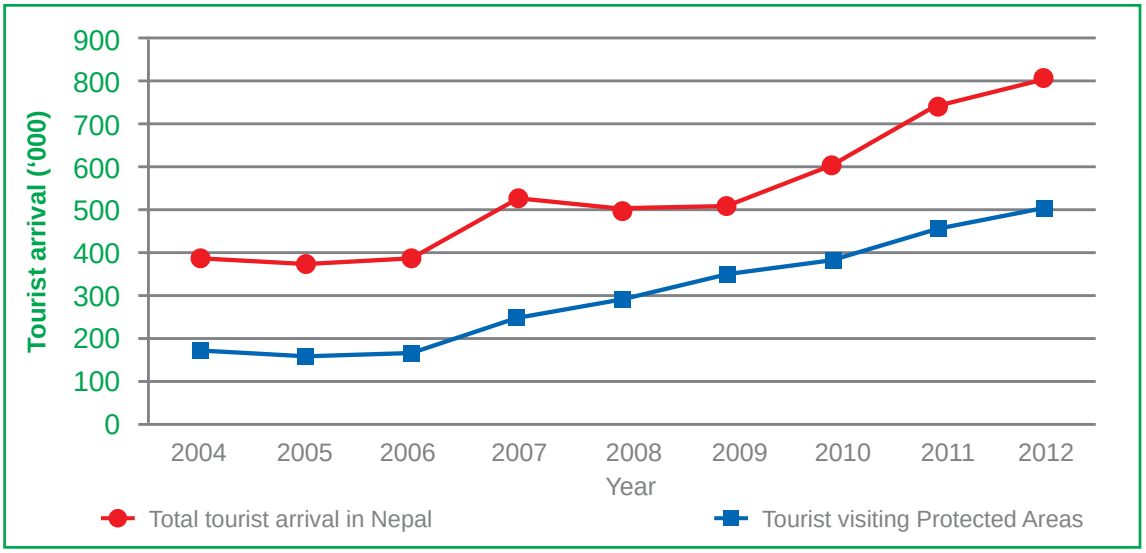
Source: MoCTCA 2012

The number of tourists visiting Nepal over the past decade has grown steadily, since the country returned to a situation of peace and relative stability after the Maoist insurgency, with more than half of the tourists coming for recreation purpose (Figure 2.18). Over 800,000 tourists visited Nepal in 2012, which is the highest figure since Nepal has welcomed the tourists in the country. Tourism data shows that the protected areas involved more than 60% of the total foreign tourists in Nepal during past the five years (Figure 2.19). Similarly, buffer-zone forests in the protected areas scattered across the country involved more than 50% of the total foreign tourists in Nepal.

A study estimates about 1,318,000 tourists will arrive in Nepal in 2023 (WTTC 2012). The study also shows that leisure travel spending (inbound and domestic) generated 79.6% of direct travel and tourism GDP in 2012 (NRs 84.8 billion) and is expected to rise by 4.4% per annum to NRs 139.1 billion in 2023.

Major international television channels, including National Geographic and Discovery, and travel newspapers have identified Nepal as one of the best places to visit in the lifetime. Recently, China, which is one of the largest tourist exporting countries in the world, has granted Nepal the status as one of the outbound destinations for Chinese tourists. There is an opportunity to develop ecotourism products focusing on Chinese and other regional nationalities in India, South and Southeast Asian countries. This shows a good prospect for eco-tourism industry in Nepal.

Figure 2.19: Total Tourist Arrival in Nepal and Tourists Visiting Protected Areas



Source: MoCTCA 2012

2.4.4 Assessment of supply situation and trend of ecotourism service

The rich biodiversity associated with forest ecosystem gives Nepal a comparative advantage in terms of quality ecotourism resources. Nepal's protected areas, which include ten National Parks, three wildlife reserves, six conservation areas, a hunting reserve and twelve buffer zones around National Parks and wildlife reserves, cover a total of 34,185.62 km^2, or over 23% of the total

geographical area of the country and are the prime source of tourist (both domestic and international) attraction in the country.

The protected areas provide variety of ecotourism products, but the inflow of tourists to the protected areas is not same. While accessible sites,such as Chitwan National Park, Shivapuri Nagarjun National Park and Annapurna Conservation Area, receive about 85% of the total tourists arrival in the country, other protected areas are less explored. There is no big tourist flow in Khaptad National Park and Bardiya National Park. The sites with the high tourist flow have also offered popular ecotourism products. Chitwan National Park, for example, offer nature tourism, village tourism, canoeing, cultural tourism, wildlife watching, jungle safari, elephant ride, etc. Similarly, Annapurna base camp at the Annapurna Conservation Area is a key trekking site and draws more than 60% of the country's total trekkers.

In addition to protected areas, community forests have a good resource base for ecotourism and some of them have developed tourist infrastructure. The community forests adjacent to the protected areas, for example, Baghmara CFUG around Chitwan National Park, have been providing ecotourism services by building infrastructures like wildlife viewing tower, and offering forest walk and wildlife safari (See Box 2.2). Some community forests that are not close to the protected areas have different services, such as picnic spots, view towers, recreation parks and children parks, as observed in some CFUGs in Chitwan, Dharan, Rupandehi and other districts. For example, Shankar Nagar CFUG in Rupandehi, and Yalamber and Hariyali CFUGs in Dharan have established forest recreation parks, in which they keep some wild animals as well. Hariyali CFUG has also set a zoo with some animals, such as monkey, tortoise, rabbit, hornbill, jackal, porcupine and eagle. People from the districts and some other parts including students visit the park for recreation and educational purposes. See Box 2.3 for another example on ecotourism in community forest outside protected area.

Box 2.2: Ecotourism in Baghmara Bufferzone Community Forest: CFUG Close to Protected Area

The Baghmara Forest is a replanted and regenerated forest area forming a buffer zone adjacent to the Chitwan National Park. It was established in 1989 following gradual degradation of the park itself over the preceding two decades. It was managed by Bachhauli Village Development Committee and since 1993 is managed by the Baghmara Forest User Group. The forest provides habitat for rhinoceros, hare, jackal, deer, monkey, mongoose, otter, crocodile, turtle, various snakes and lizards and almost 200 bird species (Rijal 1997).

The Baghmara Forest was opened for tourism in 1995. Major eco-tourism activities in Baghmara include bird watching, elephant safari, nature walk, and canoeing. The forest user group has constructed wildlife viewing towers (machan), which also incorporate tourist accommodation, and local residents have built guesthouses and established guided tours, including canoe tours. The community forest revenue record shows that the tourist revenue to the local community was NRs 65.2 million (US $660 thousand) in 2013.

Box 2.3:Ecotourism in Kankali Community Forest: CFUG Outside Protected Area

The Kankali Community Forest is an example that has developed as an ecotourism destination in community forests outside protected area. It is located in the foothills of the Mahabharat Range in Chainpur Village Development Committee (VDC) of Chitwan District and was handed over to the communities in 1995 AD. It has rich landscape and biodiversity including 124 bird species, 294 medicinal plant species and 35 mammal species.

The community forest has been practicing ecotourism activities namely, nature walk; bird watching; mulberry, silkworm and fish farming; picnic spot; mini zoo and swimming pool; tower visit; overnight stay in the forest/camping; herbs farming; and fish farming. The community forest generated an income of NRs 5.2 million (equivalent to about US $59,400) in 2012 out of which NRs 4.8 million (US $54,800) was generated from the ecotourism.

2.4.5 Supply potential of ecotourism service

The rich biodiversity associated with forest ecosystem gives Nepal a comparative advantage in terms of quality ecotourism resources. The tropical forests of the Terai preserve some of the best wildlife habitats in the subcontinent, while the temperate forests in upper hills and mountain harbours some endemic wild animals. These forests also harbour rich diversity of birds, butterflies and sites of cultural significance. The protected area system and various initiatives in forests including community forests have provided essential pillars for ecotourism development. Furthermore, Nepal presents an excellent destination where forest based ecotourism overlaps with cultural and adventure tourism (hiking, mountaineering and trekking) as the culture and adventure tourists are attracted to landscape and biodiversity, and nature tourists are wandering through mountains and hills.

There is a good potential for expanding existing ecotourism products and developing new ones and increase tourist arrival, both in number and value, in the country. There is a scope to expand ecotourism activities in community forests, and the forest-based recreation sites identified by associations and organizations working in the tourism sector in various places besides the current tourism triangle - Kathmandu, Chitwan and Pokhara. There are less explored protected areas with full of ecotourism potential. For example, Khaptad National Park and adjoining areas are full of potential tourist activities, such as camping, village walks, cultural visits, rafting, bird watching, skiing, horse riding, trekking, historical tours, and it could be developed as a tourist destination with minimal interventions. As Trekking Agencies' Association of Nepal (TAAN) Pokhara chapter has listed, Annapurna South, Dhaulagiri North, Kirkire pass (Lamjung-Kaski) and Gurung Heritage trail are potential sites for ecotourism. Some other potential ecotourism sites include Antu Danda of Ilam, Basantapur of Tehrathum, Rauta Tal of Udayapur, Rara Tal of Mugu and Khaptad area.

With some infrastructure development in the areas and expanding these new sites could be helpful in expanding the duration of international tourist stay in the country. Furthermore, certification of the current and potential ecotourism sites and service providers would attract more nature tourists and often of high-end status.

Table 2.18: Types and Estimated Number of Tourists Involved in Ecotourism Activities

Type of Tourists	Number of Tourists in 2012	Estimated Number of Tourists Involved in Ecotourism Activities		
		Current	Conservative Scenario	Optimistic Scenario
International	800,000	480,000	720,000	960,000
Domestic	120,000	72,000	144,000	360,000
Total	920,000	552,000	864,000	1,320,000

Source: Peters-Stanley et al. 2013

Assumptions:
- 60% of the total tourists go for forest-based ecotourism.
- Under conservative scenario, number of international tourists involved in ecotourism activities increases by one and half folds and that of domestic tourists by two folds.
- Under optimistic scenario, number of international tourists involved in ecotourism activities increases by two folds and that of domestic tourists by five fold.

Our analysis shows that about 60% of the total tourists visiting Nepal go for forest based ecotourism. We have estimated currently over 550,000 tourists, are involved in ecotourism activities of which 85% are international (Table 2.18). Under conservative scenario, the total number of tourists involved in ecotourism can be increased to more than 850,000 (720,000 international and 144,000 domestic). Under optimistic scenario, the figure can go up to 1.3 million (960,000 international and 360,000 domestic), which is about 3 times the current number of the tourists.

The conservative scenario assumes that the number of international tourists involved in ecotourism activities will increase by one and half fold and that of the domestic tourists by two fold. The optimistic scenario assumes that the number of international tourists involved in ecotourism activities will increase by two fold and that of the domestic tourists by five fold.

2.5 Current Status and Growth Potential of Forest Bioenergy-based Industries

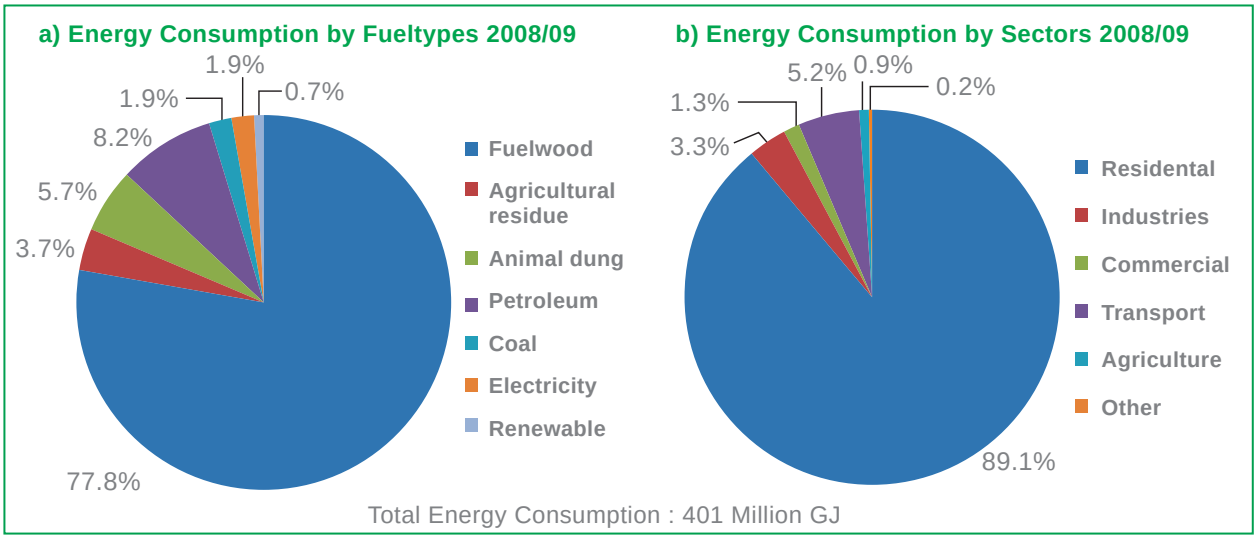
Energy in Nepal is supplied mainly by traditional sources, such as fuel wood, animal dung and agricultural residues and followed by commercial sources, especially petroleum products, electricity and coal, and alternative sources including biogas, solar power, wind power and hydropower (Figure 2.20a). Out of the total energy consumption of about 400 million GJ, nearly 78% comes from fuel wood. On the consumption side, close to 90% is consumed for residential purposes and only a small percentage is used for industrial and commercial purposes (Figure 2.20b).

This study, however, focuses only on forest bioenergy. Forest based bioenergy can be obtained directly from timber logs and residue in forest (e.g. fuel wood, sawmill residues); from processing of raw materials and weed growth in forest (e.g. bio-briquette); and from other sources of biomass through efficient conversion process.

2.5.1 Assessment of current and future demand

Fuel wood: Fuel wood makes up around two-third of the household energy demand in the country. Table 2.19 presents the share of various energy sources used in Nepal. Rural households mostly use fuel wood to fulfil their domestic energy needs especially in cooking and heating purposes, and represent the major consumers of the harvested fuel wood.

Figure 2.20: Total Energy Consumption by Fuel types and Sources



Source: WECS 2010

Mostly, the producers themselves are the consumers as fuel wood is less expensive source of energy, and often free of cost for those residing nearby the forest.

According to WECS (2010), about 18 million tons of fuel wood is consumed annually in Nepal, almost all of which is collected free of cost by the collectors/ farmers from forests or their own cultivated land. At local level, the fuel wood is traded to traditional industries, agro-processing enterprises, hotels and restaurants. Apart from residential use, restaurants around highways and brick kilns are the major end users of fuel wood. A study by Centre for Renewable Technology (CRT/N) in 2010 shows that a restaurant in Narayanghat - Hetauda highway consumes about 60-70 kg of fuel wood in a day. In another study done by Clean Energy Nepal in brick industries in 2009 shows that about 100 brick kilns use about 21% of non-coal energy, which shows that the demand for fuel wood could increase with the increase in the coal price.

Although fuel wood contributes significantly to the total energy use in the country, their contribution for household purpose is different in various regions of the country according to availability of other energy sources. For example, in high altitude regions it makes over 90% of the total energy use, whereas in Kathmandu valley it is less than 3%. Over the past decade,

Table 2.19: Sources of Household Energy Used in Nepal

Energy sources	Number of households	Percentage of households
Fuel wood	3,470,224	64.0
LPG	1,140,662	21.0
Cow dung	563,126	10.4
Biogas	131,596	2.4
Kerosene	55,610	1.0
Electricity	4,523	0.1
Others	22,583	0.4
Not-stated	34,973	0.6

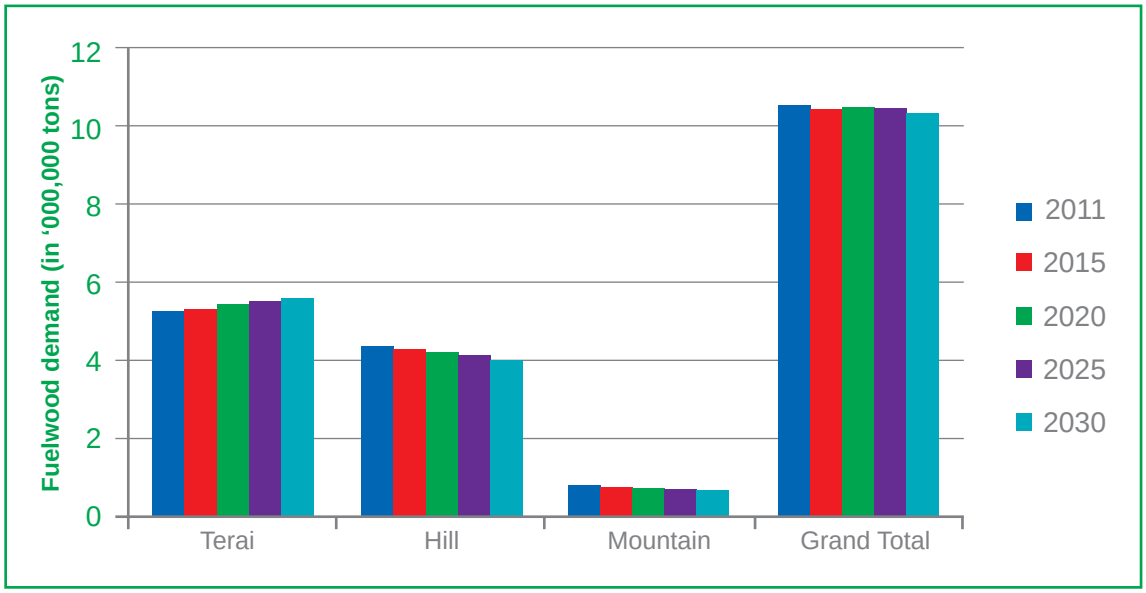
Source: WECS 2010

the consumption of fuel wood in urban area for household purpose has reduced significantly, as more and more people are switching over to fossil fuel based energy sources, primarily LPG and kerosene for cooking and heating, and electricity for cooking and heating (FAO 2009a). It has been observed that the LPG has become the primary cooking fuel in urban centres. Over the last few years, the consumption of LPG has increased by about 23% per annum followed by electricity (10%) in urban areas (WECS 2010).

The demand for fuel wood is expected to decrease with availability of energy substitutes and increasing household income. Assuming the percentage of the household using fuel wood to decrease by 1% within every 5 years due to wealth and income effect and 0.8 % of the total household fuel wood consumption is added to account for the fuelwood used in commerce and industries, and the population distribution in different regions, Kanel et al. 2012 estimates that the fuel wood demand in 2011 remained about 10.53 million tons, which is expected to decrease to 10.52 million tons and 10.39 million tons in 2020 and 2030 respectively. Figure 2.21 shows the fuel wood demand projection through 2030 in different ecological regions of Nepal.

Bio-briquette and wood pellets: Bio-briquette has experienced a significant demand growth during the past few years. For example, field survey shows from an average of 117,000 pieces of briquette sold in 2009, the quantity reached to 1,000,000 in 2013. It has emerged as an effective and alternative source of energy in Nepal because of the acute shortage of other sources of energy, especially electricity, kerosene and Liquefied Petroleum Gas (LPG). It is used for cooking, room heating and baby massage mainly in urban areas. It has also been used in home-barbequing by replacing charcoal. Some of the supermarkets in Kathmandu have also provided separate stall for its sale because of the increasing popularity among the urban users. As estimated by the sample retailers, the demand side of briquette is about 10,000 families (about 50,000 people) who are using briquette.

Figure 2.21: Fuel Wood Demand Projection through 2030 in Different Ecological Regions



Source: Data from Kanel et al. 2012

Similarly, pellets made from sawdust and rice husks are found in the market. Pellets are produced in Chitwan, Nawalparasi and Kathmandu. Though in small quantity, the pellets are also imported in Nepal.

Our analysis shows that current demand of briquette has been created through market promotion and consumer awareness campaign, and the market is still in the infant stage. Since briquette emits less carbon while burning, it might fetch good demand among the consumers looking for clean energy. Also because of the energy deficiency in the country that is also predicted to last for some more years, briquette remains one of the available sources of energy in the country.

Bio-briquette: Community forest-based briquette enterprises in Sindhupalchok, Dolakha, Lalitpur, Dhading, Chitwan, Lamjung, Parbat and Jhapa districts are producing briquettes from the otherwise unwanted forest biomass, such as invasive weeds and shrubs from their community forests. Because of the infant stage of the industry, raw materials are mainly is also collected in the form of by-products of wood processing industries as the estimated residue recovery rate is about 40 to 50% for saw milling and plywood production. The supply of fuel wood through formal channel has been decreasing in recent years. In 2011/12, the supply was 5,709 chatta[8], about 85% originating from private forest (Table 2.20).

Table 2.20: Annual Removal of Fuel wood from Different Forest Management Regimes

Forest Regime	Fuel wood sales (in Chatta)						
	2004/05	2005/06	2006/07	2007/08	2008/09	2010/11	2011/12
Government managed forest	21,650	1,464	1,871	1,713	1,939	409	437
Private forest	588	37,166	226	5,448	3,151	5,306	4,843
Community forest	48,229	342,826	-	3,094	1,833	244	429
Total	70,467	381,456	2,097	10,255	6,922	5,958	5,709

Source: Data from DoF (2005-2012)

2.5.2 Assessment of supply situation and trend

Fuel wood: The primary sources of fuel wood are both forest and private agriculture land. About 65% of households rely on forest for the collection of fuel wood. Community-managed forest and private forest are major source of fuel wood with 44% and 24% of household relying on them respectively (CBS 2011). The annual sustainable fuel wood supplied as estimated by Water and Energy Commission Secretariat (WECS) for 2008/09 was 12.5 million tons, of which 7.14 million tons can be sustainably harvested from community forest alone. The fuel wood sourced from community forests, and the sourcing has not practiced from other forest management regimes. There is only a major marketing company that has been supplying the briquette produced from the community enterprises to major urban centres especially in Kathmandu since last five years. Other small marketing companies are also started marketing of community enterprise produced briquette in Kathmandu valley in recent time.

Forest residue materials that consist of substantial amount of biomass such as invasive weeds, twigs and branches obtained

[8] In Nepal, fuel wood is measured in chatta, its dimensions are 20X5X5 ft (equivalent to 14.15 m3) and weighs 10.47 ton on average

during processing of timber could also be used for briquette making, although these are not currently used. Table 2.21 presents the volume of biomass obtained during the processing of timber for the past six years.

2.5.3 Supply potential

Fuel wood: Though the demand of the fuel wood is in decreasing trend, annual sustainable fuel wood supply from forests is increasing. WECS (2010) reported the sustainable supply of fuel wood increased from 7 million tons in 1978/79 to 12.5 million tons in 2008/09. In a more recent estimate, Kanel *et al.* (2012) estimated 16.1 million tons of fuel wood would be supplied in 2030 from about 9 million tons of fuel wood supply in 2011.

Table 2.21: Volume of Twigs and Branches Obtained During Timber Processing in Different Fiscal Years

Year (B.S)	Volume (m3)	Year (B.S.)	Volume (m3)
2004/05	613.07	2007/08	48.51
2005/06	41.46	2008/09	54.90
2006/07	52.97	2009/10	25.28

Source: Data from TCN and DoF 2010

Bio-briquette and wood pellets: Raw materials for briquette enterprises are the plants not used for other purposes and are available in significant quantity in forests. The biomass obtained during regular forest operation can be utilized to make bio-briquette and pellets. The available forest biomass for briquettes and pellets are calculated in two scenarios, which are given in Table 2.22.

While calculating charcoal[9], only biomass from community and private forests are considered which are accessible to harvest the biomass. Under conservative scenario, in case of community forest, 25% area from Terai, 20% from hill and 2% from mountain are assumed as effective collection area of biomass, while in case of private forest, 10% area is considered for harvesting of biomass to produce charcoal. In optimistic scenario, 40% of community managed forest area from Terai, 30% from hill and 5% from mountain and 15% of the total private forest area are considered. Further, in conservative scenario, it is assumed that 10 ha forest produces 1 ton charcoal while in case of optimistic scenario, 7 ha forest produces 1 ton charcoal with the use of efficient charring technology.

Similarly, wood pellets are calculated based on the data generated from a recent study (WECS 2010). The report shows that the sustainable supply of fuel wood in 2008/09 was 12.5 million tons. Under conservative scenario, we assumed that 1% (125,000 tons) of fuel wood is used in making wood pellets and under optimistic scenario it can go up to 5% (625,000 tons). With the consideration of about 40% weight loss while converting from fuel wood to wood pellets, the weight of wood pellets comes to be 75,000 tons under conservative scenario and 375,000 tons in optimistic scenario.

Table 2.22: Supply Potential of Charcoal and Wood Pellets

Products	Conservative Scenario (ton)	Optimistic Scenario (ton)
Charcoal	34,764	89,284
Wood pellets	75,000	375,000
Total	109,764	464,284

[9] Charcoal is the raw material for bio-briquettes. While making briquette, 70% charcoal is mixed with 30% clay.

3 VALUE CHAIN DYNAMICS AND ACTORS' PERSPECTIVES

This chapter first presents a summary description of the inter-firm cooperation and coordination for the four main subsectors timber, NTFPs, ecosystem services (carbon and ecotourism) and forest bioenergy. This is followed by in depth perspectives from the domestic and international value chain actors for each of the four subsectors. While enabling and facilitating value chain functions are done in a policy environment (covered in Chapter 4) and supported by research, extension and academe, the main "commercial" functions are the focus of this chapter. For Nepal to attract buyers and investors, including international, it must compete and operate taking into account global forestry industry dynamics, and this chapter indicates what specific issues Nepal needs to address by subsector. This chapter concludes with a summary of what international private sector buyers and investors require taking into account how Nepal should position itself in the global forestry market.

3.1 Domestic Inter-firm Cooperation and Coordination

Timber: The current timber value chain is dominated by few big players and exhibits an asymmetric power distribution. Timber trade is controlled by urban timber buyers (usually big saw millers) based in the Kathmandu valley and other major cities that mobilize local agents and contractors to obtain timber. Domination of a few big players has created barriers to entry for small holders in the timber business. Because of this, private producers must depend on the big players for securing permit for the sale of trees and leaves them with low bargaining power.

As an example Table 3.1 presents the prices, costs and distribution of gross margins along the value chain actors. The calculation is based on harvesting of sal (*Shorea robusta*) timber in far-western Terai and selling at Kathmandu market. The table shows that the price difference between production and final consumption level is more than four

Table 3.1: Prices, Costs and Gross Margins of Various Actors of Sal Timber Value Chain

	Producer	Contractor (at local level)	Saw miller (at local level)	Saw miller (Kathmandu)	Sawn Timber Depot	Retailers of Builder's Joinery
Buying price		1,400	2,200	2,200	4,300	4,750
Additional costs		658 (187)	1,133	1,486 (40)	129	900
Selling price	1,400	2,200	3,800	4,300	4,750	6,000
Gross margin		142	467	615	322	351

Note: All values are in NRs/cft, numbers in parenthesis are informal costs. The values except for the last two columns are of logs.

Source: ANSAB field survey 2013

times with highest gross margins at Kathmandu-based saw millers' level. The high price difference is caused by high percentage of losses (35% from log to sawn timber), profit margin (because of the high risk) at different levels, cost of handling and transportation and informal fees. The detail calculation is presented in Annex B.

Input suppliers and service providers for timber production are not well developed. To some extent, district forest offices (DFO) produce seedlings to meet their target of plantation and provide seedlings to individuals and other producers. But the extension services to the producers are very limited. DFO staff guide and approve operational plans of community forests but very limited guidance is provided on plantation.

The trust level between producers and buyers is very low. The private producers and the buyers are not bound by formal contract and the buyers dictate the price.

At the higher step in the value chain, weak coordination between veneer and plywood producer associations often results in conflicts over price setting. Veneer producers claim that the veneer price is not revised corresponding to increase in prices of raw material. The domestic furniture industry face a stiff competition against the cheap but attractively designed imported goods made from engineered woods, such as fibreboard and particleboard.

The horizontal linkage among the community forest user groups is strong due to the presence of their federation (FECOFUN). The FECOFUN primarily focuses on policy lobbying and little attention is given for the forest management and product commercialization. Most of the private tree growers are not organized into associations. The flow of information and technical knowledge is not coordinated between the government, private sector and community producers. The timber traders and primary processors are well linked among themselves through the federation (FenFIT) and their commodity associations (Veneer Producers Association and Plywood Producer Association). The furniture manufacturers have associations at the district level and are in the process of establishing their own federation. These commodity associations and federations help their members in market promotion and trade as well as addressing their problems by raising a collective voice. However, the coordination among aforementioned commodity associations is seldom observed.

NTFPs: In case of NTFP, traders predominantly lead value chains and most NTFPs are still sold through spot transactions handled by them. The majority of the lead traders dealing raw NTFPs are based in Nepalgunj while few are located in Kathmandu and other major cities. The Nepalgunj based firms usually

do business with Indian buyers, whereas the firms in Kathmandu primarily deal with Chinese and overseas buyers. The district level traders act as agents of regional traders and consolidate the required NTFPs from the producers/collectors.

Indian buyers largely dictate Nepal's NTFP trade as the largest share of NTFP production is exported to India. Lately, the Chinese importers are showing increasing interest, especially buying some medicinal products including yarsagumba (*Ophiocordyceps sinensis*), satuwa (*Paris polyphylla*), and chiraito (*Swertia chirayita*). Some NTFPs such as handmade paper and natural fibres are sold to both domestic and overseas buyers; the certified products (such as paper and essential oils) are exported to European and American markets. Through a system of advances, which comes from Indian or Chinese traders and distributed through regional and local agents, paid to harvesters and collectors in Nepal are often used to dictate quantity, quality and price of the products.

Lately, realizing the scope of business in NTFP sector, big houses like Chaudhary and Dugar Groups have started making their investment in this sector whereas herbal giant - Dabur Nepal is performing some of the activities since 1992.

The NTFP collectors are often poor and rely on district traders to meet their daily needs. This has created a more complex personal relationship between these actors, making collectors vulnerable to unfair pricing for NTFPs and commodities they get on credit (basic food, household goods, medicine). The trust level among the NTFP collectors and traders is low often due to breaches of committed quantity and price of NTFPs while purchasing by the traders and untimely delivery of compromised quality goods by the collectors. Unhealthy competition is common among district traders to procure NTFPs leading to overharvesting, untimely harvesting, and gradual depletion of the resources. The case is evident in highly demanded natural herbs, such as satuwa (*Paris polyphylla*) and chiraito (*Swertia chirayita*).

Nonetheless, there are some models of fair and green value chains developed in the NTFP subsector with long-term committed lead firms having clearly stated sustainable value chain vision. Some notable lead firms include Himalayan BioTrade (HBTL) for essential oils and lokta *(Daphne bholua)* handmade paper sourced from sustainably managed forests, Alternative Herbals for chiuri *(Aesandra butyracea)*, natural juices, and Ashapuri Organic for organic dried herbs, herbal teas, mushrooms and vegetables grown in agroforestry system. Each of them has a clearly stated vision, goal and practices. For example, HBTL has been sourcing FSC certified handmade paper from the rural mountain communities with a buyback guarantee. The paper and paper products are sold to international buyers that value societal

and green attributes. The handmade paper produced by community-based enterprises in Dolakha and Bajhang has received FSC certification that is the first of its type in the world, and has been used by an international cosmetics company Aveda Corporation to wrap their holiday gift boxes since 2007.

Though still weak, NTFP subsector has some development for organized trade and export. A number of commodity associations such as Nepal Herbs and Herbal Products Association (NEHHPA), Jadibuti Association of Nepal (JABAN), Herbal Entrepreneur Association of Nepal (HEAN) and Handmade Paper Association (HANDPASS) are actively working for the support of their members. These associations have been organizing producers and traders, addressing commodity specific constraints and opportunities, and lobbying for policy reform and good practices. However, there is no coordination among these commodity associations. There are only a few NTFP cooperatives involved in farming and trading functions, and there is no formal network of the collectors/ producers of NTFPs so far.

The profit margins for the NTFP producers are low. Actually the returns for many of the actors are low due to long trade chains and waste, product adulteration, costly transportation and "informal fees" paid along the way. Some examples of the cost of goods sold and margin distribution among various actors for some important NTFPs are presented in Table 3.2.

Ecosystem Services - Forest Carbon: Forest Carbon as a value chain in Nepal is in the initial stage that has emphasized increased roles of government and civil society organizations in the industry. This has provided good ground for governance and institutional reforms, particularly decentralization, strengthening institutional capacity of Ministry of Forests and Soil Conservation (MFSC), improvement of law enforcement and efforts to build confidence in government institutions, which are critical for the successful implementation of forest carbon projects in Nepal. The consultative initiative of the REDD Cell, increased multi-stakeholder decision making and active engagement of civil society organizations provide grounds for optimism.

There are some projects implemented by civil society organizations with donor support that have identified stakeholders and are working on information sharing, consultation and partnership building. Furthermore, the Norwegian Agency for Development Cooperation (NORAD) funded REDD+ pilot project implemented in three watersheds of Nepal has built the capacity of the local stakeholders including government and community members to measure and monitor carbon in their forests. This project has also established a pilot forest carbon trust fund and developed a benefit sharing mechanism that not only considers quantity of carbon but also the socio-economic performance indicators, which could serve as a basis for developing benefit-sharing mechanism at the national level.

While these are positive developments for the development of forest carbon value chain, some efforts have stalled since there is no clear policy on how Nepal could develop forest carbon projects to enter in the global market. While the REDD Cell has been working on REDD preparedness activities in Nepal, other activities in afforestation and reforestation for CDM are not clear. The REDD Cell has been working with multiple stakeholders

Table 3.2: Prices, Costs and Gross Margins of Various Actors Involved in Various NTFP Value Chains

Product	Collector	District trader			Regional trader/ Exporter			Royalty (NRs/kg)	Export Duty (NRs/kg)	Price in Nepalgunj (NRs/kg)	Price in Delhi (NRs/kg)
	SP (NRs/kg)	COGS (NRs/kg)	GM (NRs/kg)	SP (NRs/kg)	COGS (NRs/kg)	GM (NRs/kg)	SP (NRs/kg)				
Large cardamom	1,100	10	15	1,125	10	5	1,140	***	-	1,150	1,680
Allo (thread)	375	15	20	410	10	30	450	5	-	650	-
Bamboo	50	20	10	80	5	15	100	10/piece	-	100	-
Chiraito	650	60	15	725	45	10	780	15	1	780	840
Chamomile (oil)	20,000	-	-	22,000	-	-	22,000	-	-	22,000	-
Wintergreen (oil)	2,200	-	-	2,800	-	-	3,000	1 (leaf)	-	3,000	-
Morel	16,000	400	1,600	18,000	100	2,900	20,000	300	1	20,000	24,000
Jatamansi	270	100	20	390	20	12	720	20*	1 (marc)	390	720
Khayar	40	40	10	100	-	-	1,200^	20	5***	1,200	1,600
Khote sallo (resin)	9	31	5	45	-	-	65	6	-	-	-
Kutki	750	90	30	870	20	20	910	15	1	950	1,200
Lemongrass (oil)	1,400	-	-	1,600	-	-	1,600	-	-	1,600	-
Mentha (oil)	1,400	-	-	1,600	-	-	1,600	-	-	1,600	-
Lokta	110	-	-	-	-	-	-	5	-	-	-
Ritha	12	9	3	24			24	3**	1	24	37
Rudrakshya	15	13	2	30	3	2	35	8	2	30	45
Satuwa (big)	3,000	100	50	3,210	20	50	3,500	15	1	3,500	3,120
Tejpat	45	10	5	60	5	5	70	2	1	60	77
Timur	150	20	10	180	18	10	120	8**	1	210	256
Yarsagumba	1,450,000	20,000	180,000	1,650,000	-	50,000	1,700,000	10,000	1,000	1,700,000	-

Note: *DDC levied NRs 15 as tax for Jatamansi in some districts, **= DDC levied NRs 0.2 DDC tax in some districts,***=DDC tax ranging from NRs 2-5 per kg for Large Cardamom, ^= per kg price of kattha and **** NRs 3 for Cutch & NRs 10 for liquid kattha, SP = Sales prices, COGS = Cost of goods sold, GM = Gross margin.

Source: ANSAB field survey 2013

for developing benefit sharing mechanism for carbon from government and community managed forests, which is yet to be finalized.

The present carbon value chain in Nepal also lacks institutions to serve as the project proponent for developing forest carbon project, and an aggregator or a common regulator, to ensure that conditions are met to implement a deal. This role is a requirement for all internationally recognized formal carbon trading. The role of carbon wholesalers, brokers and retailers are a new concept for Nepal.

Ecosystem Services – Ecotourism: As forest-based ecotourism industry is expanding, there are some positive development from the government regarding policy updates and benefit sharing mechanisms. For example, the protected area management has taken ecotourism as a means of improving relation between parks and people. There is a clear benefit sharing mechanism for the distribution of revenue, which is creating a win-win situation for both the parties. The local communities get income from tourism activities and revenue sharing, and parks meet the goal of conservation. Some CFUGs near protected areas and major urban centres have incorporated forest recreational services in their management plans. There are a number of associations working in tourism sector, such as Trekking Agencies Association of Nepal (TAAN), Hotel Association of Nepal (HAN) and Nepal Association of Tour & Travel Agents (NATTA) creating a common platform to share knowledge, experience and policy lobby. Similarly, Nepal Tourism Board (NTB) has been providing facilitative environment by promoting the country at domestic and international markets and regulating tourism product development activities.

While there are some positive initiatives towards ecotourism in protected areas and community forests, ecotourism remains relatively fragmented. Ecotourism is undifferentiated from conventional tourism by the government. Specific programs related to forest-based ecotourism are often disregarded as a subset of ecotourism. The available business development services and existing tourism related associations also reflect this fact. There are no associations of the tourism entrepreneurs working in ecotourism sector, and the government has not identified ecotourism sites and developed an ecotourism policy. Moreover, ecotourism owners and operators themselves do not always have a complete understanding of how to market their services and often overlook the obvious attractions that make their green and cultural offerings desirable and feasible.

Forest bioenergy: The commercialization of fuel wood is not well developed. Fuel wood is mostly used for residential purposes. Most of the users collect fuel

wood either from their own lands or from the community forests. Large quantities of fuel wood are also sourced illegally from government managed forest for domestic use. Local fuel wood sales are informal, with collectors selling directly to consumers, with price determined by negotiation around the current market price.

In case of formal commercial channels for fuel wood, the actors are similar to the timber subsector. Fuel wood is collected by the contractors and sold to the end industrial users, such as brick kilns and industries. In some cases fuel wood is sold through depots. The price of the fuel wood from government and community are determined through auction with a base price fixed by the government regulation. Most of this fuel wood is obtained as residue from timber harvesting and processing. The fuel wood, produced from the wood processing industries, is also sold to the depots or directly to the customer at market price.

The bio-briquette subsector, though in the infant stage of commercialization, has emerged as a successful model of partnership between community and private firms with a balanced value chain governance system. The commercialization model is possible in Kathmandu valley with community based briquette production enterprises in peri-urban areas, such as Sindhupalchok and Dolakha and a single consolidation enterprise based in Kathmandu. The consolidation enterprise, Himalayan Naturals, has a contractual relationship that includes price guarantees, with the community production enterprises, and has directly invested in these enterprises. Himalayan Naturals is also responsible for the marketing and sales of the bio-briquette produced by the enterprises.

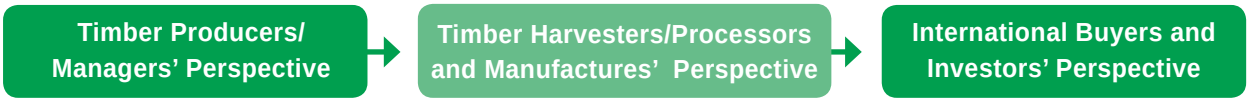
There is a flow of information and services including technology, business management, skill trainings and infrastructure maintenance provided by the consolidation enterprise to the community enterprises. Mostly ultra-poor members of CFUGs are involved in the bio-briquette production, which includes - raw material collection, charring and bio-briquette fabrication. The community members receive payment per briquette they produce. On average, char producers and briquette-makers, especially women are making more than NRs 400 per day. The involvement of women is high with more than 52% of the current total workforce involved in the subsector.

3.2 Timber Actors and Their Perspectives

Major "commercial" functions in the timber value chain include forest management for timber production, timber harvesting/felling, log hauling, log trading, primary processing (sawn timber, veneer sheets and plywood), trading of primary products, manufacturing (furniture, builders' wood work, handicrafts and others), and finally trading and retailing of these products. The major timber "commercial" participants include forest producers (government and semi government agencies, community and private forest and tree growers), contractors, saw millers, veneer producers, plywood producers, furniture and handicrafts makers, and secondary product traders (wholesalers, retailers and importers). The study conducted extensive interviews to obtain the perspective of these actors and their responses are grouped by the three primary commercial functions – production, processing, and sales/ investment as shown in Figure 3.1.

Major participants and their functions and the technologies they use in the timber value chain are presented in Table

Figure 3.1: Focus on Major Timber Actors' Perspectives



3.3. A brief description of the major actors involved in the three major functions of the timber value chain and their perspectives are presented below.

3.2.1 Timber producers/managers' perspectives

This group of commercial actors include government and semi-government agencies, forest producer groups, and private forest and individual tree growers.

Government and Semi-government Agencies

Department of Forests (DoF), with the help of 5 Regional Directorates, 74 District Forest Offices (DFO) (except in Mustang), *Ilaka* Forest Offices and Range Posts, carries out the management of government-managed forests. At district level, DFO and District Soil Conservation Office (DSCO) are involved in the production of seedlings and their distribution. Interviews with district forest officers in some study districts reveal that the average number of seedlings produced by government nurseries ranges from 300,000-500,000 per district per year.

Forest Product Development Board (FPDB), a semi-autonomous parastatal body, has been working to increase forest productivity through planting fast growing exotic plant species in degraded forest areas. Currently there are two projects under FPDB, namely Ratuwamai Plantation Project and Sagarnath Forest Development Project managing about 34,000 ha of forests. The wood received from clear felling of the trees under these projects is largely used for fuel purpose.

Opportunities and constraints: Most of the DFOs interviewed expressed the opportunity for increasing the supply through sustainable harvesting from the overstocked forest, and increased production and productivity by applying scientific forest management practices. Western Terai and lower mountains have high potential of increased supply because of the abundant natural resources in these areas. Large-scale plantation program initiated by the government has provided opportunity to expand such programs to other places as well. However, there are constraints limiting the practice of scientific forest management and harvesting and supply potential. The major constraints include:

Government regulation on harvesting of only dead, diseased and fallen trees: The ministerial level decision allow harvesting of only dead, diseased and down (fallen) trees in the government managed forest. It has limited the scientific management of forests and is one of the major reasons for low production of the forests leading to low supply of timber. However, tree felling is practiced in Kapilvastu and Rupandehi districts where sustainable forest management (SFM) has been initiated.

Limited focus and effort on scientific forest management: Scientific forest management is affected by many reasons. First, activities of DFOs towards this are limited because they are required to play

Table 3.3: Functions, Participants and Technologies Involved in Timber Value Chain

Functions	Participants										Technologies/Skills
	Department of Forest/MFSC	Associations and networks	Research institutes	District Forest Offices	Forest Product Development Board	Forest producer group (CFUGs, LHFUGs, CFMGs)	Private nurseries	Private forest and tree growers	Contractors and saw mills	Veneer and plywood producers	Furniture and handicrafts makers	Importers (log, plywood, particle board, furniture)	Wholesalers and retailers	
Trade									■		■	■	■	Trade skills, market contacts
Manufacturing											■			Carpentry skills, hand powered saw, finger joint technology, PVC lamination
Primary processing									■	■				Seasoning plant, horizontal and vertical band saw, compression, peeler,
Harvesting/log hauling				■	■	■			■					Hand saws, chain saws, harvesting techniques, rope way/ tractor/trucks, logging skills
Production				■	■	■	■	■						Silviculture practices
Seedling supply				■	■	■	■	■						Nursery management, tissue culture
Research	■		■											Lab equipment, research skills
Policy	■	■	■											Policy advocacy, formulation and implementation

multiple roles of technical, administrative and judicial. Second, budget allocations for forest management activities are very negligible or sometimes nil except for the areas where SFM has been initiated. Third, the staffs fear of being punished from the charging agencies, mainly Commission for the Investigation of Abuse of Authority (CIAA) while taking innovative/proactive initiatives, such as enterprise registration, timber grading and measurement as they are not clearly defined in the policy. Some of the DFOs also mention that the lack of performance based incentives and unpredictable transfers resulted into poor morale of the staff.

Security threat: The security threat by gangs, poachers and individuals often protected by political and local groups during harvesting, log hauling, piling, auctioning, and monitoring has been affecting the proper implementation and monitoring activities of the government officials. The threat has also caused difficulty in controlling illegal harvesting and transportation of timber.

Ineffective management of plantation projects: The plantation projects of the government face constraints for their effective management because of inadequate allocation of human resources and delay in release of budget. This has affected various activities of the project including woodlot maintenance, plantations, monitoring, maintenance of tools and equipment often leading to increase in the area of empty plots, encroachment of forestland and theft of the equipment.

Forest Producer Groups

The forest producer groups consist of community forest user groups (CFUGs), leasehold forests users groups (LHFUGs) and collaborative forests users groups (CFMGs).

Opportunities and constraints: The forest producer groups perceive the participatory forest management model as successful and take this as strength for fulfilling the needs of forest products and also increasing production. They believe the presence of local knowledge and availability of forest area and human resources could be utilized for increasing production and productivity of the forest. They also appreciate the clear tenure rights over forest products for promoting commercial production. The presence of strong user groups' forest networks and a federation and a positive image are comparative advantage of the community

forestry in influencing for favourable polices. Community forests (CFs) have also received the priority of government and donor-supported programs. Amid these opportunities, the following constraints were noted at the forest producer groups level.

Inadequate technical and managerial capacity of forest producer groups and insufficient extension services: Forest producer groups have low technical and managerial capacity for forest management activities, especially preparation of operational plan, nursery management, forest resource inventories,

and scientific management of forest. Government service in these regard are limited with almost non-existence of private service providers. As most of the community forests utilize contractors for the timber harvesting, there are some concerns among the members about irregularities and unsustainable harvesting in such cases.

Difficulties in handover of proposed CFs and renewal of the expired operational plans: During the focus group discussions in most of the study districts, the members of proposed CFs have shown concern about the delay in handover of the forest they have been conserving for decades. Many groups are struggling to renew their operational plans. This has limited their ability to utilize forest products.

Private forests and individual tree growers

Private forest owners and individual tree growers are planting and growing timber species, especially the fast growing ones. They have been playing a major role in supplying timber since the supply from the government and community-managed forests are limited and inconsistent due to frequent bans and policy changes.

Opportunities and constraints: Most of the private tree growers see the scope for expanding plantations of fast growing species, both existing tree species, such as teak (*Tectona grandis*), eucalyptus (*Eucalyptus* spp.) and alder (*Alnus nepalensis*), and new species, such as paulownia (*Paulownia tomentosa*) and Malaysian sal (*Shorea borneensis*), because of increasing demand, profitability and perceived environmental benefits. The availability of barren land especially in the areas with high out migration and other non-forested public land is seen as opportunity for increasing plantations. The major challenges faced by these investors towards increasing their investment and involvement include:

Cumbersome legal procedures, additional tax burden and high transaction costs for harvesting and trade: The harvesting of trees from private land is a multistage procedure requiring documents from and coordination with three different government agencies. Many of the private tree growers perceive the process as a major constraint because it is highly time consuming and they often have to face bureaucratic hurdles to obtain the required permits. The process is cumbersome to those who are not frequently involved in such process, and for the small holders who own only few trees. Because of this, the private tree-growers are forced to handover the harvesting procedure to the contractors, which in turn has limited the producers' bargaining power. The growers in the mountains who own low value timber were also seen reluctant to harvest and sell their trees as they foresee low return profit because of the high transaction cost. The growers also expressed their concern on VAT for the timber harvested from their land as they have already paid land tax to the government.

Limited availability of quality planting materials and extension services: Unavailability of sufficient quantity of quality planting materials and extension services is another major constraint for them. The quantity of the seedlings distributed by local forest offices is not only inadequate but also there is a concern on quality assurance. The growers like to use quality materials from private sources, but supply is limited due to insufficient number of nurseries, and they often have to pay high price for the seedlings.

The private sector also lacks extension service from the government offices, as there is no expertise in timber plantation management. In some focus group discussions in the Terai region, private tree growers raised their concern on investing in tree plantation for financial return, because they had the sad experience of loosing their investment with the disease outbreak in the sissoo (*Dalbergia sissoo*) plantations.

Limited or no access to financial services: Plantations involve high upfront cost, which is difficult for most tree growers, and long-term investment because of the long harvest rotation period of timber trees. Most of the financial institutions do not accept the land that is not close to major cities including that of hills as collateral. The government does not have any programs for providing incentives and financing. Some of the investors also perceive that there is a lack of government valuation of tree (with minimum price setting) and insurance policies to support access to financing.

3.2.2 Timber harvesters, processors and manufacturers' perspectives

This group of commercial actors includes saw millers and contractors, veneer and plywood producers, and furniture, builders' joinery and handicraft makers and retailers.

Saw millers and contractors

Sawmills are involved in contract harvesting, transportation, sale of logs, and production of sawn wood. Some are involved in builders' joinery and furniture making as well. Approximately 20% of the total sawmills are large in size and have average processing capacity of 2,265 cubic meters per year. Most of the large sawmills are concentrated in urban areas. Besides the five sawmills of the Timber Corporation of Nepal (TCN), these larger firms are the major players in Nepalese timber industry. The sawmills use horizontal band saw with a very simple carriage and a vertical band saw for re-sawing wood.

Contractor is usually a local agent of saw millers or a registered firm of an independent person or a group undertaking harvesting, transportation and sale of logs. They are directly involved in the auctioning process and transportation of timber from the log yards. Since there is no concessionaire for large scale harvesting of timber in Nepal, CFs and the government hire these contractors for harvesting.

Opportunities and constraints: The high domestic demand for timber is the major opportunity perceived by saw millers and contractors. There is a scope of increasing supply through sustainable forest management and new plantations in private lands. Some of these investors identified that forest development could be done through the utilization of the Forest Development Fund. They believe that the presence of the FenFIT has allowed them to present concerns and issues to relevant agencies and advocate for favourable policies. The major constraints from the saw millers and contractors' perspectives are:

Uncertainty of supply of timber: The issue of uncertainty of supply was pronounced in most of the interactions, meetings and focus group discussions. The frequent, and sometimes unpredictable changes in policy decisions including ban on harvest, circulars, orders and interventions from CIAA have resulted to uncertainty over timber supply. According to the saw millers and contractors, a large number of investors have left their businesses because of the lack of raw materials.

High risk and transaction cost of timber business: The timber trade involves high risk as there is no guarantee of supply; low security during placing tender, log collection and transportation; several bureaucratic hurdles, including the delay in getting required permits and unnecessary checking and frequent

stoppage by various government line agencies; risk of deterioration of timber quality due to delay in auction and collection; unhealthy competition due to lack of standards for the types of firms to be involved in timber trade; loss incurred because of difference in measurement in real product as compared to that mentioned in official documents; and the lack of standards for grading of timber.

The extra cost incurred while obtaining permits, transportation and trade of timber has resulted to the increase in transaction cost. Unofficial costs and donations required to be paid to the forest officials, political groups, local gangs and clubs and other officials of various line agencies cover the major part of the transaction costs. Other major factors that increase the transaction costs include costs to ensure security during transportation and high interest on loans taken from informal sector.

Poor social image of timber business: In spite of the significant contribution of timber to income to CFUGs and revenue to the government, timber issues have not received much importance in general public, media and the government, often limiting the growth of wood based enterprises in Nepal, mainly due to misperception about the timber business. Because of the high value of timber and weak governance, there are some cases of forest encroachment, illegal logging, misuse of authority and corruption, often depicting low credibility of the forest subsectors among the general public. But the implication of this is that the general public has the perception that every tree felled down is illegal and motivated by corruption, and the forestry sector has not been able to portray the message to the general public that the timber is a renewable resource and it can, and should, be harvested with a planned management assuring sustainability.

Inefficient processing technology: The lack of large scale seasoning plants and reliance on small seasoning plants has led to low economy of scale, and hence increased production cost of sawn timber. The high cost of setting up of such large scale plant has made the potential investment out of reach for single private firm.

Veneer and plywood producers

Veneer producers are distributed throughout the country, but a significant number of them are concentrated in the

Eastern region. About 60% of the total veneer produced in Nepal is consumed domestically by plywood industries;and the rest is exported to India. While most of the plywood producers rely on the veneer producers for the supply of veneer sheets they need, some produce by themselves.

Opportunities and constraints: Most of the opportunities perceived by veneer and plywood producers are similar to those perceived by other timber actors. Moreover, the major opportunity for them is the increasing demand at domestic and international, especially Indian markets. The expansion of road to rural hill areas has also provided the producers greater access to raw materials as they mostly use the soft wood species found in hilly regions. From their perspectives, the main constraints they have been facing include:

Increased export tax in veneer sheets: The export tax has been increased from NRs 3.50 to NRs 7.00 from the start of fiscal year 2013/14, which they believe has reduced their competitiveness.

Supply of raw material is being threatened due to registration of new industries without proper assessment of resource base: This problem is prominent in eastern Nepal. For example, there are already about 40 veneer firms established in Mechi zone, especially in Jhapa district, and the most of which are already in short supply and forced to run under capacity.

Wasting of the by-products from veneer factories: Most of the veneer producers are not utilizing the by-products. Some of them have started removing such wood residue from their factories, which is costing them extra. This actually shows a potential to explore appropriate technology to convert such by-products into energy.

Impractical requirement of distance from forest area to establish an enterprise: The current policy provision of only allowing the establishment of forest-based enterprise beyond 3km in hill and mountain, and 5km in Terai from forest is regarded to be impractical from the entrepreneurs.

Furniture, builders' joinery and handicrafts makers and retailers

Nepal's furniture industry includes modern factories, hundreds of small workshops and thousands of individual carpenters. There are few furniture factories with huge investment in modern technologies, such as finger joint and Polyvinyl Chloride (PVC) lamination. Most of the furniture factories based in urban areas are big in size with their own showroom(s) and readymade furniture. It is estimated that more than 800 furniture manufacturers are in Kathmandu alone. In the semi-urban areas and rural areas furniture makers are usually small and mostly make the products on demand basis. In addition, there are individual carpenters, who go to the customer's place and make furniture at the site.

Builders' joinery makers produce door and window frames for construction purposes, mainly with their carpentry skills. They usually get the sawn wood from sawmills, whereas some are also involved as depot of sawn timber. Some furniture makers and saw millers also produce builders' joinery mostly on order basis from customers.

Beside the very few registered factories, wooden handicrafts are manufactured all over the country mostly by small cottage industries operating informally at a household level. While there are some dedicated retailers to deal with plywood, MDF panels and parquets, most of the

furniture and handicraft makers retail their products by themselves. The importers are based in major cities, especially in Kathmandu and import furniture, plywood, parquets and other wood products, mostly from China, and distribute through the trading companies.

Opportunities and constraints: Demands for furniture, builder's joinery and other wood products are increasing with urban growth and the changing lifestyle. New assembly technologies, especially from China, are available for manufacturing competitive customised products as demanded in the market. From their perspectives, there are three major constraints as described below.

High cost of production of furniture making due to the shortage of skilled labour locally, electricity supply, and the use of old, inefficient technologies: As most of the domestic labourers, who have acquired required skills by working for furniture companies for some years, have out-migrated to gulf countries and Malaysia, most of the furniture makers are compelled to hire relatively expensive Indian labourers. The prolonged load shedding causing to use expensive diesel for power generation has increased the cost of production. The latest available technologies that increase efficiency and quality of finished products, such as seasoning and finger joints, are not accessible to Nepalese furniture makers mainly due to their small size of business and some policy hurdles or disincentives, especially to make use of fuel wood for furniture making.

Limited availability of raw material: Furniture and builders' joinery makers, especially small and those located outside the Kathmandu valley, are not getting enough timber as per their requirement. The main reason for this is that the timber auctions are of big quantity and are exported to major cities outside the production districts.

Price distortion due to informally operated firms: As the informal firms can have the possibility of using illegally sourced timber and do not pay taxes, their prices are usually low as compared to the normal price.

3.2.3 International buyers and investors' perspectives

The international buyers and investors interviewed and research done on global trends emphasized many of the observations of the domestic actors. But, it is important for the Nepal forestry sector to understand how international buyers perceive Nepal's timber products

in comparison to other choices they have around the world. This section summarizes the perspectives of international buyers and investors for Nepal's timber subsector.

Nepal is a timber importer country; however in the past few years there has been an increase in export of specific timber species. There is potential for increasing trade of some timber products especially the high value low volume products, such as wood flooring, thin veneer sheets for furniture and woodcrafts from certified forests. While this is possible given Nepal's forest areas if managed well, all industry members contacted still expressed concern over supply.

Timber provides Nepal with the opportunity to harvest, process, and manufacture dozens of products needed domestically and demanded by international markets. For international trade and investment the forecast is more complicated and varies by individual wood product. Since Nepal primarily has wild harvested wood, with minimal supply of plantation wood, specialty markets for prized hardwoods and woods with distinctive grains are a promising market for Nepal. Wood flooring and furniture veneers are therefore recommended to match this market and create value-added opportunities for employment creation in Nepal.

Given the employment generation goals, inclusion of community forestry, and Nepal's rich tradition of hand-carved woodcrafts, wood handicrafts, especially with eco-label have also been prioritized (see Box 3.1). All three of these products lines (flooring, veneers, and wood handicrafts) have projected market growth, but also strong competition. In summary, buyers are interested in the exotic woods Nepal could offer for unique flooring, veneers, and wood carved crafts while investors are looking for opportunities to develop much sought after supplies of plantation species.

Box 3.1: Wood Handicraft Success – Angkor Artisans

Angkok Artisans in Cambodia started as public – private partnership to train local artisans, building from a rich tradition of handicrafts. Professional presentation of products, high-end showrooms and artisan demonstrations, business skill, quality control, and marketing were supported during an initial project that included private sector investment. Now over 1,300 artisans supply products from around the country and there is a thriving tourist and export market.

Nepal has been steadily increasing its handicraft exports and has all the elements to develop a similar wood handicrafts craft village and showroom as Cambodia has. Elements of this already exist at Bungamati village and with other groups. With targeted private sector investment, these could become an even greater tourist destination and focal point to support clusters of wood artisans carving FSC wood into quality handicrafts. http://www.artisansdangkor.com

3.3 NTFP Actors and Their Perspectives

The market and trade channels of most NTFPs follow a general pattern of forest or meadow to village to road-head or trade centre, then on to larger trade centres. The major NTFP "commercial" participants include forest

producers and cultivators (government, semi government agencies, and forest producer groups and private collectors), NTFP collectors/harvesters, village traders, local agents, district and regional traders, primary processors, and manufacturers. The perspective of these NTFP actors and their responses are grouped by the three primary commercial functions – production, trade/processing, and sales/investment as shown in Figure 3.2.

Figure 3.2: Focus on Major NTFP Actor's Perspectives

Major participants and their functions and the technologies they use in the NTFP value chain are presented in Table 3.4, and a brief description of these actors and their perspectives is presented below.

3.3.1 Producers and cultivators' perspectives

Major producers involved in NTFP production include government and semi government agencies, namely DFO, Herbs Production and Processing Company Limited (HPPCL), FPDB, forest producer groups (including CFUG, CFMG, and LHFUG), and private cultivators.

Government and semi government agencies

Department of Forests (DoF) and district and local level offices are responsible for managing forests. Apart from forest management, District Forest Offices and District Plant Resources Offices are the responsible for providing technical support on cultivation and harvesting. HPPCL is involved in production and processing of certain NTFPs. It also provides extension service with buy back guarantee farmers involved in the cultivation of the specified NTFPs, especially essential oil bearing plants.

Opportunities and Constraints: Production of NTFPs available in the government managed forests can be increased through scientific management and sustainable harvesting to generate additional revenue and improve local livelihoods. The main constraints they face are due to inadequate resource mobilization, especially for resource inventory of commercially important NTFPs, and insufficient human resources and budget allocation for monitoring activities (See Box 3.2).

Forest producer groups and private cultivators

Wild species of NTFPs are managed and harvested by many of the forest

Table 3.4: Functions, Participants and Technologies Involved in NTFP Value Chain

Functions	Participants											Technologies/Skills
	MFSC incl. DoF, DPR, HNCC	Associations and Networks	Research institutes	District Forest Offices	Forest producer groups (CFUGs, LHFUGs, CFMGs)	Private nurseries	Private cultivators	Harvesters/collectors	Village and district traders	Regional traders/exporters	Primary Processors	Manufacturers	
Export										■	■	■	Standard packaging, shipment vehicles, special market contact
Manufacturing												■	Machineries (such as for pharmaceutical formulation, paper making, fibre cloth weaving)
Primary processing										■	■		Distillation, extraction, dryer,
Local and regional trading									■	■			Trade skills
Harvesting				■	■			■					Harvesting tools and skills
Production				■	■		■						Resource management, cultivation techniques
Input supply				■	■	■							Nursery management, tissue culture
Research	■		■										Lab equipment, research skills
Policy	■	■	■										Policy advocacy, formulation & implementation

Box 3.2: HPPCL, Tamagadi, Bara – A Case of Enterprise Running Under Capacity

Herbs Production and Processing Company Limited (HPPCL), Tamagadi, Bara a government owned enterprise was established in 1981 (2038-9-17) as a public company. They possess 300 hectares of land for the cultivation of commercial species, including mentha (*Mentha arvensis*), *Cymbopogon* spp. (lemongrass, citronella) and chamomile (*Matricaria recutita*). In addition to their own harvest from cultivation, they also buy raw materials and produce 10 different types of essential oils. The company produces 13 tons of oils annually, and employ about 200 people, including seasonal workers. Most of the oils produced are sold in Indian markets, but small quantities are also exported to Europe. The company is also mandated to provide technical support to local processors (from whom they can buy the oils) and extension service and buy back guarantees to farmers interested in cultivating selected tropical species. Even though they have enough infrastructure including distillation plants, building, ware house-shades, tractors, lands, etc., the company is not running in full capacity. The reason for this, according to them, is the lack of financial and technical resources.

producer groups (CFUGs and LHFUGs) located in hills and mountains, whereas the cultivation of NTFPs, especially essential oil bearing plants in the allocated pieces of forestland is getting popular among the groups in the Terai. Increasing numbers of private cultivators, mostly individuals and few cooperatives are involved in the cultivation of domesticated as well as exotic NTFPs. Box 3.3 presents a case of commercial cultivation of NTFPs by individual farmers in Ilam district.

Opportunities and Constraints: Along with the harvesting from natural forests, NTFPs can also be cultivated in open land that will provide good source of income to the community. This also provides an opportunity to establish forest based enterprises at local level. Another opportunity is to cultivate essential oil bearing plants, such as mentha, in wildlife prone areas near the national parks to reduce human-wildlife conflict. This is already in practice in

Box 3.3: Commercial Farming of NTFPs by Individual Farmers: A Case from Ilam District

Like many other NTFP farmers, Mr. Deu Kumar Rai of Maipokhari VDC of Ilam district started NTFP cultivation in 15 hectares (300 Ropani) of land in 2010. He invested about NRs 8 million in his farming business that includes the cost of the land purchased. So far, he has cultivated 4,000 plants of satuwa, 60,000 chiraito, 500 kiwi fruits (*Actinidia deliciosa*), 200 lauth salla, among others in his farm. A total 8 regular staffs are employed and 10 other seasonal labourers are hired for about 6 months in a year. At the moment, his business is informal (unregistered) but he has a plan to register it as a private company and gradually upscale the cultivation area as well as NTFP species in the future. According to the DFO of Ilam district, a large number of individual farmers are involved in commercial cultivation of several NTFPs in their lands. For instance, over 40 tons (90%) of the total chiraito production in the district comes from the cultivation.

buffer zones of Bardiya National Park, where communities have reported that they were able to reduce the damage from wild elephants in their crop fields. In recent years, there has been growing interest of private entrepreneurs in NTFPs cultivation because of the increased market demand and availability of barren lands for the cultivation. There are also some instances of purchase assurance to the cultivators by manufacturers.

Additional burden of environmental assessment to CFs: About 350 user groups managing about 330,000 ha (each having more than 500 ha of CFs) (DoF record March 2014) mostly from high mountains are not able to renew their forests because of the compulsory provision of Environment Impact Assessment (EIA)/ Initial Environment Examination (IEE) for renewal, as these are technical and the services are unavailable at local level. Cost of EIA is usually high and often out of the reach of CFUG members. As the CFs is not renewed, the members will not able to harvest and sell the available NTFPs. Although there has been change on the threshold of area for the forests for IEE and EIA process recently, environmental assessment procedure can be harmonized with the CF guideline as the guideline already covers most of the provisions for environmentally sustainable harvesting.

Limited availability of extension services and quality planting materials for cultivation: Most of these actors have limited knowledge on proper cultivation, harvesting, post-harvesting methods and tools. The private cultivators have not been able to receive the government extension services because of the lack of clear authority between District Agriculture Development Office (DADO) and DFO for providing services on cultivated NTFPs. For example, the cultivators interviewed revealed that they are not able to get proper information on disease and pest management of cultivated NTFPs, especially chiraito (*Swertia chirayita*), satuwa (*Paris polyphylla*), atis(*Aconitum heterophyllum*), sugandhawal (*Valeriana jatamansii*), kurilo (*Asparagus recemosus*), aloe vera (*A. barbadensis*), stevia, chamomile (*Matricaria recutita*), mentha (*Mentha arvensis*) and *Cymbopogon* spp. (lemongrass, citronella, and palmarosa). Some growers also mentioned that there is no regulation on quality planting materials in order to address the production failures due to low quality inputs.

High transaction cost for trading cultivated species: The cumbersome legal procedure, irrational royalty collection practices and informal fees while obtaining collection permits and transportation of cultivated species, such as ritha *(Sapindus mukorossi),* timur *(Zanthoxylum armatum),* lapsi *(Choerospondias axillaris),* chiuri *(Aesandra butyracea),* chiraito (*Swertia chirayita)*, satuwa *(Paris polyphylla)* have resulted to high transaction costs for the private cultivators.

Involvement in cultivation without proper knowledge on costs, returns, and markets: During the study, it was observed that some individual farmers have cultivated some new NTFPs, such as lauth salla (*Taxus baccata*), stevia and Aloe vera (*A. barbadensis*), without proper knowledge on cost of production, buyers and market price (See Box 3.4). Some were instigated by marketing agents,mostly unsustainable and illegal, involved in networking business, which were taking advantage by selling planting materials, but never bought the produce from the farmers as they promised.

Box 3.4: Cultivation of Lauth Salla Without Proper Market Research

A farmer of Sulbung VDC-2 of Ilam district transplanted over 7,000 seedlings of lauth salla (*Taxus bacata*) in 3.5 hectares of his private land in 1985. The leaves and twigs can be harvested after 4 years of transplantation. The average annual collection of leaves and twigs is 20 kg (dried) from a 12-year-old tree. With the production, the farmer tried to sell his produce several times and spent a lot of money to explore buyers in India and Nepal but with no success. Since the transplantation, he has sold just 7,500 kg of dried leaves at the rate of NRs 50 per kg to Machhapuchre Herbal and Natural Herbal. For this, he had already paid about NRs 15-20 per kg to labour for cutting leaves. The estimated annual production is about 125-150 tons, but the buyers and market are unknown or those who assured are unreliable.

3.3.2 NTFP collectors/harvesters, traders, processors, and manufacturers' perspectives

NTFP collectors/harvesters

CFUG members and individuals usually from poor households are involved in the collection of wild NTFPs from government forests as well as community forests. A small number of individual farmers cultivating NTFPs in their farmland do the harvesting by themselves and sell to local traders. The collectors and harvesters are usually also engaged in drying, cleaning and simple packaging of NTFPs wherever applicable.

Opportunities and constraints: The harvesters, who are mostly from poor rural communities, use collection of NTFPs as an alternative source of income. For some of the harvesters, especially those residing in the mountains, this is a major source of income. Proximity to the resource base in general is considered as an opportunity, and as the collection of NTFPs does not require special skills or any capital investment, any members of the community can do the collection. However, there are some constraints at the harvester level that is limiting the sustainable harvesting practices and return of their harvesting effort, the major ones are given below.

Lack of proper knowledge and tools on harvesting, post harvesting, and storage: Over harvesting and improper harvesting of the commercially important NTFPs are major concerns. As most of the NTFPs are collected from government managed forests, these are regarded as public good. It has observed that satuwa (*Paris polyphylla*) is heavily harvested without any plan in response to rising demand from China. Similarly, improper harvesting practices are common in resin tapping and khayar (*Acacia catechu*) harvesting. The harvesters lack proper tools and knowledge on sustainable harvesting. Similarly, the post harvest handling, including storage, is not done properly often leading to the deterioration of the quality of the products.

Low and unfair prices paid to smallholder collectors: Traders and local agents often treat harvesters with low prices, sometimes by using various malpractices, such as high percentage of weight reduction for inner materials and moisture and cheating in weighing. This happens when harvesters are illiterate, elder and children.

Village traders, local agents, district and regional traders

Village traders represent well off members within the community often including political leaders and teachers. They obtain NTFPs from collectors/ farmers and sell it to the district level traders and regional traders. Some of them also work as an agent of regional traders. They are engaged in preliminary packaging and providing technical skill and techniques (harvesting, drying and storing) to CFUG members and individual collectors. District traders usually sell NTFPs in regional markets. In some cases, these traders are involved in both trading and simple value addition activities, such as cleaning, sorting, grading and packaging.

Opportunity and Constraints: As most of these traders are also involved in other businesses, they view that NTFP trade has been providing extra business opportunity for them. They value the network with collectors and buyers take this as a their strength. The constraints they are facing are given below.

Inconsistent products and improper storage facility: Because of the ignorance of the collectors, and sometimes with a motive of gaining more income in the short run, the practice of mixing of low quality of products with the good one and adulteration with similar looking products are found. Similarly, soil contamination, high moisture content, and low quality packaging have resulted into the deterioration of the quality. It is found that most of the district level traders were found not to have proper storage facility, often leading to decline in quality with fungal infestation.

Uncertainty of price and unhealthy competition: NTFP business is not consistent because of its uncertainty in terms of quantity, demand and price. Although most of the traders receive certain amount of cash in advance from the buyers, final price is determined only after the goods are delivered. The buyers are inconsistent while they purchase the products; they accept any sort of quality when the demand of the product is high, and offer low price raising quality issue when the demand is low. Some unhealthy competition among the counterpart collectors is also in practice, often harvesting premature NTFPs.

High transaction costs: Informal fees associated with receiving permits along with donations and other unofficial cost demanded by political groups and check posts during the transportation are the major factors for increasing transaction cost. Furthermore, poor road infrastructure often leading to high transportation cost, processing delay, and multiple taxes also contribute to high transaction cost.

Limited access to finance: Due to limited presence of BFIs in remote areas and problem of producing valuable collateral, as they do not accept rural land, traders face difficulty in accessing finance. They usually end up borrowing from informal sources with high interest rates.

Regional traders and exporters

Regional traders are the lead firms of the NTFP trade, mainly operating from Mahendranagar, Nepalgunj, Butwal, Kathmandu, Biratnagar and Birtamod. Most of these traders also work as exporters.

Opportunities and Constraints: The comparative advantage of high-mountain NTFPs offers good potential for the regional traders and exporters for trading. Some NTFPs are unique, indigenous, and genetically superior. Besides, the demand of these NTFPs is increasing from China. The major constraints from the perspectives of these traders and exporters are:

Lack of warehouse and auction centres: There is no provision of proper warehouses for NTFPs even in the major regional market centres, such as Nepalgunj, Birtamod, and Surkhet. This has caused improper storage of the product often degrading the quality. Nepalgunj traders have suggested thatthe lack of auction centres in Nepal is hindering the growth the NTFP trade business.

Lack of proper infrastructure, standards, coordination and market promotion for the export: Major constraints include lack of internationally accredited laboratory facility in the country, insufficient number of custom offices in mountain areas despite the growing trade to China and no Nepal standard guide book for Pest Risk Analysis and assessment of exportable items. Traders are also facing difficulty in exporting NTFP because of the lack of proper HS code classification and sub classification. For example, essential oils and herbs are classified under the same code and sub classification is not yet developed.

In spite of the huge volume of trade with India, there is no resolution of the issue arisen due to the current non-inclusion of NTFPs in Annex 7 of India's Plant Quarantine Directive, which often creates administrative hurdles at Indian quarantine check posts. Similarly, the police and custom officials have problems in identification of NTFPs during transportation and export. Furthermore, due to heavy reliance with India for NTFP trade, market promotion and branding of Nepal's NTFP is quite limited for international markets.

Unpredicted government bans in Nepal and importing countries. The government's decision of ban on collection and trade of some NTFPs without prior notice has caused significant losses to the traders, who have already stockpiled the items. Besides, the traders perceive the ban on the commercially valuable NTFPs, which can be collected sustainably without destroying the plants and the habitats, inappropriate. Similarly, ban by importing countries (for example, ban on import of jatamansi oil from Nepal to EU) is hampering the business.

Primary processors

Depending on the nature of raw material and their availability, processors are based in villages, towns and cities. They do primary processing using simple and locally available technologies to add value on the NTFPs purchased from collectors/farmers and village, district and regional traders as available. These technologies, although not in big scale, have been adopted, and in some cases adapted, after the traders and collectors have realized the importance of value addition. Distillation of aromatic plants, handmade papermaking, fibre knitting, and bamboo crafting are examples of processing technologies used in Nepal.

Opportunities and Constraints: Primary processors have good opportunity in

NTFP business as demand of processed NTFPs, such as essential oils, handmade papers, allo thread, kattha, rosin and turpentine is increasing. As cultivation of NTFPs is also increasing, they have a good prospect from supply side as well. Furthermore, the investment required is relatively small and there are increasing development support available for establishing this type of enterprises. However, the main constraints the primary processors face at present are:

Inadequate knowledge and availability of processing/value addition technology: The processors especially at local level have inadequate knowledge on product development. For example, taking the case of essential oils distillation, many technical requirements, such as temperature regulation, oil-water content, storage bottle types and quality assurance/ control are not in their reach.

Inadequate business management capacity: The processors, especially at local level lack business management knowledge and skills. For the community-based enterprises that are registered as cooperative, obtaining the certificate of origin and limited cooperation from the local chamber of commerce are the major concerns.

High transaction cost for kattha processors: The kattha entrepreneurs mentioned that there is lack of legal provision to ensure a direct supply of raw material to them. This has resulted unnecessary involvement of intermediaries resulting into a high transaction cost for the business.

Manufacturers

The manufacturers produce end products targeting domestic consumers or international markets and tourists visiting Nepal, often as souvenirs. Depending on their requirements they purchase either raw material directly from the traders or the processed goods from primary processors. Chyabanparas (health tonic), Hajmola, washing bags made from ritha, handmade papers products, handicrafts made from allo and bamboos, kattha, and rosin and turpentine some examples of final products exported from Nepal. Although a very traditional practice, the manufacturing of ayurvedic medicine in Nepal is still not well developed. Recently, there is an increasing interest and investment in herbal soap manufacturing in Nepal.

Opportunities and Constraints: The increased interests and preferences towards natural products both domestically and internationally have given opportunity for the manufacturers to develop products from NTFPs. The government of Nepal is also promoting the use of this medicine through ayurvedic hospitals in 20 districts; presently the medicines required in the districts are mostly imported from India. The major constraints as observed by them are:

Low investment on R&D: Government has low priority on research and development of NTFPs and there is no any organized initiative in the product development and market research. The investment form the private sector on product development is negligible. As a result, most of the NTFPs are exported in crude forms.

High cost of production due to low economies of scale, the shortage of electricity supply, the use of old, inefficient technologies, and GMP certification: The prolonged load shedding causing to use expensive diesel for power generation has increased the cost of production of manufactured goods. Manufacturers of the similar products from

India have increasing competition with Nepali products because such products are produced in large scale and have better market promotion. For example, ayurvedic medicines produced in Nepal are more expensive than those produced in Indian. Moreover, Nepalese manufacturers are not able to adopt good manufacturing practices (GMP) and get certification, which would enable them to access the market that rewards with premium price.

3.3.3 International buyers and investors' perspectives

NTFPs represent the widest variety of products and hence end products and industry groupings. Perspectives in this section reflect interviews with Natural Products Expo industry representatives (this Expo has tracked trends over the 20 years), individual buyers and investors, and secondary research. Each individual NTFP has its own niche market potential and there is a wide range of pricing within NTFPs. Markets are growing overall for NTFPs, but getting exact volumes is again difficult since the international harmonized system codes do not break down NTFPs by individual species, wild harvested or cultivated.

While selling products to mainstream markets is probably beyond current "organized" supply levels in Nepal, Nepal offers a variety of "green" (community forestry, biodiversity) and "fair trade" niche markets. Nepal has increased quality and secured certifications for NTFPs, which have led to several long-term buying arrangements with US and European buyers and most recently resulted in a direct investment (see Box 3.5). One also has to consider that a mainstream company may have specialty needs. For example with Aveda, Nepal has not yet had the supply at competitive prices for some of the oils it uses in its personal care products (a mainstream product), but did develop the opportunity to use Nepal's lokta paper for its holiday and gift boxes (specialty). Nepal's supply was organized among several community forest groups and level was successfully matched with a mainstream company for a specialty need.

Box 3.5: Trade Show to Investor - Essential Oils Case Study Success Story

BioFach

One of the best ways to meet potential new investors is through trade show contacts. When buyers and sellers spend the money to attend and/or exhibit at a trade show they are looking to buy and sell products and expand their business.

Himalayan Biotrade (HBTL) attended Biofach several years ago and met a French company who showed an interest in Nepal's essential oils. The French company made an order and also made a visit to HBTL so get to know the company better and review their operations. HBTL also visited the company in Europe. A comfort level developed as each learned each other's business needs and the orders became more regular. This past year, discussions progressed so that the French Company and HBTL decided there was a mutual interest to expand essential oils production within Nepal and the European company decided to become an investor. The relationship therefore developed from an initial meeting at a trade show, a buying relationship and visits over several years and now a direct investment into the essential oils business in Nepal.

In the US, Lacey act applies to all plant products, including NTFPs, Nepal has some companies that have chain of custody paperwork in place that would guide for putting more in systems to meet this increasingly common requirement worldwide. There is also increasing "cross-over" markets for NTFPs from Nepal. For example, an herb may have traditionally been sold for tea blends, but now may be an ingredient in a personal care product. Essential oils could be considered for aromas in candles. There are some notable concerns regarding inadequate quality packaging of NTFP products from Nepal, which is the first impression customer has of product, and can also cause a shipment to be rejected by customs. From initial export errors with buyers, poor packaging and contamination with foreign materials was a major complaint. For example, essential oils containers that frequently leaked and one shipment had had a chicken feather in the oil.

Nepal has shown over the last decade that it can supply quality NTFPs. Nepal's NTFPs have always been in demand, but for decades were traded at low prices often illegally across the border to India and sometime China. With certifications and deals with European and US buyers, Nepal has shown it can produce quality products, trade them legally with internationally recognized certifications, and include community forest user groups and local interests in the deals.

Several of these deals started through public-private collaborations. These allowed for donors to work with a local NGO and the private sector to balance the social, environmental, and business goals. Areas that needed subsidy, like community organizing, legal advising, technical training, and capacity development and business were supported with donor funds. The private sector provided product advising, marketing support, and product purchases and/or direct investment.

The Aveda – HBTL partnership in collaboration with the NTFP Network is an example of a public-private alliance success story. Nepal is the signature holiday program for Aveda in its 1800 stores worldwide, featuring moss green lokta bark paper with red paper Rhododendron flowers (the national flower of Nepal).

3.4 Ecosystem Services Actors and Their Perspectives

Major "commercial" participants in ecosystem services value chain include forest managers, ecosystem packagers and service providers (e.g. packagers of carbon deal or tourism operators) and international

buyers and investors. The study conducted extensive interviews to obtain the perspective of these ecosystem services actors and their responses are grouped by the three primary categories shown in Figure 3.3. Two specific products within ecosystem services are highlighted – carbon and ecotourism, but it is important to note that these can, and should, be combined with other forest products and ecosystem services (water, biodiversity, soil, wildlife, etc.). Forest carbon and ecotourism are discussed from the perspectives of domestic actors and the international buyers and investors.

3.4.1 Forest carbon actors and their perspectives

Although not well developed in Nepal, major functions in the forest carbon value chain involve forest management, forest carbon packaging, product verification/ registration, product distribution and consumption in terms of carbon credits. Major "commercial" participants include forest producers, forest carbon verifiers, distributors and carbon credit buyers. Major participants and their functions and the technologies/skills they use in the forest carbon value chain are presented in Table 3.5.

Figure 3.3: Focus on Major Forest Ecosystem Services Actors' Perspectives

Table 3.5:Functions, Participants and Technologies Involved in Forest Carbon Value Chain

Functions	Participants							Technologies/Skills
	REDD Cell / MFSC	Associations and networks	Research institutions	District Forest Offices	Forest producer groups (CFUGs, LHFUGs, CFMGs)	Forest carbon verifiers*	Forest carbon distributors*	
Product distribution							■	Product consolidation, Negotiation and business skills
Product verification/ registration						■		MRV, Carbon registry
Production				■	■			Resource management
Research	■		■					Research skills
Policy	■	■	■					Policy advocacy, formulation and implementation

These participants are not developed in current carbon value chain in Nepal

Forest managers' perspectives

Different forest management regimes sequester carbon and could be termed as managers (producers or project developers) for entering the carbon market. The main regimes include the government managed forests, various types of community managed forests,and private forests. There are some pilot initiatives on REDD+ activities in some community forests and leasehold forests by some development organizations.

Opportunities and constraints: As there is growing awareness among the producers on the importance of forest carbon, they have considered it as an additional income stream from forest management. Improved forest management, governance and benefit sharing are other opportunities the producers at community level have realized out of REDD+ as their forest management has to comply with international standards, such as reducing emissions from deforestation and forest degradation strategic environmental and social assessment (REDD) SESA to secure carbon credit buyers. The producers are also aware of the growing carbon market. With respect to reforestation, afforestation and reduced deforestation, emission reductions through carbon sequestration in (forest) ecosystems can at least be competitive in the voluntary market. However, the producers have realized a number of constraints in getting benefits from forest carbon training. Major constraints include:

Unclear tenure rights: The most fundamental legal issue with which project developers have to face is who owns the forest carbon in forest management regimes. Property right is well defined for the private forestry, however it is unclear for ecosystem services derived from the community forests.

Lack of awareness on carbon as an ecosystem service and its markets: Significant portion of the producers at community level (CFUGs) and investors at corporate level are unaware on carbon as the ecosystem services and the benefits provided by them. Consultations with the investors, who are well aware of the forest carbon issues and opportunities, reflect that the investors are not motivated to invest in forest carbon unless there is a compliance market.

Limited capacity of producers in quantifying and increasing forest carbon: Producers at community level have limited or no technical capacity to measure and quantify forest carbon. Similarly, challenges perceived by governmental sector are basically related to their capacity to control illegal harvesting and knowledge and skill for quantifying forest carbon.

Highly disintegrated forests and different management regimes: The forest area in Nepal is highly disintegrated and often characterized by different management regimes within a landscape. Because of this it is unclear on developing the institutional framework for REDD+ and other carbon projects in Nepal at landscape level. This has also caused difficulty and costly effort to set up a monitoring system in the emerging market, at least until the forest markets reach more mature status.

Forest carbon packagers, product verifiers, distributors and buyers' perspectives

As there is no clarity on the market mechanism yet, the role of the government and community is not clearly defined. Actors for the registration and monitoring, reporting and verification (MRV) of the carbon projects are missing in the chain. Banks and financial institutions have not developed products for forest carbon

projects. Idea of wholesalers, brokers, and retailers for product distribution is itself a new concept in Nepal. Because of the infant nature of the value chain, the product consumption is not well developed as well. The actual transaction is limited to a couple of voluntary transactions by some private companies and donor-funded projects.

Opportunities and Constraints: Investing in ecosystem services and emitting less carbon in their supply chain, companies may have good public relation opportunity and provide indirect business benefits. Similarly, investing in ecosystem services may improve relationships with regulators and communities. Furthermore, as carbon market is an emerging field, the investors will have better recognition as the pioneer institution in the country. The forest carbon buyers/companies, particularly at international markets are interested on forest carbon of Nepal, as they want a story in addition to carbon to achieve CSR goals. Details of the opportunities perceived by the international buyers are presented later in international buyers and investors' perspective. Amongst these opportunities, there are constraints for the buyers to access forest carbon in Nepal. Major constraints include:

Lack of aggregator or common regulator: In some cases when a potential private buyer is interested in purchasing forest carbon in volume, it is necessary to organize many forests. There is, however, lack of institution to serve as an aggregator or a common regulator, to ensure that conditions are met to implement a deal. While pilot initiative in Nepal shows that community forests could be aggregated, they lack capacity in this aspect and one need the regulator.

Lack of awareness on carbon as an ecosystem service and its markets: Some investors at corporate level are unaware on carbon as an ecosystem service and the benefits provided by them, which has led the decrease of motivation among them to invest in forestry projects.

3.4.2 Forest-based ecotourism actors and their perspectives

Major actors of forest-based ecotourism are forest managers, tourism service and product providers and visitors. Major participants and their functions and the technologies/skills they use in forest-based ecotourism in Nepal are presented in Table 3.6.

Forest managers' perspectives

Protected areas (national parks, wildlife reserves, hunting reserves, conservation areas and buffer zones), community forests and botanical gardens are the major resource base and are managed by the government mainly Department of National Parks and Wildlife Conservation (DNPWC) and Department of Plant Resources (DPR), community forest user groups and some private sectors.

Opportunities and constraints: As there is growing trend of picnic and hiking activities, community-based forest management units, particularly close to urban areas have considered forest based ecotourism as one of the additional income generation sources. Increased income form increasing number of international tourist in protected areas provides opportunity for the protected area management to increase the participation of local communities in conservation by sharing revenue with them.

Major challenges perceived by forest producer groups are lack of infrastructure, such as good roads, foot trails and

Table 3.6: Functions, Participants and Technologies Involved in Ecotourism Value Chain

Functions	Participants									Technologies/Skills
	NTB / MoCTCA	Associations and networks	Research institutions	DNPWC / DPR	Forest producer groups (CFUG)	Tour operator and Travel agents	Air and land transport operators	Eco-lodges, resorts, hotels, homestays	Local guides	
Excursion						■		■	■	Excursion management, local knowledge
Accommodation and catering								■		Hotel management, hospitality
Transportation							■			Vehicles, safety, hospitality, local knowledge
Service and product development						■		■		Business skills, market skills
Production				■	■					Resource management
Research	■		■							Research skills
Policy	■	■								Policy advocacy, formulation and implementation

accommodation facility: Likewise, forest fire, poaching and unsustainable harvesting of forest products are the challenges perceived by protected area management for sustainable ecotourism.

Ecotourism service providers' perspectives

Businesses, including various combinations of local businesses, in-bound operators, outbound operators, hotel and other accommodation providers, restaurants and other food providers fall under this category.

Opportunities and constraints: They see the growth prospect, as there is an increasing interest from the international tourists visiting Nepal on natural areas, wildlife and local culture. There is a recent trend of visiting natural and protected areas by domestic tourists. Nepal is featured in international media as one of the best places to visit in the lifetime. Several

new sites are identified, including those managed by CFUGs, that are suitable for ecotourism. Many of the challenges faced by the investors in the ecotourism sector are similar to those faced by other investors in Nepal, including difficulty in accessing finance, lack of business expertise, and high upfront transaction costs.

Uncertain and unclear property rights: Eco-lodges and related services often operate in ecologically sensitive or natural resource rich areas, but in these areas owner and user rights are frequently contested. For example, in 2012, the government decided not to continue the operation of seven hotels leased inside the Chitwan National Park, on the recommendation of the parliamentary Natural Resources Committee, in order to protect wildlife and trees.

Lack of appropriate financing options: A major problem with the small-scale entrepreneurs in Nepal is that it is small, disorganized and limited in its capacity to raise resources and invest in the form of equity. Limited access to loans from financial institutions means high upfront costs, which they have to struggle to meet.

Political instability: Another factor that limits the tourist arrivals and returns on investment is the frequent internal disturbance, such as strikes. For example, eight 4-star hotels were shut down during the decade long conflict. Because of the political instability, some countries with significant number of tourist arrival, such as the USA, direct unfavourable travel advisories to their citizens.

High cost of air transportation for international tourists: As Nepal does not have direct air route from some major tourist exporting countries, the airfare of travelling to the country is high making Nepal's ecotourism packages more expensive.

3.4.3 International buyers and investors' perspectives on ecosystem services

Interviews conducted with the ecosystem services (PES) developers, brokers and buyers each with detailed experience in the carbon, biodiversity and other PES markets shows that Nepal has a great story to tell on community forestry, poverty alleviation, reforestation, food security, biodiversity, women in forestry, etc. that make Nepal's potential forest carbon a strong competitor in the markets. Three firms during the interviews, on the spot offered to help sell Nepal carbon credits.

Yet there still remains a lot of misconceptions about PES and carbon and REDD plus in particular. Nepal has actually had substantial support from the Norwegians, other Europeans, and World Bank for REDD readiness and there are several deals involving community forests that could be brought to the market soon, but it is unclear what the Nepal government want to do regarding carbon trading. This is not unusual and dozens of countries around the world continue to study and debate the best way to move forward, not approving even pilot deals. It is strongly suggested that Nepal allow some pilot deals to proceed while it weighs its final policy. More and more forestry and cook stove carbon deals enter the market each month and Nepal could be losing out on an important source of funds for much needed reforestation and forest management and rural development. Nepal has opportunities in the PES markets, but government policy that is not yet ready to allow even pilot projects to proceed, means Nepal is losing out on potential investment funds for sustainable forest enterprises.

Nepal has done extensive work to allow for sufficient safeguards so communities are protected. There has been significant work

done on community organizing, free and prior informed consent, transparent benefits sharing, robust carbon accounting and monitoring methods. Yet, deals are not being allowed to go to the market. The optimistic rationale for the delay is that policy makers want to maximize poverty alleviation and conservation outcomes in these PES deals. While this is a desirable goal, PES deals are not designed to solve all the social, economic, and environmental ills of Nepal. Too often promising deals are not allowed to proceed, since policy makers and some NGOs would like a PES deal to tackle too many issues. PES deals should meet guidelines instituted by some of the better respected PES mechanisms [e.g. Plan Vivo, Gold Standard, Climate Community and Biodiversity Alliance (CCBA), Voluntary Carbon Standard (VCS)], but not be loaded up with items not required.

PES deals and biological carbon deals (includes forestry and agriculture-based carbon deals) continue to have donor and private sector funds interested in investing. The most recent fund announced late in 2013 is the BioCarbon Fund (see Box 3.6).

Conserving and expanding Nepal's forests also protects other essential ecosystem services including biodiversity, water, flood and landslide mitigation, soil health, wildlife and tourism. Wildlife Friendly and Ecotourism are growing areas. Opportunities for joint venture investments from Asia and European private sector partners for expanded tourism is a promising area for Nepal.

Box 3.6: BioCarbon Fund Launches 280 million Initiative for Sustainable Forest Landscapes

The fate of the climate, forests, and agriculture are bound together. If agriculture and land-use change continue to produce up to 30% of global greenhouse gases, it will mean further disaster and disruption from climate change," said Rachel Kyte, the World Bank's Vice President of Sustainable Development. "That's why the new BioCarbon Fund Initiative for Sustainable Forest Landscapes is so important. Its grants and results-based financing aim to reduce greenhouse gas emissions from the land sector, through REDD+, climate-smart agriculture practices and land-use planning."

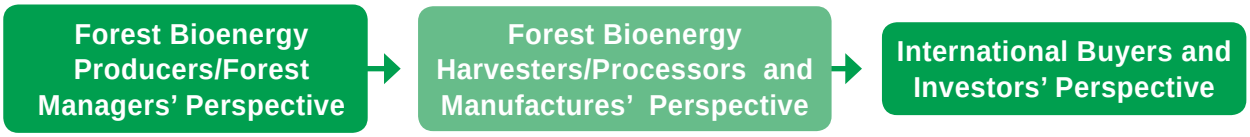
In a new public-private partnership, Unilever is looking to how it can support the fund. We need to find new forms of public-private partnership to address global challenges such as deforestation," said Paul Polman, Unilever's Chief Executive Officer. "Multilaterals like the World Bank play a critical role in catalyzing these new business models and Unilever is interested to learn how we can participate and partner with the BioCarbon Fund."

From Wildlife Works November Newsletter

3.5 Forest Bioenergy Actors and Their Perspectives

Major "commercial" participants in forest bioenergy value chain include producers/forest managers, harvesters, processors and manufacturers, and buyers and investors. Two major areas of forest bioenergy are covered – fuel wood and charcoal (especially briquettes). It should be noted that international buyers strongly recommended that Nepal not try to export forest bioenergy products, but investor opportunities from donor and semi-private donor supported programs

Figure 3.4: Focus on Major Forest Bioenergy Actors' Perspectives



were recommended. The actors' perspectives are grouped by the three primary categories shown in Figure 3.4.

Fuel wood is obtained directly from forests or other woodlands (woody materials including shrubs), and as a residue of primary and secondary wood based industries. Major participants of fuel wood value chain include forest producers, contractors, depot and sellers, which are same from the timber value chain presented in Table 3.3. Moreover, saw millers, veneer producers and furniture-makers function as the wood by-product producer and supplier for secondary fuel wood.

For bio-briquette value chain, major functions, participants and technologies involved are presented in Table 3.7. The bio-briquette value chain is in its initial stage. The major actors involved in bio-briquette production and trade

Table 3.7: Functions, Participants and Technologies Involved in Bio-briquette Value Chain

Functions	Participants										Technologies/Skills
	DOF/MFSC; AEPC	Associations and Networks	Research institutions	Forest producer groups (CFUG)	Private forest and tree growers	Wood based industries	Char producer	Bio-briquette manufacturer	Consolidation enterprises	Wholesalers and retailers	
Trade									■	■	
Consolidation, packaging									■		Consolidation and packaging skills
Bio-briquette production								■			Grinder, mixer, dye, bio-briquette making skills
Char production							■				Harvesting tools, pit/charring drum, char production skills
Inputs supply				■	■	■					Resource management
Research			■								Research skills, testing equipment
Policy	■	■	■								Policy advocacy, formulation & implementation

are micro-level production units (char producers), bio-briquette production enterprises, consolidation enterprises, and dealers and retailers. Perspectives of the actors of fuel wood and bio-briquette are presented below with short description of the actors in these value chains.

3.5.1 Forest producers/managers' perspectives

Government and semi government agencies

These actors are similar to those as described in timber and NTFP sections. Their perspectives in relation to fuel wood is presented below.

Opportunities and constraints: There is a good opportunity to increase the supply of forest-based biomass through proper management of the government forest to address energy crisis to certain extent. The initiation of large-scale plantation programme adopted by government has provided positive indication of increasing supply of fuel wood. Besides, the clearance of invasive weeds and unwanted shrubs serve dual purpose of proper maintenance of forest and as raw material for making charcoal and briquette. The major constraints as perceived by government and semi government agencies are:

High incidence of forest fires: The high incidence of forest fires, especially in government-managed forest, has caused significant loss of forest biomass. The main causes of forest fires include the lack of proper management of forest litter, lack of timely clearance of fire lines, and intentional fire by local people for clearing the forest with the expectations of getting good grass sprouting for grazing, and occasionally for NTFP harvesting.

Uncontrolled and free grazing: Uncontrolled and free grazing has led to resource degradation and low regenerating capacity of forests in some areas.

Forest Producer Groups

Majority of the forest user groups produce fuel wood mainly for their own consumption, and only some CFUGs produce this for sale.

Opportunities and constraints: There has been increase in biomass stocks due to the successful implementation of community forestry. The expansion of road and the establishment of fuel wood based industries, such as small brick kilns in rural areas, and growing demand from tourism industry has increased the sale of forest-based biomass. There is a scope of fast growing multipurpose energy plantations, as done in Mustang, to meet the demand of fuel wood and fodder. The invasive weeds, biomass from thinning and pruning activities also offer an interesting potential win-win situation in using the material for bioenergy in combination with forest restoration interventions. The constraints as expressed by the forest producer groups are:

Lack of commercial orientation and high transaction costs: Many of the groups involved in fuel wood production are subsistence oriented. It is a by-product of timber and forest management operations, especially thinning and pruning. The cost of fuel wood is comparatively high due to the lack of efficient harvesting knowledge and technology, and expenses incurred in getting approval, harvesting and transportation.

Lack of knowledge and technology for conversion of forest biomass into value added products: Despite of surplus fuel wood in some CFs, there is no any commercial utilization plan primarily due to the lack of knowledge and technology for conversion of forest residue and obnoxious weeds into energy products

Private forest owners and tree growers

Many of the rural households in Nepal usually practice agro-forestry or grow few trees in private lands to produce fuel wood for their consumption. There are very few forest owners or tree growers who are involved in commercial production and sale of fuel wood.

Opportunities and constraints: There have been increased stocks of biomass in many of the farmlands with change in lifestyle, especially the use LPG for cooking. For example, about 20% of the fuel wood supply in western part of the country comes from private forest. The increased concept of agro-forestry practice has also provided multiple products including fuel wood. The constraints as noted by the private forest owners are:

Lack of planning, implementation and monitoring for the energy situation and promotion: There is very weak coordination and cooperation among energy related organizations often limiting the flow of information, technologies and the incentives provided to local political units and communities. In spite of the provision of District Environment and Energy Unit (DEEU) in every District Development Committee (DDC) with a mandate of promoting energy at DDC level, the service is yet to be reached in many of the remote areas.

Inadequate supply of services on fuel-efficient technologies: In spite of the growing level of awareness on advantages of biogas, mud and metallic Improved Cooking Stove (ICS), and bio-briquette, many of the rural households are unable to benefit due the unavailability of the service providers for the installation of fuel-efficient technologies.

3.5.2 Harvesters, processors, manufacturers and traders' perspectives

Fuel wood contractors, local traders and depots

The contractors involved in timber trade, usually participate in bulk purchase of fuel wood, especially from government and community-managed forests. The local traders usually contract the standing private forests in the villages and harvest fuel wood. Both the actors are involved in fuel wood processing (cutting and chopping) and transportation upto sales depots or customers, mainly brick kilns. Fuel wood depots, mostly located in market centres stock the fuel wood and sell to the end users. The Timber Corporation of Nepal (TCN) also sells fuel wood from its depots.

Opportunities and constraints: In the present context of insufficient and uncertain supply of fossil fuels, fuel wood presents a good opportunity. Besides, the growing tourism industry in rural areas has also increased the demand of fuel wood. The constraints faced by them are:

Unorganized trade: Except the government auctions, the trade of fuel wood is largely informal and at times illegal. The industrial use of fuel wood is very little and there is almost no demand from rural users, as they produce by themselves.

Lack of reliable supply: Due to frequent change in policy decisions, such as bans, and cumbersome process of purchasing fuel wood from community and government managed forests, the traders face the problem of finding a reliable and consistent supply of fuel wood.

Wood by-product producers

Saw millers, veneer producers and furniture makers produce wood by-products, which is used as fuel wood.

Opportunities and constraints: Significant amount of by-products is produced from wood product producers and manufacturers that can be utilized for the production of different energy products, such as pellets and briquettes. The main constraint for the entrepreneurs is the awareness and access to efficient and cost effective technology for the conversion of wood by-products into energy products. In the absence of knowledge, the veneer industries often need extra costs for the disposal of their by-products instead of converting these to energy products.

Char producers

The char producers, usually the members of a CFUG, residing near the bio-briquette production enterprises, produce char using the traditional pit method of production.

Opportunities and constraints: As the char producers are member of community forests, they have easy access to forest biomass. Furthermore, the traditional knowledge of harvesting biomass, digging pits and making char are their strengths. The conversion into char in the collection spot reduces the burden of carrying heavy loads providing instant cash upon selling to briquette production enterprises.

Amongst these opportunities, the producers are facing the challenges due to the lack of proper tools and technologies for char production, uncertainty on access to biomass collection, and lack of proper storage facility for char. The collection of biomass and char production is done with the use of traditional tools and technologies available locally. These are less efficient and sometimes inconsistent in producing quality char.

Bio-briquette manufacturers

Most of the briquette production enterprises are community-based and established with the support from various development organizations. They produce briquettes of various sizes by mixing charcoal with clay and putting manual pressure, and dry in the sun.

Opportunities and constraints: The community-based briquette enterprises have advantage of easy access to raw materials and char producers. Similarly, the involvement of local communities in these enterprises makes them eligible to get support from development organisation and the government agencies. The availability of in-country expertise in machine fabrications at small scale, which are being improved periodically, has helped in upgrading product quality and efficiency. As the commercialisation of briquette has been initiated, it has presented the scope to source advance machineries from neighbouring countries. However, there are some constraints for the efficient operation of these enterprises, which are given below.

Inconsistency in the product quality: Quality of briquette depends upon the quality of char and the process of grinding, mixing and compaction. Since these are usually done manually or by use of simple machine, quality of the produced briquette is not consistent. Besides, lack of proper production and storage facilities have caused difficulty in quality maintenance of the product.

Insufficient management capacity: The complexity of group ownership and leadership of the community-based enterprises have affected the regular operation and confidentiality in the business. There is no established practice of standard operating procedure in these enterprises. Usually social leaders are trusted to look after these enterprises and in most of the cases, they lack business and enterprise management skills. Similarly, there is a lack of local technical expertise, even for the maintenance of simple machines/technology, which has reduced the efficiency of these enterprises.

Difficulty in accessing finance: Because of community group as the owner, it has been difficult to get collateral for large sized loan. It is also hard to bring enough investment from individual members in a group entity.

Briquette consolidation and marketing enterprises

The consolidation and marketing enterprises collect the briquette produced from various production enterprises, keep stock and conduct sales and marketing. The consolidation enterprises also develop the marketing network consisting of dealers, supermarkets, department stores, grocery shops and other retailers to sell the briquette to consumers.

Opportunities and constraints: The consolidation enterprises foresee a great opportunity of expanding the scale of business as they see the increasing customer base. Their expertise in business management and marketing has created a scope for further commercialisation with improved brand development, effective marketing and sales. At supply side, they have a good relationship with community based enterprises due to transparency at practical level at whole value chain. Increasing interest of donors and financial institutions on renewable energy can also be taken as an opportunity in this sector. However, there are some constraints as follows:

High cost of operation: Due to the seasonal nature of business a major part of investment is required for the maintenance of stock and working capital as the sales are mostly in credit. The high legal requirement for business operation (incl. transit permit) has also increased the cost of operation.

Low reliability of getting large-scale supply: Due to labour intensive production, there is low reliability of getting large-scale supply of briquettes from the production enterprises.

Lack of focus of rural energy policy for urban market: Rural energy policy 2006 is rural focused. This has limited the urban companies to be benefitted from the policy in spite of the great potential market of renewable energy in urban areas.

3.5.3 International buyers and investors' perspectives

Forest bioenergy should be part of Nepal's energy strategy, but not at the expense of food production. Nepal has to consider land use in developing its

bioenergy. Bioenergy is an important component of a renewable energy mix, helping to ensure a stable energy supply. But forest biomass and productive land are limited resources, and part of Nepal's 'natural capital'. So it is essential that Nepal considers how to use existing resources efficiently before imposing additional demands on land for energy production.

Generally, three generations of biofuels come under discussion. First generation transport biofuels, for example biodiesel based on oil from rapeseed or ethanol from wheat, are shown to be far less efficient than second generation solid biofuel which combine heat and power applications and are made from waste and by-products (leaf litter, sawdust, rice hull pellets and briquettes for example). Third generation include fuels from seaweed and other non-traditional materials and are still largely experimental.

All those interviewed only recommended second-generation solid biofuel development for Nepal, indicating almost all investors had lost interest in liquid biofuels especially Jatropha (*Jatropha curcas*), which at one point in Nepal was seen as very promising. Those interviewed did feel that solid biofuels for both commercial and household use were promising, but did not recommend Nepal to try to export, describing the market as "cut throat" and high volume, low priced. The industry interviews shared the following insights:

- Would not advise anyone to invest in this sector, as traditional sources of fuel are still too cheap.
- Industry is not standing on own two feet yet.
- Overall, biofuels are extremely fragmented but could be opportunities for local sales of a waste/residue from an industry plant.
- Biofuels have been a real struggle for those interviewed with few private sector investments being made in biofuels in past year.
- Several investors interviewed had experiences trying to trade liquid biofuels and "it was a disaster" and they lost a lot of money. Experiences like this had meant that were a year ago there might be 20 or more investments in biofuels being made at investor circle conferences/meetings, this year there were two (both for third generation biofuels).
- Might be opportunity to build pockets of small production that services a small area surrounding the production facility, this is something Nepal should consider.
- One buyer indicated he gets 3-5 phone calls per week from European countries (namely Italy, UK and Germany) asking to buy wood pellets but he is unable to sell at a cost that they are willing to pay.
- Their interest stems from a desire to be 'green' but the firm interviewed believes you lose the green aspect when you have to transport the fuel long distances.

Funding Opportunities

While the market for clean energy in the private sector might not be the most robust, as is often the case with new technologies, donor agencies are on the vanguard of technology development. Listed below are several donor agencies that either currently have open calls for proposals or pride themselves on a strong focus in the clean energy sector in Asia.

Asian Development Bank (ADB): ADB has a Clean Energy Financing Partnership Facility (CEFPF). Through the CEFPF, the ADB aims to improve energy security in developing member countries and decrease the rate of

climate change. It does this by financing the deployment of new, more efficient and less polluting supply and end-use technologies, through either grant or non-grant resources. Supporting the development and scaling of various sorts of distributed energy production opportunities are key programmatic components of the CEFPF.

Climate Technology Initiative – Private Financing Advisory Network (CTI-PFAN): The CTI-PFAN identifies promising clean energy projects at an early stage and provides mentoring for development of a business plan, investment pitch, and growth strategy, significantly enhancing the possibility of financial closure. Beyond providing funding and technical support, CTI-PFAN organises summits and seminars around the world dedicated to clean energy. They currently have one open call for proposals and while it does not specifically apply to Nepal, it provides an overview of what types of opportunities they fund:

- Project Development Initiative in India– They are implementing an initiative to present promising clean energy projects from India to interested investors. This initiative actively seeks innovative projects that are financially viable, socially responsible and environmentally beneficial.
- Furthermore, CTI-PFAN is currently funding one project in Nepal. The implementing organizations, HPR Nepal Private Ltd and AASTHA Network Private Ltd, are introducing and scaling up small-scale biomass gasifiers for the drying and processing of high value cash crops.

World Bank: The World Bank provides numerous resources, reports and studies that cover market trends and policy recommendations in the energy markets. A quick review of their website demonstrates that there are eight active projects and two projects in the pipeline within Nepal. While most active projects appear to be large infrastructure initiatives being implemented by the Government of Nepal, there might be opportunities for partnerships with government agencies and/or public-private partnerships.

International Finance Corporation (IFC) - Clean Tech Venture Capital: The Clean Technologies Investment Team is IFC's venture investment arm, focusing on companies with the potential to lead in technology and business model innovation and produce high development impact in emerging markets. They invest directly in emerging markets or in technology transfer that benefits developing nations, offer long-term investment horizons, provide for the ability to leverage the resources of the entire World Bank Group, and are dedicated to maximize the value of client companies through sustained assistance. Several companies in India and China are already a part of the Clean Tech Investment Team's portfolio.

International Energy Agency (IEA): The IEA is an autonomous organization that works to ensure reliable, affordable and clean energy for its 28 member countries and beyond. They focus on promoting energy security, economic development, environmental awareness, and engagement worldwide. While Nepal is not a member country of the IEA, due to IEA's focus on energy security and economic development, contexts similar to Nepal is a key component of IEA's work. IEA doesn't appear to be a grant making entity but they serve as a collection point for energy related data plus they author many unique reports and

policy recommendations. For example, the yearly report, World Energy Outlook is an excellent free resource to provide a landscape-level view of trends in the energy markets and recommendations. Specifically, the World Energy Report from 2011, Energy Access for All-Financing Access for the Poor, and the report Advantage Energy- Emerging Economies, Developing Countries and the Private-Public Sector Interface, are both relevant to the Nepal context.

3.6 International Buyers and Investors' Requirements

This portion of the study focuses on secondary and primary research of international private sector investment and buyers for Nepal's forest products. In particular, this study emphasized four subsectors prioritized in the study: Timber (specialty wood products flooring, furniture veneers, and wood handicrafts); NTFPs (Essential Oils, Medicinal Herbs, Spices, Natural Fibres, Cosmetics and Detergents); Ecosystem Services (especially carbon and ecotourism); and Forest Bioenergy. International private sector investors and buyers are concerned with four major areas, in the order presented, when considering investment in Nepal's Forestry Sector:

1) **Regulatory Compliance:** Will the products from Nepal be sourced legally and adhere to all Nepali and international forestry and trade laws?
2) **Reliability and Ease of Business Relationship:** Will my Nepali business suppliers/investee deliver on time, and operate a professional business that I can rely upon?
3) **Product Supply and Quality Consistency:** Will there be consistent, quality supply of forest products in Nepal?
4) **Price and Value for Money:** Are Nepali forest products with taxes, export tariffs, and transportation costs factored in, competitive with other countries that sell similar products?

Each of these four items is described below in relationship to the most recent international forestry sector developments and international forest industry surveys and trends.

1) Regulatory Compliance

Reputable buyers in the United States, Europe, and other developed nations, where international standard for sustainable forest management are valued, may also require third party certification and/or other documentation that proves forest products have been sourced legally. In the case of the United States, the Lacey Act Amendment (see Box 3.7) requires by law that importer of any timber (wood) or non-timber forest product source only legally harvested forest products.

The US is not alone in this enforcement. Increasingly, governments are strengthening the legal frameworks that regulate the trade of timber and non-timber forest products. In the United States, for example, the Lacey Act Amendment calls for increased transparency and requires importers to declare the species, country of origin, and other related information of these products. US firms have been raided, shut down and hit with heavy fines.

The European Union's (EU's) Action Plan on Forest Law Enforcement, Governance and Trade (FLEGT) encourages businesses to adopt purchasing policies that exclude illegal timber from their supply chains and promotes the implementation of sound public procurement policies by its member states. Thus far, the FLEGT plan has operated through Voluntary Partnership Agreements (VPAs) between individual EU states and selected producing countries.

However, a proposal has been made to the European Commission that would establish regulations to govern the import and trade of wood and wood products within the EU[10].

Within Nepal, the government has lists of specific banned species for export. While exporting from Nepal, the documents namely i) payment of all relevant taxes including local tax, ii) plant quarantine certificate, iii) certificate of origin and iv) certification from management and/or scientific authority (in the case of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and banned) are required.

For processed products and services that include other ingredients or attributes, for example, glue and finishes in wood flooring, carbon credits that also claim biodiversity conservation, an essential oil or detergent that will be used in personal care or cleaning product – additional regulations in the importing country to meet phyto-sanitary, human health, environmental codes, and international treaty obligations may also apply.

The increased attention to regulatory controls is the number one concern mentioned by industry representatives and many interviewees shared horror stories of importing forest products that did not meet regulations with huge costs to industry members. This is a growing trend worldwide with even China and India increasing their regulations and enforcement (two countries that used to be considered lax on both). Countries in Latin America, that just 10 years ago had a reputation for clearing the rain forest, now have become preferred forest products trading partners and gained reputations for sustainable management and legal sourcing of products. Asia and by extension Nepal have to catch up on regulatory reputation. One industry association commented that if Nepal could distinguish itself as a source of products that meet all regulations, it could out-compete other supplies even if their prices were a bit higher. Regulatory compliance has become that important for international buyers and investors.

Box 3.7: The Lacey Act Amendment – Strong Enforcement to Curb Illegal Timber and Plant Trade a Growing Trend in International Markets for Forest Products

The Lacey Act is a United States (U.S.) law that originally related to illegal trade in wildlife. In 2008, amendments to the U.S. Lacey Act were passed. Effective 22 May 2008, the law makes it illegal to import, export, transport, sell, receive, acquire, or purchase in interstate or foreign commerce any plant, with some limited exceptions, taken or traded in violation of the laws of the U.S., a U.S. State, or relevant foreign law.

This law affects manufacturers and exporters who ship a variety of products made from wood to the U.S., including paper, furniture, lumber, flooring, plywood and other products made out of wood as well as non timber forest products – including medicinal plants, lokta bark paper, and other plant and wildlife based products.

2) Reliability and Ease of Business Relationship

Across the interviews for all products, buyers and investors stressed that they are putting more emphasis on working with existing suppliers/partners rather than jumping around to get the best

[10] http://www.rainforest-alliance.org/forestry/verification/timber-regulations (Accessed December 1, 2013)

price. Relationship building therefore has become more important for the forestry sector in the past three to five years. This is a change and an opportunity for Nepal if they prioritize sustainable forestry and good business practices at the firm level, expand certification, and create a policy environment that supports government coordination, transparent business practices incorporating the unique characteristics of the forestry sector.

To build a reputation of reliability and ease of business, Nepal needs to lead with confidence, rather than present excuses about all that is wrong in its forestry sector. Globally, dozens of countries have long lists of issues in their forestry sector and far worse reputations to overcome than Nepal, but have turned it around to be forestry export and investor leaders. The most recent examples are Brazil and Indonesia. Specific things Nepal has opportunities to build its reputation include the success stories in successful community forestry enterprises. Nepal could collect and consolidate the good buyer and investor relationships that have succeeded and start publishing articles and features to get the word out. Nepal has also opportunities of expanding certification for many products in order to meet the quality requirement of buyers and investors (See Box 3.8). For the forestry sector, Nepal does have some certified companies that have organic, FSC, and International Organisation for Standardisation (ISO) with others under development including CCBA and Plan Vivo, yet they are not showcased in a unified manner.

3) Product Supply and Quality Consistency

International investors are aware on Nepal's domestic demand for timber exceeding its current supply. The situation for NTFPs is similar, with some species put on CITES II list (for example, jatamansi) due to threatened supply levels. When one looks at Nepal's domestic wood and NTFP processing capacity, there is excess capacity yet at the same time inefficient processing and quality control, which gives potential investors pause. Under-used capacity can be for several reasons:

- **Lack of raw materials to process:** This is a constraint for Nepal and means that foreign investors will be hesitant to come in since there is already excess processing capacity. This also means there is little capital or incentive to upgrade current facilities that would provide for greater efficiencies and higher quality. Working on old equipment and inefficient processing facilities

also means Nepali labourers are not trained on the most current technologies. All contribute to Nepal not keeping pace with international standards and market demand for quality products at competitive prices.

- **Lack of markets, so do not produce at capacity:** There does seem to be good demand for wood and NTFP products both in Nepal, cross border in India, China and within Asia. Under-used capacity does not appear to be market driven for Nepal (See Box 3.8).
- **Other infrastructure constraints (power outages, transport difficulties, wastewater environmental compliance etc.):** This is likely a consideration in Nepal and impacts domestic industries and international investors. Frequent power outages mean equipment has to run on more costly generator use, pulp wood factories need support in processing waste water to meet environmental compliance, and poor road conditions or in some cases, inaccessible roads in certain seasons, means raw materials transport to processing facilities is constrained.

International buyers and investors consider all these factors. In the case of timber, even though the forests have larger supply potential, timber demand far exceeds the domestic supply. Under business as usual scenario, it is difficult to ensure reliable and consistent supply of most of the timber species. As presented in Timber supply potential section, Nepal has good potential for increasing timber supply with improved productivity, production and management of all forest area.

Reliable forecasting of supplies will be essential for Nepal to attract international

Box 3.8: Exports of Nepali Medicinal Herbs to China a Growth Area but Supplies an Area of Caution

"KATHMANDU, Jan. 21 (Xinhua) -- Nepal's exports to neighbouring China increased by 254% in the first five months of the current fiscal year 2012/13, officials said Monday. According to Trade and Export Promotion Centre, rise in the demand for carpets and medicinal herbs were the main reasons for the exports' upward movement. There was a surge of 479% in carpets' export, while it was an increase of 478% in medicinal herbs exports.

In the review period, Nepal's exports to China reached NRs 1.21 billion (around 15 million U.S. dollars from NRs 342.4 million (around 4 million U.S. dollars) -- a growth of 254%. "Demands for Nepali goods are increasing in China's Tibet as well as coastal region," Suyash Khanal, Director of the Centre, was quoted as saying by the Republica. "China's liberal trade policy and positive impact of trade fairs between the two countries helped Nepal boost up its exports," said Ngaindra Upadhyay, Joint Secretary at the Ministry of Commerce. "We can increase exports by even higher rates, provided that we succeed enhancing our supply capacity in line with the demands," Khanal added."

From People's Daily Online January 21, 2013

China is very interested in Nepali NTFPs especially medicinal herbs and there are good buyer and joint venture investor opportunities (one medicinal plant China-Nepal joint venture has already started), but supplies needed to be mapped and business partners chosen that respect long-term sustainable forest management and inclusion of community forestry and quality local employment.

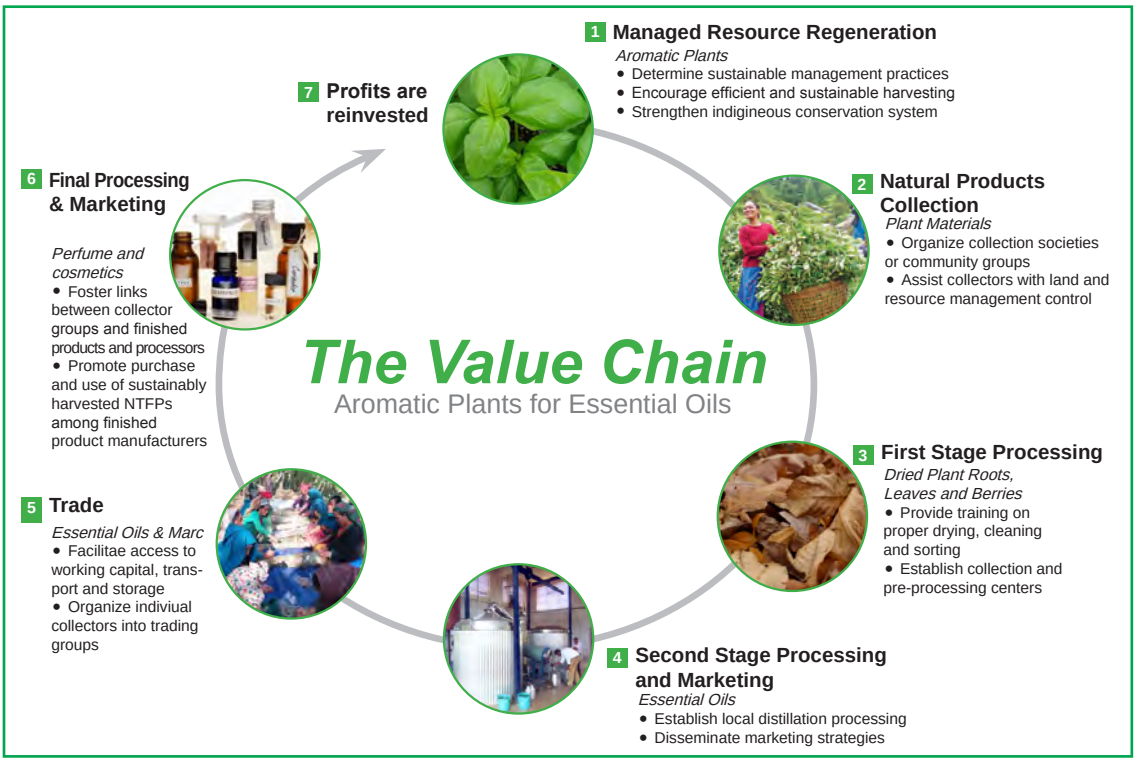
investment and buyers. For example, interviews with essential oil buyers expressed concerns over long-term product supplies and ability to scale up if a product that incorporated a specific essential oil took off in sales. The industry interviews also consistently revealed stories of how product samples and shipments did not match - the sample being of high quality and the shipment of low or inconsistent quality. Supply forecasting and consistent quality supply can allow Nepal to develop strong trade partners for its forest products. One trend noted during the study was that buyers invest in bringing up the skills of their existing trusted suppliers. It used to be buyers frequently switched suppliers each year in the quest for lowest prices around the world. The increased emphasis on regulatory enforcement and higher quality products is changing this. Buyers and investors are looking for longer-term supplier relationships and a supplier partner that can grow with their business.

4) Price and Value for Money

For most Nepali forest products if one sums up all the official taxes (export duties averaged 200% on wood products), tariffs, royalties (varied widely by NTFP), along with the transport costs, International Labour Organisation (ILO) labour standards and rates, and factors in the product recovery rates given the level of technology used for forest products processing, Nepal is not competitive with other countries exporting similar products. Firms have competed in the past by illegally exporting Nepali forest products, avoiding full payment of taxes and tariffs, and paying low prices to community harvesters. As discussed in the regulation section, it will be harder for Nepal to continue this practice in the future.

Taxes and tariffs, and royalties have an income generation goal for Nepal, but without enforcement, effective rates of collection are not realized; legitimate

Figure 3.5: A Sustainable and Profitable Forest Value Chain for Nepal



Source: ANSAB and EWW 2000

businesses following the laws are put at a disadvantage or simply do not invest, which leaves the illegal actors dominating the forest trade. High tariffs on raw materials also have the goal of encouraging domestic processing, which can be a good thing if coupled with incentive programs to attract and promote the processing expertise, technology, and capital needed, but again Nepal has not realized this goal either. Establishing competitive tariff rates, effective collection, and attraction of processing investments may seem daunting on a national level for all forest products but is manageable if Nepal does pilots on select products using a cluster system. A cluster system groups select enterprise and community forests willing to advance a value chain model for forest products that reinvests back in managed regeneration for Nepal. See Figure 3.5.

When it comes to price and value for money, adjustment of the taxes and tariffs can help, but alone will not make Nepal competitive in many forest products markets. For example given Nepal is a land-locked country with inefficient transports systems, in the short term the transportation cost is difficult to change. In the past, some buyers and investors argued that a lower wage rate could make up for this, but Nepal should not continue to rely on this and instead be looking for ways to grow the daily wage rate while expanding jobs.

For this reason, all those interviewed recommended that Nepal focus on higher value niche and specialty markets for their forest products and ones that are compatible with wild harvested products in the short term since plantations are limited in Nepal. Wild harvested versus cultivated forest products categories is an important distinction for Nepal's forest products. Most gross level export and trade figures combine these categories since the international harmonized system codes for trade do not distinguish by wild and cultivated. So for example, international trade trends for wood flooring will give a misleading picture for Nepal, since most of the flooring is from plantations (not wild harvest) and industry cost structures and pricing are therefore driven by the plantation cost model. The same is true for wood picture frames, handicrafts, and essential oils.

To gain specific pricing and cost structures for these specialty products, trade shows and outreach to specialty industry groups is the best mechanism. Personal interviews conducted at both revealed a great willingness to share pricing structures for individual products. What was clear is that the prices range greatly among specialty products; with average multipliers of four to five times over the buying price in source country. It is important for Nepali enterprises to do their costing homework before they go to trade shows and meet with industry representatives.

4 ANALYSIS OF INVESTMENT CLIMATE

Private investors defined in this study are entrepreneurs namely producers (such as forest producer groups and private growers), processors, manufacturers, and traders in four subsectors - timber, NTFPs, ecosystem services, forest bioenergy, and the banks and financial institutions availing financial products to these industries. By nature, private investors in general invest with profit motive as equity investment or loan, which are also called asset investments as opposed to enabling investment.

The successful strategies for attracting and retaining responsible private investors address the prime needs and concerns of investors in ensuring security of the investment, long-term profitability of the business, and untainted image of the industry and social prestige. A rational investor analyses whether the risks are measurable, risk mitigation measures are available, and the net rate of return is satisfactory before making an investment decision. Return is weighed against risks, and a high return is expected when the risks are high. The analysis of investment climate provides a picture of the level of risks involved in investment, the confidence of return, and the transaction costs that determine the profitability of investment.

In many situations, enabling investments are necessary to create environment where the asset investments are profitable. These are usually made by governments, donors, NGOs, and philanthropists. In Nepal, the government, international agencies, and other donor agencies have been investing in forestry sector in the formulation or reform of policy and legislative frameworks, infrastructure development, organisational development, institutional reforms, grants and seed funding for community organisations, and developing and demonstrating business models. During the past decade, international donors have invested US $119.92 million through various forestry projects, while government of Nepal invested NRs 43 billion (US $411.38 million) during the same period (MoF 2013).

These enabling investments have several positive outcomes including the development and reform of various policies, strategies, programs and production of experts in the forestry sector. However, as the World Bank's doing business report (2013) shows, Nepal is ranked as 105th best country for investment out of 189 economies compared. This indicates that Nepal needs to make further investment to create enabling environment for both domestic and foreign investors.

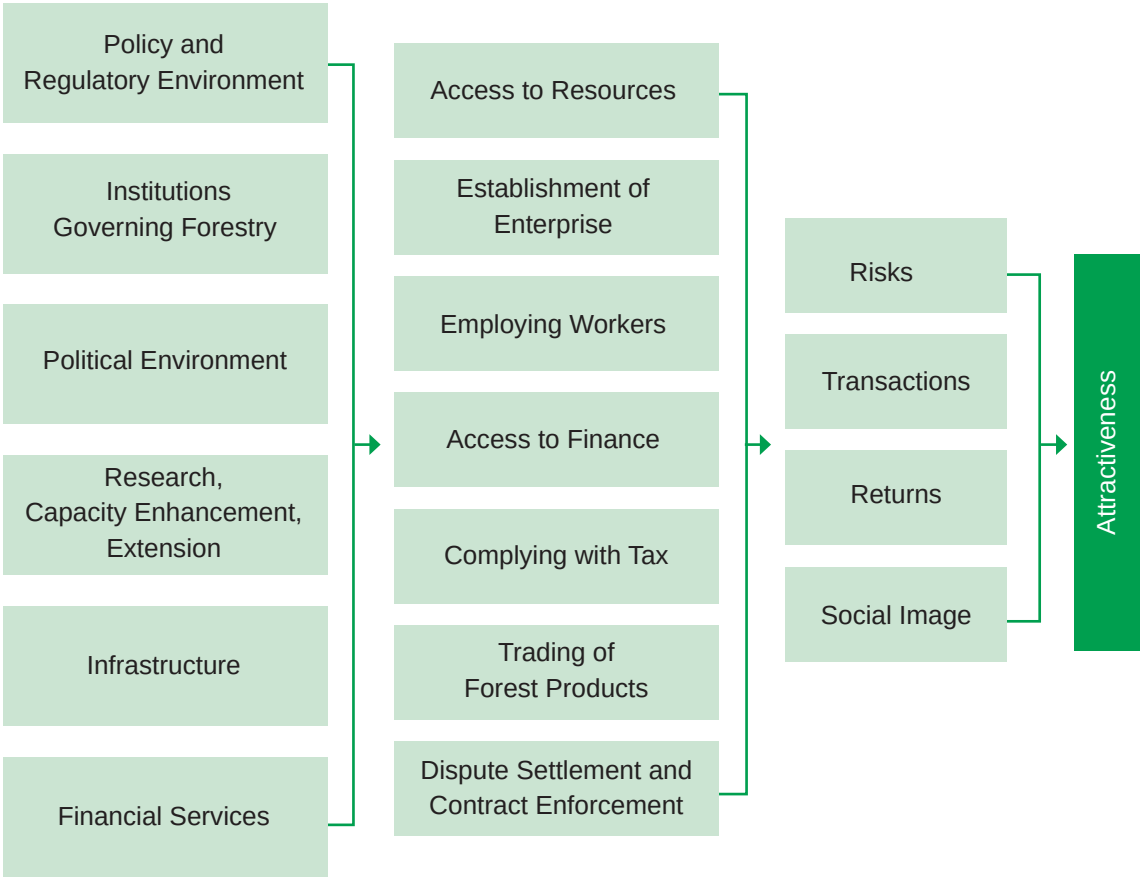
The factors influencing investment climate are given in Figure 4.1. The investment climate of a country determines the profitability and social image of an industry (and thereby attractiveness) by influencing the factors that determine risks, returns and transaction costs at various aspects of the business establishment and operation, such as access to resources, establishment of enterprise, employing

workers, access to finance, complying with taxes, trading of forests products, and settling disputes and enforcing contracts. The factors this study has identified include a) policy and regulatory environment governing the forest sector, b) political environment, c) institutional framework governing the forest sector, d) policy and institutional environment governing finance, e) infrastructure, and f) research, capacity building and extension services. More specifically, the analysis highlights the implications of present state of these factors in terms of opportunities and constraints due to existing provisions, actual practices, gaps, contradictions, overlaps, inappropriateness, and inefficiencies.

4.1 Policy and Regulatory Environment Governing the Forest Sector

Clear policies and legislations, appropriate institutional framework, efficient implementation of regulations, transparent systems, and well-defined procedures provide investors assurance of returns and reduce risks and transaction costs. Various policies, regulations, strategies, plans and practices both in the forestry sector and those outside the sector, such as investment, fiscal, industry, trade and labour, interact to regulate and set the context in which forest products and services are produced, harvested, processed and sold. A detailed analysis of the most relevant policy and legislative provisions, implementation practices and suggested reforms (including international treaties and

Figure 4.1: Factors Influencing Investment Climate



agreements) for improving the participation and investment of the private sector in forestry in Nepal are presented in a matrix form and included in Annex C. This section summarizes the analysis with the descriptions of policy and legislative provisions and their implications for private investors.

4.1.1 Investment related and fiscal policies and legislations

Investment related policies and legislations: The relevant provisions under the main investment related policies and legislations currently in force in Nepal, which include Foreign Investment and One Window Policy (OWP 1992), Foreign Investment and Technology Transfer Act (FITTA 1992) and its amendments (1996 & 2000), Private Financing in Build and Operation of Infrastructures Act (BOI 2006), and Investment Board Act (2010) are summarized in Box 4.1.

Box 4.1:Relevant Provisions Under Investment Related Policies and Legislations

OWP

- DoI has been designated as the One Window servicing agency with the Industrial Promotion Board as a focal point as spelt out in the Industrial Enterprises Act 1992.
- The power and authority concerning facilities and services of the agencies, such as Ministry of Finance and its Departments, Department of Commerce, Nepal Rastra Bank (NRB), Department of Immigration have been delegated to the One Window Committee.
- The One Window Committee shall decide on infrastructure facilities, such as land, electricity, and water as well as registration facilities on taxation.
- The DoI will inform the applicant of the decision of the Board on foreign investment project within 30 days from the receipt of the application.
- Application for the registration of an industry should be submitted to the DoI within 35 days from the date of receipt of approval for foreign investment. The industry will be registered within 21 days from the date of receipt of the application.

FITTA

- A foreign investor can make investment as i) investment in share (equity), ii) reinvestment of the earnings derived from equity, and iii) investment made in the form of loan or loan facilities.
- Foreign investor can use any technological right, specialization, formula, process, patent or technical know-how of foreign origin, use of any trademark of foreign ownership, and acquire any foreign technical consultancy, management and marketing service.
- National priority industries for FDI are agro and forest based industries, traditional medicinal and the industries producing disabled supports while no foreign investment is allowed in cottage industries except technology transfer.
- 100% repatriation is permitted for proceeds from sale of shares, dividend, loan and interest (repayment of foreign loan), technology transfer fees, and 75% repatriation is permitted for salaries and allowances of expatriates.

BOI

- The private investor can submit proposal in the government for building and operation of infrastructures and they may use the facilities and concessions as described in the licence.
- Any private property will not be nationalized during the period of licences.
- Private sector investor requires using local resources in the project.

Investment Board Act

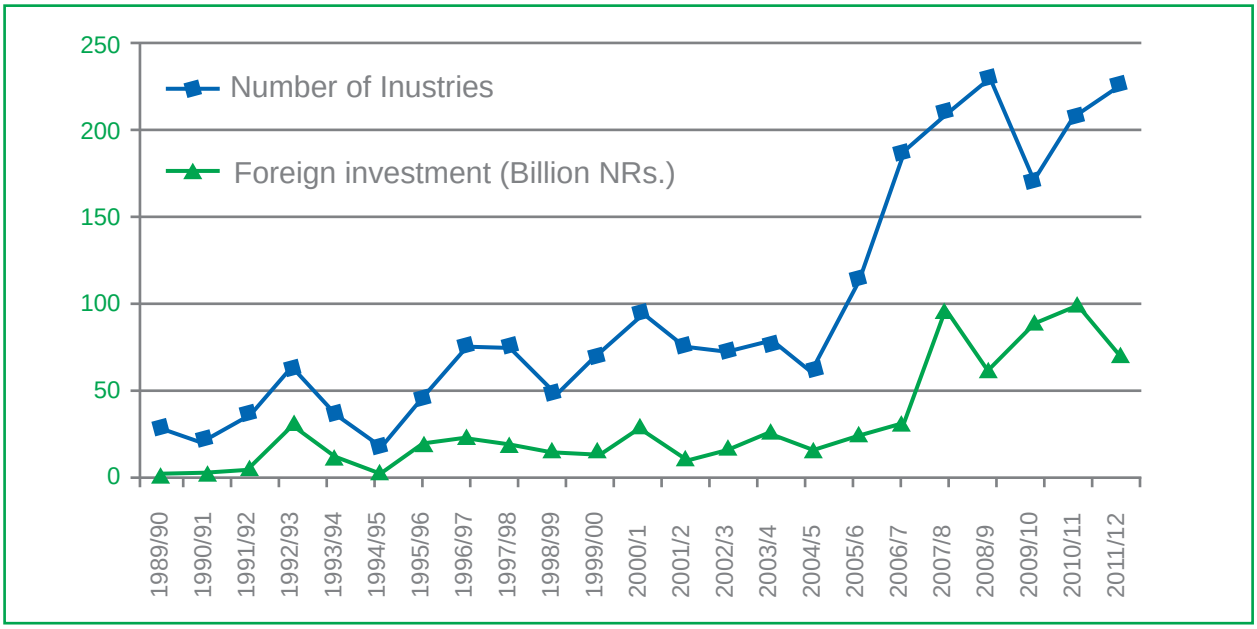
- The act has provision for establishment of export promotion and export processing.

The provisions in OWP can help to bring all necessary services in one place for the investors thus reducing the transaction costs while the provisions on investment, repatriation, and technological rights under FITTA are encouraging for foreign investment in Nepal. The provisions in BOI 2006 on building and operation of infrastructures using the facilities and concessions from government and the security against nationalization of private properties during the licence period are positive points to attract investment.

The government has signed Bilateral Investment Promotion and Protection Agreements (BIPPA) with seven countries including Finland, France, Germany, Mauritius, India, Qatar and United Kingdom; and Bilateral Trade Agreements with seventeen countries[11]. Nepal has signed double taxation avoidance agreement with major trade partners to attract foreign investment. According to double taxation avoidance agreement, if foreign investors earn profit from immovable property including forestry in a country, they are required to pay income tax only in the country where they invested and generated income. However, the agreement has not come to the implementation stage due to pending approval from parliament.

It is still quite low, but some signs of increasing foreign investment is observed after 2006, which coincide with the implementation of BOI Act 2006 that prioritize providing various facilities and infrastructure for foreign investors (Figure 4.2). This together with effective implementation of FITTA 1992 that simplified repatriation of earnings, visa procedures, and tax rebates might be playing roles, but due to other factors analysed below it is still not quite attractive.

Figure 4.2: Trend of Foreign Investments and Number of Industries in All Sectors



Source: Based on DoI data (2012)

[11] Countries that signed bilateral trade agreements with Nepal are: Bangladesh, Bulgaria, China, Czech Republic, Egypt, India, Democratic People's Republic of Korea, Republic of Korea, Mongolia, Pakistan, Poland, Romania, Sri Lanka, United Kingdom, United States, Russia and Yugoslavia

However, in practice investors often report that due to ineffective implementation of the policy, it takes several months to more than a year for the foreign investors to start a business in Nepal. There are some other cases that the investors are not able to acquire required technical experts on time because of the complex visa procedures for these workers. Some investors also complained about the government's inability to assure protection and security of trademark for secondary and tertiary products, which is also affecting the investment in the country.

Fiscal policies and legislations. The fiscal policies and regulations that affect forest-based industries are Value Added Tax Act 1995; Income Tax Act 2001; and Excise Act 2001.

Value Added Tax Act 1995 has a provision of exemption of value added tax (VAT) on NTFPs and its extraction; firewood, charcoal and equipment related to bioenergy; and local production of cottage industries. Similarly, Income Tax Act, 2001 has a provision of tax exemption in the production and marketing of forest products, which are produced by forest-based cooperatives and the Financial Act 2013/14 has provided tax exemption in land registration for NTFP farming and processing.

However, value added tax is still levied in harvesting and trade of timber, khayar and the other forest products, which are included in the Annex-6 of Forest Regulation 1995. The Excise Act 2001 imposes excise duty in the products of kattha, wine produced from wild fruits, and the wine mixed with the extraction of NTFPs/MAPs. Similarly, the provision specified in Annex 2, Annex 3 and Annex 6 under Forest Regulation 1995 for fixing price and royalty of timber, herbs and NTFPs is not rational and the present rates given in these annexes do not reflect the market, environmental and social values of the products.

4.1.2 Industry, trade and labour related policies and legislations

Industry related policies and legislations: Government of Nepal formulated Industrial Policy 1962 (and its amendments 1987, 1992 and 2010); Industrial Enterprises Act 1992; Private Firm Registration Act 1956; and Company Act 2006 for facilitating industrial development. The industrial policy emphasizes strengthening industrial security, encouraging non-resident Nepali to invest in Nepal, establishing an Investment Promotion Fund, and launching capacity enhancement activities. Following its motto "One Village, One Product", the industrial policy puts special emphasis for the promotion of micro, cottage and small enterprises including forest-based enterprises. The relevant provisions of the industrial policy are listed in Box 4.2.

The Industrial Policy lists agriculture and forestry as highly prioritized industries and emphasizes providing assistance in technology, market, skills and research for industries based on NTFPs including herbs. The provisions for assistance in technology, market, skills and research for some of the FBEs can attract investors in this sector. Access to resources is provided to the FBEs as they may be entitled to access any forest on a leasehold basis. In order to incentivise micro enterprises, all type of taxes, (customs tariff, excise and value added tax) are exempted, which also includes FBEs.

In spite of these favourable provisions, there are some constraints in practice.

Box 4.2: Industry Related Policy and Legislative Provisions

- National priority for agro and forestry-based industries; lease of forestland for the industries based on forest products.
- Providing special tax holidays for industries in rural area; and holidays in income tax and excise duties for the industries in extremely underdeveloped, underdeveloped and developing areas for 12 years, 7 years and 5 years respectively.
- Providing 25% income tax concessions to small, medium and large industries that employ more than 100, 300 and 600 native workers respectively.
- Exempting excise duty and VAT on raw and packaging materials for the industries established in Special Economic Zones (SEZs); and 5% income tax deduction in research, development and market promotion.
- Developing industrial infrastructure, such as roads, electricity and telecommunications in the potential area of manufacturing and processing.
- Special package programmes to develop Karnali industrial corridor & new industrial villages.
- Enhancing capacity of entrepreneurs and strengthening industrial security.
- System of avoidance of inconsistency with industrial development.
- Encouraging non-resident Nepali for investment and establishing Investment Promotion Fund.

For example the procedural complexities that are out of reach of the cottage and micro enterprises to secure benefits of the tax exemption provisions. The local governments often impose various levies and taxes during transportation of forest products, which negates the policy provided tax incentives. This has caused hassles in transporting forest products and raised transaction costs. Access to resources by leasing forests has not come into practice well, because the leasehold forests are either located in remote areas, or in conflicts with local people. Furthermore, FBEs of timber, bio-energy, and cutch are not included as concessionaires under the policy.

Trade policies and legislations: Trade liberalization of Nepal has created opportunities for international trade and making investment in trading enterprises. The main trade related policies and legislations presently operational include Trade Policy 2009; Customs Act 2007; Competition Promotion and Market Protection Act 2007; Patent, Design and Trademark Act 1965; Copyrights Act 2002; Import Export (Control) Act 1956 and its amendment 2006; and Nepal Trade Integration Strategy 2010 (NTIS).

The Trade Policy 2009 is formulated to address new challenges in global competitive market after Nepal became WTO member. The relevant provisions under Trade Policy 2009 are listed in Box 4.2.

The provisions of trade policy are supportive to facilitate the trading of forest products and services by emphasizing export promotion; developing policy, institutional and physical infrastructures relating to foreign trade; developing policy and institutional networks for the protection of intellectual property rights; providing additional incentives to export oriented industries; establishing Special Economic Zones for export promotion; developing employment oriented skills and entrepreneurship in trade sector; and increasing income and employment opportunities through promotion of trade in services. The provisions for establishing a

Box 4.2: Trade Policy Provisions

- Enhancing the role and professional capacity of government and private sector entities.
- Reducing transaction costs through procedural simplification and institutional strengthening.
- Developing policy, institutional and physical infrastructures relating to foreign trade.
- Developing policy and institutional networks for the protection of IPR and promotion of export of services; providing additional incentives to export oriented industries.
- Expanding market through utilization of opportunities available under bilateral, regional and multilateral trade promotions.
- Establishing Special Economic Zones (SEZ) for export promotion.
- Developing employment oriented skills and entrepreneurship in trade sector.
- Increasing income and employment opportunities through promotion of trade in services.
- Promoting identification, selection, production and trading of new exportable goods of comparative advantage.
- Encouraging exports of goods or services produced for domestic consumption by expanding their production.
- Establishing a separate unit for 'forests affairs' at custom office.
- Provision of Thrust Area Development Program, Commodity Development Program, Trade Promotion Program.

separate unit for 'forests affairs' at custom office and the designation of some places as trade centres for specific products, such as Nepalgunj for NTFPs and herbs, are also noteworthy. Furthermore, NTIS has prioritized 19 commodities with export potential, among which herbs and essential oils, handmade paper and tourism are relevant to the forestry sector.

However, the implementation status of most of these provisions is only partial to non-existent. Traders face cumbersome procedures in obtaining export license, certificate of origin, and producing sanitary and phyto-sanitary certificates. According to a recent study, in general it takes 39 days to export products across the border (World Bank 2013). The infrastructures are also not developed for helping the smooth operation of enterprises and trade of the forest products. For example, storage facilities at customs ports are either inadequate or non-existent, SEZs are yet to materialise, and the trade and collection centres that could provide a platform for buyers and sellers are seriously lacking.

Labour related policies and legislations: Nepal has enacted Labour Act 1992, Foreign Employment Act 1985, and Trade Union Act 1992 to regulate labour rights and obligations. Nepal has also ratified eleven ILO conventions relevant to bonded and child labour, union activities, prevention of discrimination in workplace, and rights of indigenous people over the land, territories and resources. The fundamental eight ILO conventions ratified and the relevant Nepalese legislations are presented in Table 4.1. There is a central labour advisory board under the Ministry of Labour and Employment that fix the minimum wage rate.

There are some implementation issues, often limiting the smooth operation of the forest based industries. The Labour Act contradicts with the Industrial Policy 2010, as

Table 4.1:List of ILO Conventions and Relevant Nepalese Legislations

ILO Conventions	Nepalese legislations
Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)	Interim Constitution of Nepal 2007 put no limitation in the number of association (trade union) in the industries.
Right to Organise and Collective Bargaining Convention, 1949 (No. 98)	Provisions included in Labour Act 1992
Forced Labour Convention, 1930 (No. 29)	Bonded Labour Prohibition Act 2002
Abolition of Forced Labour Convention, 1957 (No. 105)	Bonded Labour Prohibition Act 2002 and Labour Act 1992
Minimum Age Convention, 1973 (No. 138)	Labour Act 1992
Worst Forms of Child Labour Convention, 1999 (No. 182)	Child Labour (prohibition and regulation) Act 2000
Equal Remuneration Convention, 1951 (No. 100)	Interim Constitution of Nepal 2007 has guaranteed this rights
Discrimination (Employment and Occupation) Convention, 1958 (No. 111)	Foreign Employment Act 2007

the former has the provision for entitlement to full facilities if a worker worked for a total of 240 days in a year, while the industrial policy has a provision of the 'no pay for no work'. Similarly, the labour administration has limited human and financial resources to address labour issues.

There are some misunderstanding among the forest entrepreneurs and labour unions that represent workers of the industries. The working environment and facilities does not generally meet the safety and health standards and the government's labour inspection system is poor. The assigned factory inspectors are the mechanical engineers skilled in inspection of machineries and do not have understanding of labour issues. Most of the labour force are engaged informally and many on daily wage basis to minimize the costs of production.

The entrepreneurs on the other hand have separate set of labour issues. There is a scarcity of skilled labour force required for FBEs and the problem is further worsened recently due to increasing outmigration trend. The trend has compelled to hire skilled labourers from India especially in processing and manufacturing of forest-based products. The general perception among entrepreneurs is that the labour unions are often politically influenced and many times conflicts between the unions and the owners are politically influenced as well. Such conflicts result into losses for both the employers and employees because of time-consuming conflict resolution process in Nepal.

4.1.3 Forestry sector related policies and legislation

Forest sector policies, legislation and guidelines regulate forest management, including the land tenure and use, harvesting and auctioning, environmental management, royalties and pricing, and tariffs, which further affect investors' profitability by facilitating or constraining access to resources, establishment and operation of enterprises and trading of forest products. Some of the policies and

legislations are acclaimed as the best policies to create enabling environment for the engagement of public and private stakeholders in the forest sector to maximize the social, economic, and environmental benefits from forests. The government's policy to engage community in forest resource management, for example, have developed successful community forestry programmes that have resulted into exemplary forestry management reducing deforestation. Similarly, leasehold forest programs have been successful in involving poor and excluded distant communities in resource management and utilization.

Forestry policies: Space for involvement of the private sector is limited in forestry, although it has been a priority in the policy statement since the Master Plan for the Forestry Sector (MPFS) 1989 was developed. Revised forest policy 2000 was then implemented without much result and currently the government is formulating the forestry sector strategy. It is expected to have clear provisions for creating conducive environment for effective involvement and investment of private sector in forest-based industries in the upcoming forestry sector strategy. In line with this, Ministry of Forests and Soil Conservation(MFSC) has also formed a committee for drafting of policy for providing forest products to the private sector, which is an opportunity for private sector to introduce their agenda and issues in the policy provision.

Forestry legislations: The Forest Act 1993 and Forest Regulations 1995 are the major legislative instruments for regulating forest management in Nepal. One important objective of these legislations is to contribute to economic development of the country and local communities. Under the Forest Act and Regulation, various directives and guidelines have been formulated. Box 4.4 lists the existing legislative instruments on forestry sector and Box 4.5 lists the major provisions relevant to the private sector investment.

Forest management plan and its preparation process have remained important element to make effective involvement and investment of private sector in forestry, because the approved

Box 4.4: Existing Legislative Instruments in the Forestry Sector

- Forest Act 1993 (amendment 1999)
- Forest Regulations 1995 (and its amendments 1999, 2002 & 2005)[1]
- Community Forestry Directive 1995 (and its amendment 1999)
- Forest Product Collection and Sales Directives 2000
- Leasehold Forest Policy 2002
- Forest Product Auction Procedure Directives 2003
- Guideline for Inventory of Community Forests 2004
- Guidelines for CF Development Program 2008 (revised)
- Collaborative Forest Management Directives 2011
- Formation and Operational Directives on District Forest Sector Coordination Committee (DFSCC) 2011
- Procedure of Handing over Leasehold Forest for Commercial Purpose & Poor Families 2011
- Presidential Chure Conservation Program Directives 2011
- Approved forest management plans & government circulars

management plan is a main techno-legal instrument for production and harvesting of timber and NTFPs, collection of biomass for the purpose of bioenergy and obtaining other ecosystem services from forest. The private sector is a key stakeholder of forest management planning process as it plays commercial role. Although forest legislation has not explicitly incorporated any provisions to make effective involvement of private sector in forest management plan preparation and implementation process, some FUGs and DFOs have started to involve private sectors during the preparation of forest management plans. Recently established forestry sector multi-stakeholder mechanisms[12] at district level are creating some opportunities for the private sector to raise their concerns in the preparation as well as implementation of forest management plans.

There are some provisions that limit the private sectors' access to raw materials and participation in forestry business. Procedural complexities exist in registration of private forests and trees grown in private land, harvesting and utilization of forest products from private land, fixing size and grading of timber, depository system, stock holding, transportation, technology transfer, certificate of origin, forests leasing for industrial and commercial purposes, establishment and operation of FBEs that have resulted very low number of private forest registration and involvement of private sector in forestry.

Box 4.5:Major Legislative Provisions in Forestry Sector Relevant to Private Sector Investment

- Forest Regulation 1995 has a provision to involve private sector in trading of forest products, namely timber through licensing and auction system at domestic market and permission system for export of value added or processed forest products (rule 7, 10, 11 of Forest Rule 1995).
- Some procedures for licensing or auction are included in the Forest Product (timber and fuel wood) Collection and Sales Directives, 2000 and Forest Product Auction Procedure Directives, 2003 to involve private sector in trading of forest products.
- According to forest rules (21), saw mills or furniture companies can transport the logs as products with registered marking.
- Government-managed forests allow felling of the 'dead, dying and diseased trees' and not the green trees, however the CFUGs are allowed to cut green trees as approved by the DFO to fulfil the needs of the members. Collaborative and Buffer Zone Forest Groups are authorized to cut green trees.
- Collaborative Forest Management Directive (CFMD) 2011 authorizes DFO to sell 50% of timber from collaborative forests.
- According to BZMR, 1992, timber cannot be taken out of buffer zone without processing.
- Forest Regulation 1995 has given legal rights to CFUGs for the establishment of FBEs in forest area considering the availability of forested products of community forestry. CFUGs can establish such enterprises solely or collectively and such enterprise can also establish and operate in a public-private-community or cooperative partnership modality

[12] The private sector is a member of DFSCC at district level and various commodity-based associations and FNCCI have been involved at national level multi-stakeholders mechanism of the forestry sector such as Multi-stakeholders Forestry Program and Herbs and NTFP Coordination Committee (HNCC).

considering the legal framework as defined by Company Act 2006.

- Forest Act 1993, Forest Regulation 1995, Leasehold Forest Policy 2002 and Procedure for Handing-over Leasehold for Commercial Purpose and Poor Families 2011 have mentioned procedures for handing-over leasehold forest to the private sector including any corporate body or industry. The private sector can demand forestland on lease with the government for the production of raw materials for industrial purpose where the government can provide an appropriate part of national forest to the private sector considering the management plan.
- Private land owners have legal rights to sale their timber to the private sector by following the legal procedure defined in forest legislation.
- The government has a provision of e-biding system, which is practiced in various departments.
- The forest check-posts along the highway have authority to check relevant documents during transportation.
- Import and Export Act 2007 bans the export of some species (jatamansi, sugandha kokila, lauth salla, talispatra, sarpagandha, jhyau, and silajit) without processing and the definitions of processing given in various gazette notifications are not clear and even contradict with each other.
- Industrial Policy prioritizes bioenergy and the Environment Protection Fund under the EPR has a provision of fund to promote bioenergy in rural areas.
- EPR has a provision of 1 km distance to establish FBEs; the contradictory decisions made from CIAA (3-5 km) and MFSC (2-3 km), and the provision in Industrial Promotion Board (2-3 km) has created confusion.
- Local Self Governance Act (LSGA) has given authority to DDC on resource rights over forest products while the local bodies have obligations to support and promote energy sector including bioenergy.
- VAT Act 1995 has made a provision of VAT exemption in bioenergy including charcoal.
- Forest legislations do not have explicit provisions to make effective involvement of the private sector in forest management plan preparation and implementation process.

The frequent change in government decisions regarding the ban and restriction on collection and export of forest products (see Table 4.2) has created uncertainty for the business. Presently, the government has banned some NTFPs such as, Panch aunle (*Dactylorhiza hatagirea*) and walnut (*Juglans regia*) bark completely for collection, use, transport and export. Other NTFPs are banned for export in crude form, such as jatamansi, sugandha kokila, lauth salla, talispatra, sarpagandha, jhyau, and silajit so as to promote processing industries at home. Unfortunately, such bans have resulted into illegal export of these products. Similarly, timber products, wood log and sawn timber of seven species champ, khayar, sal, simal, satisal, bijaya sal, and walnut from national forests are banned for harvest and transport for commercial purpose and export. But this ban is not applicable for harvesting of fallen trees as per the management plan and the trees to be harvested as per the approved work plan or by priority projects. Some timber products allowed for export are log and sawn timber of cultivated sissoo, teak, and eucalyptus produced in private land under the recommendation of DFO. Illegal export of the banned species in crude form however, is still going on.

Table 4.2: Government Decisions on Ban for Collection and/or Export of Forest Products in Raw Form

Date (BS)	Date (AD)	Gazette notification under Forest Act 1993 and amendments
20/12/2051	1995 April 3	• Banned on collection, use, transport and export of *Ophiocordyceps sinensis* and *Dactylorhiza hatagirea*. • Banned on export of *Nardostachys grandiflora*, *Rauwolfia serpentina*, *Lichen* spp., Rock exudate, *Abies spectabilis*, *Taxus* spp. without processing.
08/10/2053	1997 Jan. 21	Banned on export of *Nardostachys grandiflora*, *Rauwolfia serpentina*, *Lichen* spp., Rock Exudate, *Abies spectabilis*, *Taxus* spp. without taking permission from Department of Forests (DoF) and without processing.
01/11/2057	2001 Feb.12	Banned on collection, use, transport and export of *Dactylorhiza hatagirea*, *Juglans regia* and *Picrorhiza scrophulariiflora*.
16/09/2058	2001 Dec. 31	• Banned on export of Rock Exudate and *Ophiocordyceps sinensis* without processing. • Banned on harvest and transport for commercial purpose and export of champ, khayar, sal, simal, satisal, bijaya sal, and okhar from national forests. But this ban is not applicable for harvesting of fallen trees as per the management plan and the trees to be harvested as per the approved work plan or by priority projects.
01/08/2060	2003 Nov. 17	*Picrorhiza scrophulariiflora* can be exported on the basis of permission provide by DoF considering the availability of this species and identification by DPR.
18/06/2061	2004 Oct.4	*Ophiocordyceps sinensis* can be exported without processing.
19/07/2064	2007 Nov. 5	Lifted the ban on harvest, transport and export for champ, khayar and simal.
09/05/2065	2008 Aug. 25	Mark of banned species can be exported by taking permission of DoF.
16/07/2066	2009 Nov. 2	All banned species will be regulated under the Import and Export (control) Act 2013. Note: this notice was published by the Ministry of Commerce and Supply.

In spite of the strict laws on the felling of green trees, illegal trade is rampant, particularly in the Terai, because of the weak law enforcement practices. The weak regulatory mechanisms in the country combined with the inadequate information among the authorities provided incentives for collectors to over extract the select high value species for maximum resource rent. The weak regulatory mechanism has also resulted into illegal export of the species banned for collection, use, transport, and export.

Lack of strong mechanism for tracing the source of forest products has given sufficient room for questioning their legality. Likewise, weak governance has fuelled the intension of getting undue benefits among the value chain actors resulting into illegal harvesting, harvesting excess quantity than prescribed, tax manipulation etc. As a result, forestry sector is losing its image, and mistrust is developing among the stakeholders. Introduction of private sectors in the given condition may promote over exploitation of the

resources as they can capitalize the weak governance. Still the perception of the society in general is that the entrepreneurs working in forest value chain especially in trading activities are illegal.

There are some provisions in forestry legislation that are conflicting with other policies, often limiting private sectors access to resources. For example, tenure rights and user rights under forestry legislations is contradictory with those in LSGA 1999. Forest Act and Forest Regulations have clearly stated tenure rights and user rights of forest products. The state owns all the forests except private forests while communities under various forest management regimes (community, collaborative, and leasehold) have use rights. The Forest Act gives all use and management rights of the forest and other natural resources to DFO, who can handover certain responsibilities to communities, but the LSGA grants use rights of stone, sand, and driftwood and timber to DDCs and Village Development Committees (Table 4.3). In some situations, private companies or organizations are given exclusive collection rights for quarrying or mining in community forests. This creates confusion on use rights between the CFUG and the private licensee, and results in an environment that is not conducive to improved production and conservation.

The approach paper of 13th Periodic Development Plan (2013-2015) has mentioned the forest conservation and promotion of protected areas (PAs) management regimes as a priority for Nepal, which may create procedural hurdles to operate FBEs at local level. However, the approach paper has accepted that without developing FBEs, it is difficult to generate employment and income at local level. One of the strategies of this paper is to promote public-community-private-cooperative partnership for the promotion of private sector investment to develop FBEs in Nepal, which is an opportunity for the private sector.

In general, the policy provisions focus on basic need fulfilment rather than economic development. For example, the timber marketing legislations are based on the principle of surplus timber marketing, and the process for allocating surplus timber for commercialization through private sector is not yet legally defined.

According to Nepalese forest laws, government cannot provide the forest areas to the private sector for timber harvesting. DFO has authority to provide patches of forest only to TCN or District Forest Products Supply Committee (DFPSC) for timber harvesting after marking of trees and calculation of

Table 4.3:Provision of Forest Resource Rights Under Forestry Legislations and Local Self-Governance Act

Forest products	Forest Act 1993 and Forest Regulations 1995	Local Self-Governance Act 1999
Fuel wood, dry timber twigs, branches, bush	User groups or managers	VDCs
Medicinal plants, herbs	User groups	DDCs and VDCs
Resin	User groups and government	DDC
Stray timber	User groups and government	DDC
Straw	User groups	VDC
Water	User groups	DDC/VDC

logging and operation cost. Only these two agencies can contract with licence holders private firms to mobilize them for harvesting, collection and transportation of timber to the stocks (depots) if they have no capacity to do these activities. The private sector has no direct access in the forest areas for timber harvesting and such types of legal provision have strengths and weakness for the forest conservation and timber marketing and need to be revisited.

The government (and semi-government) agencies - DFPSC, TCN and DFO – are directly involved in the trade, limiting private sector's equal access to supply the products in market. The timber supply to the private sector for marketing is depending on the discretionary power of government agencies, which is contradictory with the liberal market economy adopted by the constitution of Nepal.

The contradictions among various policy and legislative provisions encourage the authority to use discretionary power, increase the cost to fulfil unexpected conditionality and increase the overall transaction costs. In practice, there is a tenure conflict in leasehold forests; demotivation to grow forest products in private land; and very limited access of private sector in buffer zones. Similarly, the malpractices in forest product harvesting and trade have caused huge gap between the stumpage value and market price of forest products. Ultimately, the responsible private sectors are deprived from securing forest products for the industrial processing. Furthermore, they are looked down by society with a tainted social image and bear high risk and transaction costs.

There are some additional regulations for specific subsectors, especially NTFPs, ecosystem services and forest bio-energy. A brief assessment of the additional subsector specific provisions and practices is given below.

NTFPs: Forest legislation and gazette notifications are the major regulating instruments for this subsector along with a number of policy documents and national and international standards involving many institutions and enforcement agencies. These policies, legislations and guidance have provided some space for the private sector involvement and investment in this subsector, however there is inconsistency and inadequacy in the legislative instrument.

The most recent development is the formulation of the Herbs and NTFPs Development Policy (HNDP) 2004. It has recommended developing a comprehensive legal provisions and addressing legal and policy constraints on NTFPs. It has also stated that the royalty system requires to be linked to the price received by primary producers and final market price of the commodities produced by the private sector. According to HNDP, improvement in custom regulations is also an area for legal reform. The provisions in HNDP 2004 have also given emphasis to promote private sectors' involvement and investment in the NTFPs subsector. The major provisions of this policy are given in Table 4.4.

The HNDP has recommended formulating laws and guidelines for effective implementation of this policy. Accordingly, the Department of Forests has formulated NTFP Inventory Guideline 2012 to maintain sustainable supply of NTFPs from all types of natural forests. However, laws and policies on licensing, permission, transportation, tax, custom and export are still inconsistent with the policy provisions in HNDP. For

Table 4.4: Major Provisions and Strategies in Herbs and NTFP Development Policy

Policies	Strategies
1. Conservation and utilization on the basis of sustainable development: • To create the beneficial environment for local people and enterprise for the collection of Herbs and NTFP. 2. Encourage people participation: • To establish the network of Herbs and NTFP producers, collectors or traders for the market management and give emphasis to the concept of cooperative to establish enterprise or marketing. • To encourage private sector for value addition of Herbs and NTFP in local level on the basis of potentiality. 3. Simplify the tax system and certification 4. Delivery of the profit of development and appropriate technology to local people: • To handover the appropriate technology to local community which is gained from the research and may be useful for the commercialization of Herbs and NTFP. 5. Creation of awareness and provision of privileges: • To provide privileges and create awareness for those community or private sector which are interested to product, process and marketing of Herbs and NTFP.	• Encourage the establishment and development of cooperative and strengthen them in all over the country in order to optimize the common benefit through the production and development of Herbs and NTFP. • Make legal mechanism to provide loan easily to forest based local enterprise through the Agriculture Development Bank or similar institutions. • Give emphasis to the local level enterprise for storing, processing, packaging and extraction of Herbs and NTFP in the scientific way. • Provide technical knowledge, skill, training and financial support to FUGs for the incorporation of provisions relating to Herbs and NTFP management in community forest. • Make appropriate provision for the Herbs and NTFP cultivation in the government managed forest by cooperatives. • Make appropriate legal provisions for the protection of the community rights over their indigenous knowledge, skill, innovation, technology and practices associated with Herbs and NTFP. • Determine the roles and responsibilities of district level government agencies relating to local enterprise. • Review the legal provisions relating to environment protection for the creation of easiness to enterprise. • Make appropriate arrangement of agriculture loan for the poor and marginalized people of the local community through the Local Development Fund and Poverty Alleviation Fund to harvesting and marketing of Herbs and NTFP. • Support for the advancement of local technologies and incorporate the modern technologies in this process for the production, collection, procession and marketing of Herbs and NTFP.

example, HNDP prioritizes establishing enterprises at local level, but the Environmental Protection Regulation bans establishing enterprises within 1 km distance of forest areas. Likewise, the conservation laws have created procedural hurdles to establish the forest-based cottage industries at local level including conservation areas and buffer zone. Another example is that HNDP has recommended simplifying procedures to obtain permits or release order for the transportation of NTFPs, but the provisions traders are required to follow provide discretionary power to the government staffs, which often create hassle to traders. Without review and amendment in these laws and policies the provisions of HNDP are not likely to be effectively and fully implemented to generate the desired outcomes.

Ecosystem Services: From late 1980s the paradigm has shifted towards management of the ecosystem with landscape approaches and participation of local communities and private sector. Such shift has provided the ground for establishment of various conservation areas and buffer zones surrounding the PAs throughout the country. The National Park and Wildlife Conservation Act 1973, Nepal Biodiversity Strategy 2002 (revised in 2014) and the National Conservation Strategy 1988 are the pioneer legal and policy documents to provide basis of systematic conservation efforts in Nepal. However, these documents had a narrow focus on the conservation of the flagship animals like tiger, rhino, elephant and snow leopard and their habitats. In doing so, the basic approach was enforcement of the rules using armed forces (Nepal Army) and pushing people away from the PAs. In spite of the potential for payment for ecosystem services (PES) in the PAs in Nepal, these instruments have not internalized the concept of PES. There are many contradictions between NPWC Act and other sector specific acts, such as LSGA 1999, Water Resource Act 1992, Electricity Act 1992, and Environmental Protection Act 1996.

More recently, the policy documents, such as National Biodiversity Strategy 2002, Water Resource Strategy 2002 and National Wetland Policy 2012, stepped towards landscape approach of planning and ecosystem management. These policies laid the foundation for enhancement of bundling of ecosystem services, such as conservation of biodiversity along with maintaining scenic beauty and watershed service. Similarly, the Buffer Zone Management Regulation 1996, Tourism Policy 2009, Hydropower Development Policy 2001, LSGA 1999 have provided policy and legal basis of providing financial resources through public PES to local communities for the ecosystem services they generate. The private sector who are involved in eco-tourism and hydropower generation are also interested to develop PES schemes at local level, however due to the lack of clear legal mechanism of private PES, it is being complicated to develop such schemes at local level.

Policy and legal provisions have provided small window for innovative practices and initiatives to provide financial rewards to buffer zone for the ecosystem services provided. Concessionaire hotels inside the PAs pay conservation fees and royalty to the government. The government redirects 30% to 50% of the income of PAs to buffer zones, which can be considered as the proxy for the compensation paid to the ecosystem service producers because the money received by the buffer zones is used for enhancement of the ecosystem in PAs including buffer

zones. Additionally, private companies established in PAs have also agreed to pay a certain proportion of their income for the ecosystem conservation of PAs.

National Wetland Policy 2012 has provisioned to collect ecosystem service charge, which is an opportunity to strengthen PES at local level, however the legal entity authorized to collect the ecosystem charge is not clear. Several urban drinking water users groups at local level have been paying for clean drinking water, the ecosystem services generated by the CFUGs. These policies and practices are creating space for the private sector involvement and investment in PES.

Apart from aforementioned small windows in the existing legal framework, there is a lack of policy and legal framework with explicit provision for PES in and outside the PAs. Such gap has constrained the institutionalization of the PES mechanisms. For example, PA authorities or buffer zone councils are not being able to officially be engaged in negotiation for PES with the users of the services even if they are willing to pay. Similarly, since the existing legal framework restricts the local communities residing within the PAs to participate in the process because their rights are not well defined and they are also not recognized as a legal entity to receive the payment of ecosystem services from public or private buyers.

There are lots of space for improving existing policy and legal documents to include the provision of PES so as to initiate the schemes within and outside the PAs. For example, the Buffer Zone Management Regulation 1996 gives rights to local communities and recognizes their roles in conservation. So there remains a space of improving the Buffer Zone Management Regulation to incorporate PES related provisions. Similarly, government can amend the existing National Park Conservation and Wildlife Conservation Act 1973 and Forest Act 1993 to include some PES relevant provisions. The institutional reform is necessary in the sector of PAs and sectors relevant to PAs recognizing the role of local government, local councils, community networks, Civil Society Organisations (CSO) and private sector for strengthening PES system.

Forest Bioenergy: The Interim Constitution of Nepal 2007 has guaranteed the right to clean environment as a fundamental right of people[13]. Indoor pollution is an important cause of women's health problems in rural areas and the women are deprived of their rights to clean environment and pollution free life. The government of Nepal has formulated Indoor Air Pollution Control Policy, which has provisions for subsidies in alternative energy in order to control indoor air pollution and protect women's health. Apart from general policies and regulations, the policies related to rural and renewable energy has emphasized private sector's investment for the promotion of bioenergy. The major policy provisions are listed in Box 4.6.

Renewable Energy Policy 2006 gives priority to research and development mainly on raw material identification and cost reduction of bioenergy technologies (like briquette, biofuel, biomass gasification, biogas plants, fuel wood efficient improved cook stove). The policy also focuses on activities related to awareness creation in the use of these technologies utilizing local skills and resources. According to the policy, technologies for production of briquette, bio-fuel, and biomass gasification based

[13] Article 16 of Interim Constitution of Nepal 2007

Box 4.6:Forest Bioenergy Related Policy and Legislative Provisions

Rural Energy Policy 2006

Overall goal: Reduce dependency on traditional energy & conserve environment by increasing access to rural energy technologies (RETs); increase employment and productivity through RETs and increase living standard of rural population by integrating RETs with social and economic activities.

Main policy provisions: Emphasis to environment friendly, affordable and sustainable RETs; enhancing capacity of local bodies and facilitation; integration of RETs with economic and other developmental activities; special promotional activities focusing poverty reduction & positive impacts on women and children; and involvement of private sector, community, CBOs and NGOs.

Subsidy Policy for Renewable (Rural) Energy 2013

Additional incentives to poor, women and marginalized groups and communities; reduce supply/consumption gap between rural and urban; support RET market by attracting private sector; support long-term target of the government replacing subsidy by credit.

Biofuel Policy

Production of liquid biofuels for transport from Jatropha (*Jatropha curcas*)-based biodiesel; high priority for the private sector involvement and investment.

Climate Change Policy 2011

Promotion of clean energy, such as renewable energy, alternative energy and green technology to reduce green house gas emission; financial resource generation from public-private partnership.

National Adaptation Program of Action (NAPA) 2010

Promotion of bio-energy with the technical support of private sector; formation of a multi-stakeholder Climate Change Initiatives Coordination Committee (MCCICC).

on the availability of paddy husk, saw dust and other agricultural residues will be stressed and emphasis will be given on research, development and dissemination of household and institutional stoves, biogas appropriate for varying geographical and cultural needs.

Improved Cooking Stove (ICS), bio-briquette and biogas are some important tools and technologies to reduce indoor air pollution. The private sector highly contributed to achieve the government's goal to reduce indoor pollution through investing in technology development for alternative energy. The government of Nepal has adopted public-private partnership approach for renewable energy including bioenergy programmes in Nepal, and thus providing the emphasis on private sector investment in bioenergy based rural energy technologies.

The bioenergy sector is relatively new but encouraging for private sector investment, Subsidy Policy for Renewable Energy 2013 does not clearly recognize the forest bioenergy, such as charcoal and bio-briquettes. Similarly, due to the lack of clear legal provision for the utilization of biodiesel,

the producer companies are hesitant to give continuity of such production. Multi-stakeholder Climate Change Initiatives Coordination Committee (MCCICC) does not have explicit provisions to involve private sector while private sectors along with civil society are participating in activities, such as organizing programs and activities to raise public awareness and promote adaptation and use of renewable energy. As discussed in 13th periodic development plan, private sector can be involved in bioenergy sector and generate employments.

4.1.4 Biodiversity and environment related policies and legislations

Government has formulated and implemented National Biodiversity Strategy (NBS) 2002 and its implementation plan (2006-2010) for the conservation and utilization of biodiversity in Nepal. The NBS was formulated recognizing the unsustainable harvesting of medicinal herbs and other NTFPs from the wild, including protected areas by the commercial enterprises. National Park & Wild Life Reserve Act 1973[14] is the umbrella legislation for the conservation of biodiversity in Nepal, according to which the government can provide license to private sector for operating various services, such as hotel, resort and eco-tourism in PAs. Lately, in some of the national parks, due to encroachments and human wildlife conflicts in buffer zones, the infrastructures are not permitted anymore. According to this Act, government may also permit interested individuals for hunting of non-protected wild lives in wildlife hunting reserves.

The government has formulated wildlife farming, breeding, and research procedure 2003, Procedures for Handing over the Management of Protected Areas to NGOs and other Organizations 2003, and Procedure for Handing over the Land of Protected Areas for Infrastructure Development 2008 to increase the role of private sector in the conservation and development. These procedural arrangements have created opportunities for private sector to increase their investment in biodiversity conservation and utilization. Furthermore, a number of investment and employment opportunities related to tourism have been created in adjacent areas to provide services to the visitors to conservation area. National Wetland Policy, 2012 has also incorporated some provisions to promote the involvement of private sector in wetland conservation and utilization of its resources (GoN 2012).

The Environmental Protection Act, 1997 and Environmental Protection Regulation, 1997 require any individual, community, company, industry (governmental or semi-governmental, non-governmental agency or institution) interested to establish any forest-based enterprise to carry out Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA). Table 4.5 provides the list of the forest projects requiring IEE and EIA.

Environmental Assessment (EIA and IEE) is supposed to ensure optimal utilization of forest resources for industrial or enterprise development without threatening the resources. However, the private sector often faces difficulties to go through the complex process and centralized mechanisms and fulfil the requirement for the approval of EIA. This often delays the operation of the proposed enterprises. At community level,

[14] Under this act 10 regulations are enacted which are National Park and Wildlife Conservation Regulation 1974, Chitwan National Park Regulation 1974, Wildlife Reserve Regulation 1977, Himalayan National Park Regulation 1979, Khaptad National Park Regulation 1987, Bardiya National Park Regulation 1996, Buffer Zone Management Regulation 1995, Conservation Area Management Regulation 1996, Conservation Area Government Management Regulation 2000, Kanchanjangha Conservation area Management Regulation 2007.

Table 4.5: Forest Projects Requiring IEE and EIA

Proposals Requiring IEE (Schedule - 1)	Proposals Requiring EIA (Schedule -2)
• Plantation of native or imported species in large areas • Handing over leasehold forest (50-200 ha in Terai and 10-50 ha in hill) • Handing over community forests (500 to 750 ha) • Collection of roots (annually 5-50 tons) • Collection of barks (annually 10-100 tons) • Collection of NTFPs (annually 5-50 tons) for processing to export its extraction • Collection of non-banned species (annually 5-100 tons) • Collection of resin (annually more than 5 tons) • Farming of imported wild species • Establishment of NTFPs processing centre in public land • Establishment of paper industry (per day production capacity 100 tons) • Establishment of saw mill (per year timber consumption capacity 5-50 thousand m^3)	• Plantation of native or imported species (more than 500 ha in Terai and 100 ha in hill) • Handing over leasehold forest (more than 200 ha in Terai and more than 50 ha in hill) • Handing over community forests (more than 750 ha) • Establishment of rosin and turpentine, rubber, plywood and veneer, Kattha, wood-based paper and NTFP processing industries within 1 km distance form forest areas. • Collection of roots (annually more than 50 tons) and collection of barks (annually more than 100 tons) • Collection of NTFPs (annually more than 50 tons) for processing to export its extraction • Collection of non-banned species (annually more than 100 tons) • Establishment of paper industry (per day production capacity more than 100 tons) • Establishment of saw mill (per year timber consumption capacity more than 50,000 m^3)

Management Regulation 1995, Conservation Area Management Regulation 1996, Conservation Area Government Management Regulation 2000, Kanchanjangha Conservation area Management Regulation 2007

the requirement is also creating additional unaffordable burdens to the communities, and as a result many community forests especially in the mid-hill and high-hill regions have not been renewed.

4.1.5 International standards, laws, agreements and treaties

International legal agreements create an environment for domestic and international investors in facilitating investment and trade. Nepal has ratified more than 25 Multilateral Environmental Agreements (MEAs) and among them CITES, ITTA, RAMSAR, CBD and associated protocols, ILO 169, UNFCCC and Kyoto protocol, plant protection conventions, pollution and hazards control conventions are directly related to trade of forest products. Likewise, Nepal is also required to implement World Trade Organization (WTO) agreements namely Trade Related Intellectual Property Rights (TRIPs) and Agreement on Application of Sanitary and Phyto-sanitary Measures while trading forest products. The private sector interested in the industry and trade of forest products should also be aware about the legal opportunities and constraints generated due to these international legal arrangements. Major treaties and agreements signed/ratified by Nepal relevant to the forestry sector and the provisions creating enabling environment for forest-based enterprises are summarized below.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973: Nepal acceded to CITES 1973 in 1975. The National Parks

and Wildlife Conservation Act 1973 and Forest Act 1993 are major legal instruments to implement the convention. To ensure the prevention of illegal trade of CITES species Nepal has designated the implementing and supporting agencies. The DPR and the DNPWC are responsible for the implementation as the scientific authority and as the management authority respectively, whereas the DoF, customs offices, security agencies, postal offices, cargo agencies and judiciary bodies play supporting roles. The private sector interested in the trade and export of CITES listed species is required to obtain permission from scientific and management authority. In practice, due to the lack of legal awareness on CITES, private investors including NTFP/MAP collectors are facing administrative complexity and some of them are sued against the violation of CITES. A draft bill on CITES developed in 2011 is still waiting the approval from the parliament, and the bill is expected to be instrumental for effective implementation of CITES in Nepal.

International Tropical Timber Agreement (ITTA 1994): The objective of ITTA 1994 is institutionalizing sustainable source of timber in a growing market. Nepal became member of this agreement on 23 May 1997. According to this agreement, Nepal as a consuming country cannot ban timber import from producing country, however can impose ban on timber export. Gazette notification of Ministry of Commerce and Supply dated on 24 October 2009 announced the ban on export of five species of timber. However, most of the banned species are allowed for export after processing and thus provides opportunity for the private sector for exporting timber based final products such as furniture.

ILO 169 (Indigenous and Tribal Peoples Convention 1989): Nepal has acceded/ ratified ILO 169 convention in 2007 and enacted National Foundation for Upliftment of Indigenous and Tribal People's Act 2001. Nepal has also incorporated safeguard measures in the Interim Constitution of Nepal 2007 and National Action Plan of ILO 169. This successfully incorporates indigenous people's voice in resource management. There are many strong points of ILO 169 for the protection of rights of indigenous peoples over the forest resources, however due to weak monitoring of ILO 169 implementation at the local level, some groups are misinterpreting the objectives of ILO 169 and misusing this convention for fraudulent collection of money from the private sector in the name of "ILO tax", which is increasing the transaction costs and discouraging the private sectors' involvement.

United Nations Convention on Biological Diversity (CBD 1992): Nepal ratified CBD in 1993 and developed National Biodiversity Strategy in 2002. National Parks and Wildlife Conservation Act 1973, Forest Act 1993, and Environment Protection Act 1997 are the major legal instruments for the implementation of CBD in Nepal. Government of Nepal developed a bill on access and benefit sharing in 2006, however due to the lack of consensus among government, indigenous people and private sector, the proposed bill is still pending. The majority of the provisions of CBD are related to bio-prospecting and sharing of benefits that have created enabling environment providing opportunity for the private sector to work with indigenous people to share benefits from forests. However,a supportive legal framework at domestic level is required for the private sector to benefit from this convention.

United Nations Framework on Climate Change (UNFCCC 1992) and Kyoto Protocol 1997: With regard to UNFCCC

and Kyoto Protocol, Nepal has developed Climate Change Policy 2011, National Adaptation Plan of Action (NAPA 2010) and Subsidy Policy for Renewable Energy 2013. The initiatives have opened various windows of opportunity availing resources toward building the ecological and social resilience of communities based on natural resources including forests. These provisions also provide opportunities for the involvement of the private sector in developing renewable energy options, carbon credit products, and adaptation strategies.

Trade Related Intellectual Property Rights (TRIPs): Protection of intellectual property is a pre-requisite to empowering private sector investment in trade and industry. As a member of WTO, Nepal has accessed TRIPs and formulated Copyrights Act 2002 and Patent, Design and Trademark Act 1965 (amended). These legal instruments have guaranteed the protection of intellectual property rights of private investors. However, legal provisions have yet to be developed for the protection of traditional knowledge related to biodiversity in order to prevent traditional knowledge holders from exploitation by the private sector.

Agreement on Application of Sanitary and Phyto-sanitary Measures: The members of WTO have the right to take sanitary and phyto-sanitary measures necessary for the protection of human, animal or plant life or health. Nepal is also a member of International Plant Protection Convention (IPPC), 1952. Its objective is to ensure plant protection from disease and effective implementation of plant quarantine for which Nepal has enacted various acts[15]. However, the private sector does not have capacity to maintain and comply with sanitary and phyto-sanitary measures and thus face procedural hurdles in obtaining plant quarantine certificates required for the export.

4.2 Institutional Framework Governing the Forest Sector and Political Environment

Strong, transparent and accountable institutions create enabling environment and contribute to increase returns and reduce the risks and transaction costs for the private sector. The Ministry of Forests and Soil Conservation is the key institution governing the forestry sector whereas other state institutions, such as Ministry of Science, Technology and Environment (MSTE), Ministry of Industry (MoI), Ministry of Commerce and Supplies (MoCS), Ministry of Finance (MoF), Ministry of Federal Affairs and Local Development (MFALD), Ministry of Agriculture Development (MoAD),Ministry of Labour and Employment (MoLE), Ministry of Home Affairs (MoHA), and their respective departments and offices are playing important role in developing private sector in forestry. Other non-state actors, such as civil society organizations, associations and federations are also contributing towards the development of private institutions in forestry sector.

A checklist of the major state institutions and their roles in supporting FBEs is presented in

Table 4.6, and a brief assessment institutions in terms of their roles in regulating, enabling, and facilitating along with the challenges they face at present is described in the following sections.

[15] Aquatic Animal Protection Act 2017 (1960), Feed Act 2033 (1976), Seed Act 1988, Drugs Act 2035 (1978), Food Act 2052 (1996), Plant Protection Act 2064 (2007), Pesticides Act 2048 (1991), Animal Health and Livestock Services Act 2055 (1999), National Dairy Development Board Act 2048 (1992), Dairy Development Policy 2064 (2007), Organic Chemical Fertilizer Guideline 2068 National Tea Policy 2057 (2000), National Coffee Policy 2060, Agro-business Policy 2006.

4.2.1 Government institutions in the forestry sector

Ministry of Forests and Soil Conservation and its Departments: The major roles of MFSC are to formulate forestry sector policies and legislations for forest management and supply of forest products to the private industries and enterprises. The ministry is also responsible for enforcing its policies through its institutions. However, because of the frequently changing forest product supply policy by MFSC, the private sector has been facing uncertainty of raw materials supply for their industries. Lately, MFSC has accepted the multi-stakeholder policy process, which provides the private sectors opportunity to put their concerns in policy reform.

The Department of Forests (DoF) is responsible for enforcing forestry policies and regulating the operations in government-managed forests,community managed forests (CF) and Leasehold Forest (LHF) and privately owned forests. The DoF executes its policies though district forest offices (DFO)and local-level offices. The DoF is also a management authority of flora to the CITES. The DFOs are responsible for the approval of forest management plans for the collection of forest products, issuing the licenses or permit for the collection of forest products based on the approved management plan, checking orest products collected from forest areas, collection of royalties of the forest products, issuing the release order or transit permit for the transportation of forest products, checking and endorsement of transported forest products, and recommendation for the export. They also play a role of judiciary and are authorized for penalizing offenders. The roles of DFOs as forest managers, law enforcers, and judiciaries are conflicting with each other.

However, the DFOs and their field offices are severely constrained by prolonged absence of staff, frequent transfers, little sense of local accountability, and inadequate resources. For instance, most DFOs have large areas of national forests to monitor, control, and manage. The manifold responsibilities of DFOs constrain them from providing services effectively and efficiently. As a result, the extension services, an essential element for the commercialization of the

Table 4.6: Major Institutions Governing Forestry Sector and Their Roles in Supporting FBEs

Areas of concern for FBEs	Ministry of Forest and Departments					Other Relevant Ministries							
	MFSC	DoF	DFRS	DNPWC	DPR	MSTE	MoI	MoCS	MoAD	MoF	MFALD	MoLE	MoHA
Access to resource	*	*	*	*		*					*		
Establishment and operation of enterprises	*	*	*	*	*	*	*	*			*		
Employing workers							*					*	
Access to finance										*			
Complying with tax	*	*		*			*	*		*	*		
Trading of forest resource	*	*		*	*		*	*	*	*	*		*
Dispute settlement and contract enforcement	*	*		*									*

sector, are weak. Within this context, with the number of human resources and workload, the effective management of production forests is not possible.

The Department of Forest Research and Survey (DFRS) is responsible for conducting periodic inventory of forest resources and conducting research on scientific forest management. It can support private sectors by providing data on forest stocks for business planning and recommending appropriate species to cultivate in particular biophysical condition. However, the department is financially constrained to conduct periodic inventory and research on scientific forest management. As a result, there is a lack of information on forest stock availability to decide on types, scale and location of enterprise constraining the private sector investment in the sector.

The Department of National Park and Wildlife Conservation (DNPWC) facilitates community forests and promotion of forest based enterprises in buffer zones. The DNPWC through its parks and protected area offices regulate the private sector while accessing resources from buffer zones and PAs. As the priority of DNPWC and its institutions is forest resources conservation, development of private sector falls below in their priority list.

T***he Department of Plant Resources (DPR)*** has mandates to carry out research on utilization, improvement and propagation of plants and provide research results. The DPR is also a scientific authority of flora to the CITES. The department is also responsible for issuing natural product certification and export permission for selected natural products. The department could guide private sector in their business on medicinal, aromatic and other valuable plants;however, the acute deficiency of human and financial resources constrains the department to perform the role. As a result, the analysis and preparation of certificates for exporting forest products is delayed taking toll on the private sector business.

4.2.2 Government institutions beyond the forestry sector

Ministry of Science, Technology and Environment: The ministry is responsible for protecting environment and regulating the private sector to comply with the environmental regulations. According to Environmental Protection Act 1997 and Environmental Protection Regulation 1997, if any private sector is interested to establish any forest-based enterprise, they are required to carry out IEE and EIA. The IEE/EIA provisions, endorsed by the ministry, also determine the access to resources by regulating management handover of forestlands to communities and private sectors, and establishment and operation of enterprises. However, as presented in Section 4.1.4 of this study, the private sector is facing difficulties to fulfil the requirements of EIA process, due to complex process and centralized mechanisms of EIA approval. Particularly, the distance-based threshold is a complicated provision for a private investor, who is interested to establish and operate a FBE.

Ministry of Industry: This ministry is responsible to develop industrial policies, legislations and guidelines for facilitating industrial development including FBEs. The industrial polices and legislations have emphasized for providing enabling environment for establishing small-scale forest-based enterprises. Many institutions under MoI, such as Office of the Company Registrar, Department

of Industry, and Department of Cottage and Small Industry are responsible for recommendation and registration of all kinds of enterprises, companies, industries and cooperatives, registration of intellectual property (e.g., trademarks and patent) and provide technical support for the capacity building of the private sector. However, due to the provision of multiple agencies without much clarity on which agency is responsible for what, the registration and operation of an enterprise is costing high for an entrepreneur. Issue of distance between FBE and forest has to be resolved by the MoI.

Ministry of Commerce and Supplies: The ministry is responsible for the implementation of trade policies and legislations and also plays an active role to promote the private sector's involvement in trade. However, the complex custom requirements often create challenges for exporting forest products.

Ministry of Agriculture Development: This ministry is responsible to make appropriate legal measures for the enforcement of plant quarantine. There are five Regional Plant Protection Laboratories in respective development regions. The National Plant Quarantine Program has fifteen plant quarantine check-posts, sub-check posts and Regional Plant Quarantine Offices. The Plant Quarantine Offices issue sanitary and phyto-sanitary certificate for the purpose of export. However, the plant quarantine offices are unable to provide services to the entrepreneurs effectively due to inadequate testing facilities and equipment. The problem is further worsened due to weak coordination between Nepal and importing countries including India to resolve procedural complexity in obtaining sanitary and phyto-sanitary certificate from importing countries while exporting forest products from Nepal.

Ministry of Finance: The ministry is responsible for regulating financial services. This is also responsible to make incentive oriented policies and laws to attract private sector. Some provisions are incorporated in tax laws for tax exemption to the private investor investing in forestry sector. However, the private sector raises issues of irrational royalty rates, high custom duties in export, and dual taxation-local and national.

Ministry of Federal Affairs and Local Development: The ministry is responsible to develop private sector friendly local taxation system and decentralized policy for the private sector promotion. It is also responsible for the collection of local taxes and preparing district plans for the development of local level enterprises. Local bodies are also interested to support private sectors to establish forest-based enterprise at local level. However, local taxes on forest products imposed by many of the local bodies are unrealistic, and as a result, it has created extra burden for the private investor.

Ministry of Home Affairs: The ministry is responsible for ensuring peace and security for smooth operation of enterprises. Moreover, the government on September 2012 has decided to establish Industry and Revenue Security Force (IRSF) to provide industrial security and check tax evasion at border points. However, the decision is yet to be materialized. Moreover, the IRSF was designed to give services particularly for industries located in Industrial Estate; the industries operating outside of Industrial Estate may not be benefited from this provision.

Ministry of Labour and Employment: The ministry is responsible to develop policies for employing labour in industries. The Labour Rules 1993 has

provisions for security of profession and service; remuneration and welfare; and health, cleanliness and safety. According to the rule, the government can form a committee to review and fix minimum wage of labour in industries. According to Labour Act 1992 and Labour Rules 1993, an employer can recruit non-Nepalese citizen after taking prior approval from Labour Office for a maximum period of five years only if a Nepalese citizen could not be available for the specified job. In the due course of time the employer has to train Nepalese citizen and replace non-Nepalese citizen. However, the provision has not been implemented effectively because of weak monitoring mechanism in the ministry. There is no concrete statistics on how many foreigners are working and being employed against the provisions of the Labour Law of Nepal.

4.2.3 Non-state actors

Apart from governmental institutions, various other institutions, such as I/NGOs, bilateral/multilateral agencies, association and federations are involved in forestry sector particularly providing extension services on sustainable forest management, disseminating market information system (MIS), facilitating and promoting establishment and operation of enterprises and trade, etc. However, the interventions from I/NGOs and bilateral/multilateral agencies are project-based and confined in certain geographic area for a specific time period. The continuation and expansion of such interventions for effectiveness at large scale has always been an issue. The business membership organizations (BMOs), such as FenFIT in timber sector; NEHHPA, JABAN, HANDPASS and HEAN in NTFP sector; HAN, TAAN, and NATTA in ecotourism sector; Nepal Briquette Producers Association in bioenergy sector are active in Nepal. These associations have limited capacity to provide required services to the entrepreneurs.

4.2.4 Key institutional issues

The inefficiency and ineffectiveness in delivering services, weak coordination between the forestry institutions, overlapping jurisdiction and authorities, conflicting and contradictory provisions, and complex bureaucratic process are some of the issues challenging the growth of the private sector in forestry.

Inadequate capacity to provide extension services: The MFSC is responsible for providing extensive services through its departments and regional and district level agencies. Extension services, particularly on scientific forest management, establishing forest based enterprises and facilitating trade are important for promoting production forestry. However, the overwhelming responsibility of staff within the DoF and DFOs to perform technical, administrative and judicial roles is reducing their efficiency and effectiveness to provide extension services. Similarly, as the extension personnel under forest department are not trained on enterprise oriented forest management, the entrepreneurs are not able to get required extension services.

Overlapping authority and weak coordination: The existing monitoring mechanisms in the forest sector and industrial sector are led by different agencies of the government, Regional Forest Offices and Department of Industry and there is no any functional relationship between these agencies. This provision creates the jurisdictional overlap for the monitoring of forest-based enterprises, and sometimes conflicts, which ultimately impacts the private investors. Similarly, the weak coordination between custom

offices and other government agencies often create challenge for the export of forest products.

One Window Policy designates Department of Industry as the 'one window servicing agency' with the industrial promotion board as the focal point. It is practically not operational due to jurisdictional overlaps across the concerned agencies, policy contradictions and weak coordination between service providers.

Complex bureaucratic processes: Registering forest-based enterprise is a cumbersome, costly and de-motivating process. An entrepreneur has to pass bureaucratic processes of various government institutions, such as DFO, Company Registrar Office and Department of Cottage and Small Industry. The complex process of registration is demotivating factor for private sector to enter into forestry business. Moreover, the time consuming process for getting certificate of origin from FNCCI and documents required for exporting, is another challenge that the private sector is facing.

4.2.5 Political environment

The transaction costs of a business are reduced in politically stable environment. Nepal underwent numerous and significant political changes since 1990. It has resolved a decade-long insurgency, the nation was declared as a federal democratic republic in 2008, and is still in a post-conflict political transition phase. There have been frequent changes in the government. In this situation, the overall economy including the forest sector has been impacted, forcing the nation towards a slow growing or stagnated economy. In the present context of long transition period with the constitution of the country still to be drafted, there are confusions about the federal structures and their policies, and power sharing on natural resources including forest.

The private sectors investing in forest-based enterprises have been bearing risk and uncertainty on policy provisions, which might be changed after the establishment of federal states based on the new constitution. Besides, due to unstable government and prolonged transition period, the problems such as general strikes, extortion, intimidation, and hurdles in the movements of goods have been occurring frequently, creating hesitation among private investors for further investment. As stated in a recent publication of Nepal Rastra Bank, the average direct cost of general strikes stood at NRs 1.8 billion per strike per day and NRs 27 billion per year at the current prices during 2008 and 2013 (Shrestha and Chaudhary 2013). The total accumulated output loss due to the general strikes during the five-year period is estimated at NRs 117 billion. The report of high-level judicial commission states that the political instability and lawlessness are considered to be the major cause of corruption during the past one and half decades in Nepal (MFSC 2011).

The forest sector has also been suffering due to lack of political commitment. In spite of the fact that every major political party has considered forest as an attractive sector in their election manifestos and identified a need for its development for national prosperity, the practical application has been low. Instead, the forest based trade and industry has been negatively affected by the political influence. Reports prepared by the Parliamentary Committee on Natural Resource Management and the High-level Commission for Investigation on Community Forestry, Forest Encroachment and Deforestation have indicated insufficient accountability, elite capture in

forestry resources, political protection for timber smugglers to be some of the major causes of corruption in the forestry sector.

There had been reports of massive timber harvesting and encroachment of forest during the period of political events including periodic national elections. According to Department of Forests, the problem of felling of trees and encroachment is more in Terai, particularly in the districts of Kailali, Banke, Bardiya, Kapilvastu, Nawalparasi and others than in the mid hill region. Good news is that during the recent election of Constitution Assembly, no such evidences have been found. This is a positive sign for the country.

The obstacle by political groups and forceful donations including money seeking by some local level groups (misinterpreting and misusing ILO 169 to collect illegal money from private sector, which is in some cases informally labelled as 'ILO tax'), local political cadres and local hooligans during transportation and trade of the timber products have increased the transaction costs as well as created entry barriers for potential investors.

The issues relating to security of private land and property remain unresolved that is still a stigma for investors. There is still the fear of losing harvestable trees and even land due to political parties' confiscation, which were practiced during the insurgency period. The uncertainty of land reform due to frequent changes in the policy with change in political regime has cautioned private land holders thus demotivating private plantation as well as renting out for its utilization. On the other hand, the government has been unable to return or provide compensation for the properties lost due to confiscation and as forced donations.

The private sector in the leadership of FNCCI has also developed a Code of Conduct focusing on business transparency including a ceiling of the value of any gift or present to anyone not to exceed NRs 5,000 and submitted their approaches to the political parties. However, the private sector reports that forced donations is still heavily practiced by political parties though they observed some soft tone in the recent Constituent Assembly (CA) election in 2013.

Due to the negative political interference, there have been some obstacles in law enforcement and crime control. The latest annual report of CIAA has exposed that the decisions of courts and orders of CIAA to government agencies to punish those officials, forestry smugglers and persons, who have involved in forest related offences, timber smuggling, illicit trade and corruption are not being complied by the government agencies including the Ministry of Forests and Soil Conservation (CIAA 2012a).

The forest stakeholders and forest communities including the private sector, who are struggling for forest protection and enterprise development, are seriously raising their concerns about the lack of law

and order and degree of impunity within the forestry sector.

The political influence in hiring and transferring personnel in government agencies has also been affecting the forestry sector. Similarly, at the enterprise level, conflicts between the entrepreneurs and labour unions often backed by political parties and their sister organizations results into losses in workdays. Such threats prevents entrepreneurs from implementing provision of 'no work, no pay'.

In summary, the nation has incurred negative side effects on the national economy through 1) inefficiency in implementation of existing policies and difficulty in law enforcement; 2) increased lawlessness, widespread corruption, and growing insecurity and crime; 3) reduced transparency and inefficient legal systems; 4) increased political risks; and 5) more frequent civil unrest and strikes. According to the political instability index developed by economic intelligence unit (EIU 2009-10), Nepal is ranked as 19th highest politically unstable country along with some African nations out of the 165 nations compared. However, the actual situation at present is not bad and it is improving rapidly. In fact, in comparison to other conflict-affected countries Nepal's forestry sector has been relatively less impacted, in international comparison Nepal's forests are found to be maintained and well protected.

4.3 Business Development Services including Infrastructure and Finance

4.3.1 Research, capacity building and extension services

The business development services required for enabling business environment other than described above include research and development, supply of quality inputs and technologies in a regular basis, capacity building, business advice and counselling, market information and product promotions, and networking and brokering. The availability of quality services either reduces risks or the costs of production and marketing making a sector profitable and attractive for the investment. Various service providers from government, civil society and in a very limited areas some private institutions are providing, research, capacity building and extension services to forest producers and entrepreneurs.

Research: The DFRS is responsible to develop and demonstrate appropriate technologies related to forest management activities such as determination of forest growth to maximize forest productivity, identification of suitable tree species for various biophysical settings, and development of nurseries and silvicultural technologies for the productive species and varieties. Some research efforts have been made in the field of agroforestry and fodder production, tree improvement, socio-economic studies, utilization of forest products such as bamboo and rattan, and estimation of volume and biomass for various forest products. The Department of Plant Resources is also involved in various research activities on plants, especially NTFPs.

However, the research and development activities in the country are very limited due to low policy priority, the lack of development vision on the part of planners and managers, shortage of fund, decreasing appointments of professional researchers, and increasing frustration among existing researchers (Acharya 2006). No research has been conducted in the identification of the commercially viable and biodiversity friendly timber and NTFPs species.

Similarly, the identification and proper treatment practices of diseases in the forest related species is yet to be done. Research is also lacking in proper cultivation and maintenance practices of the commercial species that could have generated a greater private sector interest for investment in plantation.

Capacity building: Under MFSC, there is Human Resource Development and Training Section, which oversees the training component at the central and regional training centres. Limited trainings are conducted, which are mostly focused on enhancing the forestry staff capacity. The capacity building activities of the producers and other actors related to the forestry sector are limited.

Tribhuvan University (Institute of Forestry and Kathmandu Forestry College) and Agriculture and Forestry University are producing mid and high-level forestry technicians. The coordination between universities and MFSC is weak and there is almost no coordination with forest-based industries. There are some civil society organizations which have been conducting capacity building, research and development activities and transferring knowledge, skills and technologies to local communities for enterprise development at small scale.

The study found that the private sector is ready to extend partnership with the government or any training institution to develop skilled human resources especially in processing and manufacturing forest products. Developing appropriate curricula and organizing practice-oriented training in partnership with enterprises and training institutions, such as Coucil for Technical Education and Vocational Training (CTEVT) can address the issue of shortage of skilled labour for the enterprises.

Extension services: Among the five departments of the MFSC, the DoF is the main institution, directly linked with forest producers and entrepreneurs in relation to extension services. As the DoF and its field offices are playing multiple roles, the focus and scale of extension service is insufficient. The Department of Soil Conservation and Watershed Management (DSCWM) and its district offices have been implementing soil conservation and watershed management programs based on the principles of integrated watershed management. This department also provides some plantation supports in soil erosion prone areas. The DPR provides only limited extension services, especially occasional NTFP management training and some supports in Quality Assuracne (QA) and Quality Control (QC) for trade through its laboratory facility. The DNPWC is active only in protected areas.

During this study, the entrepreneurs expressed the need for information on soil and climate specific species of economically profitable timber and NTFPs for private plantations. Quality inputs and technology supply has also been identified as a major issue by the entrepreneurs; the inputs and technology suppliers are inadequate. Only few nurseries managed by DFOs and private entrepreneurs supply plantation materials, which are unable to supply sufficient quantity of quality seedlings to growers. Due to the use of improper harvesting technologies and practices, the loss in the total output of the timber and NTFPs is significant. In spite of the great technological innovation in the engineered wood, Nepal still lags far behind in adopting such technologies.

Most importantly, there is a severe shortage of technical assistance and extension services in resource inventory

and operational plan revision of CFUGs. Without the renewal of the community forest with revised operational plan, the CFUGs are not able to harvest and sale forest products.

In the forestry sector, business counselling service providers do not exist both in private and public sector. However, DFOs regulates the trade of forest products issuing the release order or transit permit for the transportation of forest products, checking and endorsement of transported forest products, export recommendation to the concerned custom offices. The offices under custom department regulate international trade through collecting custom fees, taxes and tariffs.

The demand and supply status of forest products is not available which has made the investment in this sector risky and unpredictable. There is no proper platform to seek market information for forest products except for NTFPs. ANSAB has been publishing price bulletin of 32 NTFP species regularly and providing other market related information through its website. Although in NTFP subsector, associations such as NEHHPA and JABAN are organizing some trade fairs, the activities towards market promotion in the forestry sector are very limited.

4.3.2 Infrastructures

The availability of adequate quality infrastructures either reduces risks or the costs of production and marketing making a sector profitable and attractive for the investment. This study reveals that four most important infrastructure needs for attracting investments in Nepal are transport, electricity, information and communication technology (ICT), and other supportive facilities.

Electricity: Electricity being the first and foremost input required for running enterprises, especially processing and manufacturing, its availability and regular supply really matters for the overall performance of an enterprise. The unavailable or intermittent supply of electricity is one of the major constraints for processing and manufacturing enterprises. The coverage is very low providing access to electricity only for 48% of the population in Nepal. Even the population with access to electricity have been facing problem of intermittent supply of electricity due to the load-shedding almost throughout the year, which goes up to 18 hours a day during the winter and dry seasons.

In spite of the high priority of the government to develop electricity since late 1990s, the total present supply of electricity is 564 Mega Watt (MW) (NEA 2013; Majgainya 2009). The domestic consumer category continued to be the largest consumer category with a share of 95.12% of the total number of consumers. The industrial and

other remaining consumer categories combined accounted for 1.44% and 3.44% respectively (NEA 2012/13). The consultations during this study revealed that electricity produced from generators is at least three times more expensive than that received from electric grids and adds approximately 26% of the sales price making Nepalese forest products less competent in the market. The entrepreneurs who get electric connection complain about the losses they bear due to intermittent supply of electricity due to frequent load shedding.

The time required for getting electricity connection is 70 days, which is less as compared to other South Asian Association for Regional Cooperation (SAARC) nations, however the number of procedures required for getting the connection is high. The government has provided the construction licenses to 85 projects with a total capacity of 4,392 MW and provided the survey licences to 57 projects with 5,311.79 MW capacities. Seventy-six projects have been issued generation licences over the past decade, which have a combined total capacity of 2,128 MW. Out of seventeen on-going projects, seven are in completion phase. NEA has also been working to address electricity supply shortage through import from India. In 2012/13, 223 MW of electricity was imported from India. With the completion of the hydro-projects currently under construction, the energy situation of Nepal could be improved in five years. This challenge and the need to address this are also reflected in the election manifesto of the major political parties.

Transportation: Road infrastructure is increasing, however, most of the rural area in Nepal still remains disconnected from district headquarters or all season roads due to lack of integrated policy and implementation strategy for rural road development. While the Terai has relatively high road density (22 km/100 km^2), difficult terrains and lower road density in hills (8 km/100 km^2) and mountains (2 km/100 km^2) constrain transportation of forest products in the mid hills and mountains, sometimes needing expensive air transportation. For example, transportation cost from Gamgadi, Mugu to Nepalgunj by air is NRs 70/kg while even by earthen road it would cost NRs 40/kg, which would even be less if a better road is made. To increase the competitiveness of products, the transportation facilities should be reliable and available at a reasonable cost, and in case of export goods boarder roads should be functioning and transit facilities should be available.

The Government of Nepal have developed 20 years road master plan, implemented road transport policy 2001, and emphasized the role of road in interim three year plan (2007-2010) to improve transportation infrastructure and increase road access. The Department of Road has been implementing 10-year sector wise plan, and priority investment plan (2007-2016). The priority investment plan envisions bringing entire hill population within a four-hour walk and the Terai population within two hours walk to all season roads.

60% of resources for transportation sector enter as foreign investment. Various agencies including the World Bank and Asian Development Bank have been providing grants and loans for developing transportation infrastructure in rural area and linking Nepal to other countries to facilitate the country's import and export. The World Bank supported programs, such as 'Rural Sector Development Project' that improved access of rural villages in remote hills and 'Rural Access Improvement and Decentralization

Project' that have improved rural transportation infrastructure in 20 districts reducing travel time by 60%. Similarly, the ADB supported projects have constructed 613 km of rural road and 96 km of road connecting villages with district headquarters. In addition, the ADB supported projects also constructed 41 km of roads connecting boarder markets in Birgunj, Bhairahawa, and Kakarvitta to reduce transportation costs associated with import and export.

The weak institutional capacity of local agencies and the lack of accountability and monitoring have resulted into poor road network with high vehicle operating costs. Inadequate road networks, poor quality of roads, syndicate system and lack of competition in transport sector, and obsolete technologies and old vehicles in transport system are creating challenges for forest-based industries for transportation. To make the matter worse, frequent strikes and the lack of alternate routes have increased risks during transportation hiking up the transportation time and costs. Unreliable transport system delays supply of forest products, which has been costly for FBEs in the short as well as long run. All these factors are contributing to increase of the risks and transaction costs for FBEs reducing their competitive capacity both in domestic and international markets.

Information and Communication Technology (ICT): ICT can transform the development of any sector. With a fair competition among Internet service providers in Nepal (there are about 50 registered companies), the price of Internet is at average on broadband network but relatively expensive on mobile networks among South Asian countries. About 80% of the population of Nepal is using telecommunication and 72% is using Internet services. Almost 70% of the Internet users use GPRS/Mobile data service, of which 80% of the bandwidth is used for the official or for business purpose.

Given the progress Nepal has made over the past two decades in ICT with accelerated communication facilities including Internet facilities and mobile phones, the communication costs are reduced and are quite reasonable for a business. This is a good opportunity for private sector for doing any business. This also facilitated to improve other BDS, for example, commercial banks have developed and providing innovative banking services such as mobile banking.

Other supportive facilities: The study revealed that collection centres, warehouses, market infrastructures (wholesale/auction), laboratories for quality assurance (QA) and quality control (QC) are the critical facilities required for increased investment in NTFP sector of Nepal. Similarly, access and affordability of modern and efficient harvesting, processing and manufacturing technologies are very crucial to increase the efficiency and upgrade the timber value chain. In case of forest bioenergy, the technology on wood biofuel, such as torrefaction combined with densification leads to a very energy-dense fuel carrier.

Most of the technologies required by the forest-based entrepreneurs are already in use in China and India and are relatively cheaper in price. As Nepal has good trade relation with China and India, the entrepreneurs can easily access the required technologies.

4.3.3 Financial services

The banking system in Nepal has evolved since its introduction in 1937 with the establishment of Nepal Bank Limited

creating a better investment climate including that for forestry sector through availing various financial products from various types of banking and financial institutions. Nepal Rastra Bank (NRB), the central bank established in 1956 governs the cash flow towards various components of economy through various types of banks and financial institutions.

Financial system: There are four kinds of major institutional players, which dominate financial intermediation in Nepal. These are BFIs, government owned institutions, capital market, and insurance companies. Table 4.7 shows the structure of financial system in Nepal providing lists of regulating institutions and financial intermediaries.

With the proliferation of banks and other financial institutions (BFIs)[16] in the country, a positive outcome is indeed observable in the form of lending by these financial intermediaries in the economic sectors including forestry. The financial services from formal source is encouraging and becoming better. There are 283 BFIs in Nepal providing services through 2,492 branches, with the total loan volume of NRs 955 billion. To ensure the fund flow, the NRB has mandated class A, B, and C banks to disburse 20%, 15% and 10% respectively of the loan volume to the priority sectors by the end of FY 2014/15. Overall credit disbursed to agriculture and forestry sector[17] by banks under the supervision of NRB was NRs 17.24 billion in 2012/13, which is 2.18% of the total loan volume in the country (NRB 2013).

Recently some BFIs have started to provide innovative banking facilities to entrepreneurs in few rural areas in collaboration with I/NGOs. Another type of BFI-I/NGOs collaboration has resulted into the development of enterprise service providers to support enterprises to develop acceptable business proposals. Lately, other innovative banking services suitable for rural area are available, such as “banking on wheel” and “mobile banking” that FBEs can benefit from.

Stability of financial system: As experienced by other countries around the world, Nepalese financial sector is also experiencing the trend of deregulation, globalization and financial innovation. The proliferation of BFIs in terms of products

Table 4.7: Structure of Financial System in Nepal

Regulating institutions	Financial intermediary institutions
Nepal Rastra Bank	Commercial Banks (Class ‘A’), Development Banks (Class ‘B’), Finance Companies (Class ‘C’), Micro finance Development Banks (Class ‘D’), Financial Cooperatives, Non-Governmental Organizations
Ministry of Finance Postal Service Departments	Specialized Financial Institution(s) like Employees Provident Fund, and Citizen Investment Trust
Postal Saving Banks	
Securities Exchange Board	Nepal Stock Exchange Limited
Insurance Board	Insurance Companies

Source: NRB 2013

[16] As per the Bank and Financial Institution Act – 2006, BFIs are categorized into four types; Class "A" i.e., commercial banks, Class "B" i.e., development banks, Class "C" i.e., finance companies and Class "D" i.e., micro finance development banks.
[17] There is lack of desegregated data on agriculture and forestry sector.

and services as a result of advancement in ICT has created more opportunities as well as challenges in the stability of the financial system. Furthermore, with the growing integration of Nepal with the world economy especially in the area of trade and services as well as dependency on foreign employment, it is increasingly being exposed to the global forces, shocks and vulnerabilities.

As a regulator and supervisor of the financial system, maintaining financial stability has become a major policy concern for the central banks worldwide and so does for Nepal. Even in the case of low integration with global financial market, Nepal is exposed to domestic and external shocks. Volatility in remittance flows, increase in international oil price, high level of imports relative to exports, pegged exchange rate regime, frequent volatile liquidity, real estate sluggishness and other supply shocks have impacted the stability of the financial sector. NRB, being the central bank of Nepal has to play a vital role in achieving the goal of financial stability in the country. Accordingly, the NRB Act, 2002, which replaced the previous NRB Act, 1956, explicitly expressed financial stability as one of its objectives.

To sum up on the stability of financial system in Nepal, the nature and intensity of the impact of the global crisis on Nepal is considered to be different from those in some of the developed economies. The financial sector has remained resilient and functioning, despite slight volatility of liquidity and interest rate of BFIs because of low growth of remittance inflow and excessive investment in the real estate sector.

Supply of financing products and channelization methods: An observation of credit exposures by different financial institutions since 2000 reveals that commercial banks in the beginning of the last decade were not much involved in extending credits to small business firms and individuals with small financing requirements, which were used to be favourable lending sectors for the Class B and C institutions. The credit facilities to individuals under deprived sector (then loan ceiling of NRs 30,000) used to be extended by micro finance institutions, which later categorized as Class D micro finance development banks. This pattern has however changed later owing to increasing number of BFIs which made the market very competitive, thus forcing the BFIs to look for viable sectors to book quality credit assets.

With evolving market scenario and increasing competition to create quality loan portfolio in the book, commercial banks currently not only extend bigger size loans (above fifty million in Nepali rupees) but have of late also started constituting departments for small and medium enterprises and micro finance businesses. The financial products presently available through BFIs are summarized in Table 4.8. A case of financial products and services to herb growers is presented in Box 4.7.

Supply of these financial products is governed by 1) BFI's internal rules, such as principles of credit of the BFI, types of credit facilities available with BFI, loan categorization, borrowing cost and prerequisites for credit decision and 2) investee's characteristics.

Nature and tenure of credit products: The BFIs offer loans to the forest-based enterprises for the short as well as long term. The short-term loans are basically for catering the working

Table 4.8: Financial Products Available Through BFIs

Financial Products	Product Characteristics
A. Fund-based loans	
1) Working capital loan	
1. Overdraft	Borrower is allowed to overdraw its account up to certain approved limit. This is revolving in nature annually. The interest payment frequency is monthly or quarterly. Depending upon the business and interest payment record over the year, bank may continue overdraft for one.
2. Demand loan	Demand loan is revolving in nature with maximum of one year tenure and is disbursed upon the demand from the borrower. The interest payment frequency is monthly or quarterly.
3. Short-term loan	This loan is provided for 4 to 5 months period with a requirement of full repayment at maturity. Short-term loan is suitable for meeting seasonal requirement of entrepreneurs.
4. Pledge loan	Short-term (4 to 5 months) financial product, jointly locked possession of BFI and borrower. Borrowers use pledge loan to enrich their inventory of goods until they can sell them at the best price possible.
5. Packing credit loan	Exporters use this product (4 to 5 months maturity period) for procuring or producing goods to export to other parties in Nepal or abroad.
6. Trust receipt	Importers oriented short-term (4 months) products used by borrowers to pay exporters and for custom clearance. The borrowers settle the loan through the sales proceeds.
2) Fixed-term loan	Long-term product- more than one year. Repayment mode is equal monthly instalments that include monthly amortization of principle and the interest amount for full settlement of the loan within the specified tenure. Used for long term investment needs such as procuring land, building, machineries etc.
B. Non fund-based loan	Entails no fund outflow from BFI but a BFI offers their guarantee for supporting the financing need of the borrower.
1. Letter of credit	A letter of credit is issued by bank on behalf of importer assuring payment to the exporter upon fulfilling the conditions by exporter specified in the letter while exporting the goods to the importer. Importer gets time to make payment to the exporter.
2. Bank guarantee	Banks render guarantee to borrowers to procure business supply of organization or for advanced payment.

capital requirement whereas the long-term loans are for meeting the fixed cost requirements,such as buying plant and machinery and building construction

Box 4.7:Financial Products and Services to herb growers: A Case of Rastriya Banijya Bank

Rastriya Banijya Bank (RBB) Ltd. provides credit service to the herbs grower or farmers for a whole year, with one time processing, according to cropping pattern. The bank also provides credit service to the processors, wholesalers and retailers and seed producers. The other areas for which the RBB provides the credit support include farm machineries, construction of cold storage,developing irrigation facility, production and marketing of orchids and ornamental plants. The interest rate for deprived sector loan is 10% for individual and 9% for institutional per annum. The bank also provides a loan to individual and company for exporting and importing of goods at 9% interest rate per annum.

necessary for the business operations. Such term loans are repayable by the borrowing enterprises with the equal monthly instalment (EMI) for a period ranging from 5 to 15 years depending upon the cash flow of the FBE projects, which borrow through such long-term loans.

Informal sources of finance: Apart from the formal borrowing from the BFIs, the FBEs or individuals doing business also borrow from the informal sector. In the informal sector, the creditors are cash rich people like goldsmith, landlords, individual lenders, etc. The borrowing from these creditors is generally against the loan deed or transfer of land ownership to the creditors and the interest charged under such informal lending is generally quite high. The situation for such informal borrowing is attributed to a number of reasons including lower financial literacy of the people, lack of financial institution in the area and quick decision-making ability of the creditors to provide loans to the borrowers without much hassle. To check and control the practice of borrowing and lending through informal channels, Nepal Rastra Bank has taken a number of measures, such as regulations for branch opening and directed lending.

Regulatory scope for financing FBEs: As per the Unified Directive dated mid July 2013 of NRB, every BFI must formulate a plan to achieve its loans exposure to productive sector equalling 20% of its total loan volume within mid July 2015. This means the mandatory finance to productive sector will reach to NRs 191 billion by mid July 2015, even if the total loan volume of BFIs remains the same as in 2013, which was NRs 955 billion. The productive sector as defined by NRB includes prioritized sectors like agriculture, energy, tourism, and cottage and small industry. There is also a separate directive, which specifies that every BFI must have 10% of its loan exposure in agriculture and energy by the end of fiscal year 2013/14. There is no any specific regulation from NRB for BFIs to comply as regards to financing the FBEs but forest heading does get incorporated as sub head in the agriculture sector as specified by NRB in its aforementioned unified directive.

Perspectives of BFIs and FBEs on access to finance including constraints: According to the field survey of 72 BFIs in Kathmandu and sample districts done for this study, 7% of class A

banks disbursed loan to FBEs, while 41% of class B banks, 33% of class C FIs, 50% of class D FIs and 47% of others (financial cooperatives, NGOs) provided loans to FBEs. Interestingly more than 70% of the disbursed funds were in the form of working capital loan. Risk of loan default is one of the prime reasons for not sanctioning loan products. When asked whether the BFIs provide loan to newly established FBEs, 64% savings and credit groups, and 59% development banks responded "yes", which implies that either they are willing to take risks or have risk mitigation measures which may be true in case of development banks and the perceived risk is low in case of saving and credit groups.

The interest rates of BFIs are in a range of 10% to 20% with the commercial banks having the lowest rate followed by the development banks, finance companies and micro financial institutions. During the survey, most of the entrepreneurs taking loan from informal sources stated that one of the reasons for avoiding BFIs for loans is the uncertainty in the interest rates as the BFIs unilaterally decide the higher rate without informing and taking consent from the borrowers.

In supply side, most of the BFIs have provisions and are interested to extend their credit facilities to FBEs. The findings of the survey of BFIs during this study revealed that the major motivating factors for investing in FBEs are return in the form of interest income and other fee related incomes along with the requirement of fulfilling the regulatory provision. Similarly from demand side, the entrepreneurs are continuously seeking finance to expand their business. The survey data shows that 68% of FBEs faced obstacles while accessing finance, among them 53% consider the obstacles they face are very severe. It is also found that 54% of the firms surveyed have not taken loan. Among those who have taken loan, 50% have taken loan from informal sector. Among the informal sources, relatives and friends were found to be the major contributors.

The following are the major factors leading to not so much advancement of FBEs for their access to finance from BFIs.

i. *Informal and unorganized nature of FBEs:* Most of the FBEs are informal in nature; a survey during this study found that over 40% of enterprises do business informally. The informal nature of their business by default, exclude them from the set of financeable organizations and have little access to finance.
ii. *Financial illiteracy and difficulty in ensuring credit worthiness:* Even the formally registered businesses lack financial literacy and many of them suffer to prove their credit worthiness. The lack of sound account keeping, and inability to produce required documents often deprive these businesses from access to finance.
iii. *Long moratorium period:* Some of the FBEs such as plantation need to wait for sizeable number of years before production; this long moratorium period coupled with other risk factors as disease and pest infestation make such businesses less attractive to BFIs.
iv. *Inability to produce enough collateral*: FBEs in semi-urban or rural areas own low value lands, which do not suffice for collateral. In addition,the banks also consider unavailability of readily saleable additional security as a negative score while they assess FBEs for credit disbursement.
v. *Lack of appropriate insurance coverage:* Insurance market for FBEs is not developed in Nepal. The lack

of insurance coverage is another factor that makes BFIs hesitant to disburse loans.

vi. *Information management system:* The availability of formal data and information on forest industries and FBEs in Nepal is very limited and even the interested BFIs cannot triangulate the information produced by borrower before lending the loan. Creation and maintenance of data on FBEs would definitely help in enhancing awareness for both the existing and potential investors to consider the investment/financing in the forest based businesses positively.

vii. *Reputation of forestry sector in general:* The general lack of trust attributed to degraded reputation of forestry sector business turns BFIs away from making investments.

Given the state and nature of the FBEs, they require support in a number of areas to be able to access credit without difficulty. These include a) development and execution of business plans, b) building managers' capacity, c) linking with lenders, d) assistance in financial negotiations, and e) financial account keeping.

5 INTERVENTION STRATEGIES

Nepal should define a goal for forest-based industry development that is owned by all of its key stakeholders. Considering the potentials that have been identified in this report, Nepal can set a goal of increasing the value of legally and sustainably produced and supplied forest products and services by 15 folds and creating sustainable employment through improved productivity, increased production and supply, value added processing, marketing and governance. To achieve this, a two-pronged strategic approach is recommended, which would consist of a) preparing base for private sector led value chain/industrial growth in forestry and b) promoting industrial competitiveness and growth of most promising forest value-chains. Of course not all can be implemented, but the study has included all the suggestions so that readers see a range of expertise to inform their decisions.

While strategies for preparing and strengthening the foundation that creates space and provides long-term assurance and profitability for asset investors are necessary to retain, expand and attract new investment, strategies for supporting firm-level upgrading in promising value chains are important for improving and sustaining their competitiveness and growth with social and ecological sustainability. These value chains can also serve as a model industry providing evidence and confidence for policy reforms and making right type of enabling investments.

5.1 Prepare Base for Private Sector Led Industrial Growth in Forestry

To attract involvement and investment of private sector in forestry, there is a need to develop a foundation from which the existing entrepreneurs can expand their business and new one would be able to know the prospect and be interested to start a new venture. Preparing the foundation would involve the following six strategies:

1) Define and promote multiple forestry development models for Nepal;
2) Map and zone forests by bio-physical, land tenure, and product characteristics;
3) Address policy issues hindering forestry development;
4) Address institutional and law enforcement issues in forestry;
5) Promote to adopt standards for sustainable forest management and responsible business practices; and
6) Expand business development services including infrastructure and finance.

5.1.1 Define and promote multiple forestry development models for Nepal

In order to attract and approach potential investors, it is important to create space and determine the scope for private sector involvement in forest-based industries. The national strategies would clearly define the management objectives of the existing and potential forestland and define the basis to allocate the available forest and other land for commercial production of forest products and services. Given the diversity of Nepal's forest, institutional landscape and participation of various stakeholders, multiple forestry development models for the development of forest-based industries are needed.

There is no systematic effort to define and develop effective forest industry model(s) applicable to a situation like in Nepal. The forest industry model, effective for production and marketing in land rich countries, is simply not suitable in Nepal due to ecological and socio-economic complexities and business environment that prevails in Nepal. Further, this model does not necessarily take care of environmental and social concerns, which are very important from the considerations of biodiversity and poverty. The government and development partners led model of community groups and cooperatives is working to some extent to perform limited functions, but unable to develop a sustainable business at scale, let alone to address the challenges of developing an effective value chain. In our context, recognizing and dealing with two important functions in forest industry, namely primary production function and processing and marketing function, would be more practical to deal with the above-mentioned complexities. Accordingly, defining production system for commercial purpose, and defining and developing effective business model for different scenarios are suggested as intervention strategies for creating scope for industrial growth.

Define production systems for commercial purpose

Nepal needs to prioritize greater investment in primary production of forest goods and services, since without increased supplies and better quality of supplies; all other investment in the forestry sector will be constrained. Designating available land for commercial production of forest goods and services should be a first step for Nepal. Similarly, clearly defining categories and sub-categories of the available land according to the focused products and/or services and management regimes is needed. Since the dynamics of industry based on use of products and services produced from natural forests vary vastly with that of plantations, the objectives of management, products and services and strategic interventions that are required to promote the corresponding value-chains also vary. While further studies and data from the FRA would be useful for refining the strategies for this, it is suggested to define two broad categories of commercial forest production system as follows.

Category 1: Natural forests for commercial production: This would aim for sustainable management of natural forests incorporating community forestry, biodiversity conservation, and generation of multiple products and services, both for subsistence and commercial purpose. The major actors for the production would be forest producer groups, such as community forest user groups, leasehold forest user groups and collaborative forest management groups, and the government agencies, such as DFOs and the proposed entity for production forest management.

Category 2: Plantations for commercial production: This would aim for plantation of most remunerative plants where appropriate, including rehabilitation of denuded lands, near easy transport, not in conflict with food productions or community land rights. In this, the major actors for the production would be a private business entity either as an individual or a corporation.

Define and develop effective business models for different scenarios

One of the challenges Nepal's forestry stakeholders are facing is not having a

business model that delivers social and environmental benefits in a sustainable way. The worries are over-exploitation of forest resources and resultant degradation of forests and loss of natural stock for the flow of ecosystem services including biodiversity on the one hand, and exploitation of local people and inequality in benefit sharing along the value chain on the other.

In the present state of complexity in the forest sector, a blanket approach of involving private sector for the development of forest-based industries is not only inappropriate, but can create a confusion and even conflict among various stakeholders. For example, the topic of who is more appropriate in developing and running the forest-based industries became a prominent issue of discussions in multi-stakeholder forums recently. There are two extreme opinions, one advocating that community groups should take the entire business functions, and the other advocating that only private sector should be involved in business functions. Although in a minority, there is a third opinion, which advocates that the state should own and operate the forest-based industries. Therefore, it is important to take a multi-model approach; and develop and promote effective business models that deliver the desired economic, social and environmental goals under the given context. The following strategic steps are suggested to define and develop appropriate and effective business models for different scenario.

a) Explore options for forest industry models appropriate for various categories and sub-categories of forest production system: Examining existing forest industry models and best practices, both at global and national level, would provide insights on various elements of a successful model. The study findings presented in the previous sections provide some useful inputs for this. The insight gained from the study also indicates that the exploration would consider the following four main elements of an industry.

- What is the industrial vision of all actors and stakeholders of the value chain?
- Who would manage the production of primary forest products and goods and how?
- How various actors are organized to perform business functions in the value-chain?
- How individual firms, at all level of value chain, are structured in terms of ownership, shareholding and benefit sharing?

b) Design forest industry models appropriate for various categories and sub-categories of forest production system: In the initial stage, a design framework for a business model would be developed including business vision, business functions, actors, partnerships, ownership structure, governance, roles, investments, benefit distribution, legal matters, and business principles on fairness, equity, gender and social inclusion. The participatory process would continue to refine the details that are required to make an effective business model. While the exploration and the answers to the above questions would support to design an appropriate industry model for a value chain, we suggest the following strategic supports for designing appropriate models.

Support to define vision and values to be considered in business models: It is important to have a common national vision and guidelines acceptable to all stakeholders of the value chain.

The vision and values of the business models would be defined by considering specific national context, strengths and weaknesses of value chain actors and other stakeholders, and the goal of sustainable economic growth and employment. Deeper understanding of supply potential, interest and capacity of investors, and end market characteristics for Nepali forest products and services would help to refine the vision. Technical and financial support would be provided to develop some exemplary cases of forest-based value chains with clear national vision for promoting inclusive, fair and green growth by involving existing and potential value-chain actors, enablers, and facilitators. Simultaneously, incorporating the learning, a guide would be developed for potential value-chain actors on how to be organized and define value and vision of the business model. The guide can also provide guidance on selecting the primary products and services, production and harvesting practices, inputs and technologies, and end markets.

Develop examples on how various actors can be organised to perform primary production and business functions in a value-chain: Depending on the context, interest, capacity, scenario of production system, and stakeholder participation, the division of roles and business functions among various actors should be structured in such a way that the overall competitiveness and growth of a value chain is maintained. For example, in Nepal's context the following options could be considered.

- In a value chain based on forest producer groups led production system managing natural forest, the traditional model, where investors with capital seek natural resources and operate business with the involvement of local people as labourers, is not suitable. Instead a model where local communities and producer groups with clear tenure arrangements for use and management manage forest resources and seek partnership and capital, is more appropriate for sustainable development. This is practical for Nepal for various reasons including the strong community-based forest management system, human resources engaged in community forestry, and possibility of creating many small and medium sized forest enterprises (SMFEs), rather than a big company,which generate employment opportunity and income to many. The model would consolidate the production, processing and marketing of natural products by combining strengths of communities and business leaders, who will complement each other in terms of land, labour, capital as well as knowledge, skills and network required to make a viable industry.

- Similarly, in a value chain based on products from government managed natural forest, government agencies (district forest offices or an entity responsible for production forests) would play primary role in managing forest land by producing a portfolio of products and services to improve overall economic value. They would then seek the private sector partnership for processing, manufacturing and marketing of their products and services.

- In a value-chain based on the products from plantations (or cultivation in case of NTFPs), a private company would play a role of lead firm providing planting materials and technology with buyback guarantee, and local people, either individually or organized in a

group, would grow trees and plants. In any case, in Nepal's situation, it would be worthwhile to create more space for SMFEs and provide support to dominate business functions as much as is possible as these together are found to contribute to the creation of jobs, local economy and eventually to national GDP more than big firm dominated value chains.

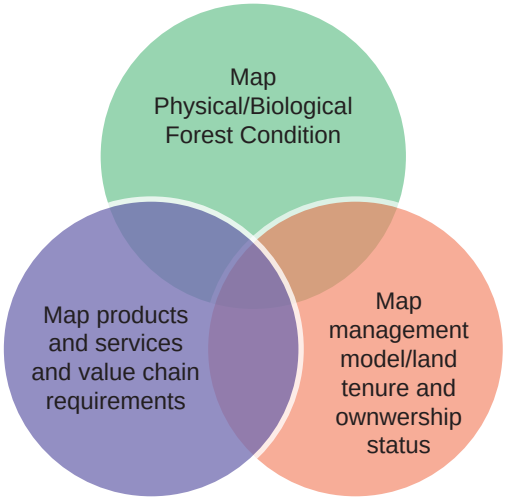
5.1.2 Map and zone forests by bio-physical, land tenure, and product characteristics

Forestlands in Nepal have not been systematically zoned on the basis of their economic potential or conservation value. As the space for private sector participation in the present situation is very limited, it is necessary to create more space and scope for private sector participation. One of the important steps for this is to categorize existing natural forestland based on the main functions and clearly designate production forests in all nine ecological regions. This may require identifying additional critical areas that need to be protected for special purpose, such as scientific studies, biodiversity conservation or ecological function. Excluding the forests under the protected area system and other critically important areas for conservation, the area under productive forests would be demarcated and declared as production forests for commercial purpose.

Support is necessary for using science-based management to increase productivity and matching with market information to prioritize products. Similarly, development support is needed for clustering producers along with the mapping of the distribution of most potential products. Considering the complexities of Nepal's forests, three-dimensional model as illustrated below is suggested while mapping and zoning the forests of Nepal.

Using the upcoming FRA data, further zoning of the production forests could be done defining sub-categories based on the management regimes, prioritized products and services and ecological regions. This will help further clarify the scope and objectives of forest management and develop and apply appropriate scientific management for not only increasing physical productivity but also economic productivity in a sustainable way.

Figure 5.1: Mapping Nepal's Forests on Three Dimensions



Map and zone natural forests and declare production forests

As a starting point, three broad management regimes based on whether it will be managed by a government agency, a forest producer group, or a private business entity could be defined. From the management point of view, options such as i) scientific management of forest for timber production in Terai and mid hills, ii) sustainable management and harvesting of NTFPs in mountains and hills could be considered.

With regards to the products and services, in the beginning, the following list of recommended products and services could be considered along with the continuous process and mechanism of identifying, assessing and prioritizing, which would be based on the emerging markets and technology of production and value addition.

Preliminary list of commercially potential products and services from natural forests:

Timber

- Hard-wood for builders' wood work and furniture especially for frames for domestic market using sal (*Shorea robusta*), asna (saj)-*Terminalia tomentosa*, sissoo (*Dalbergia sissoo*), karma (*Adina cardifolia*), and jamun (*Syzygium cumini*) produced in all 3 regions of the Terai; satisal (*Dalbergia latifolia*) in central and western Terai; tooni (*Toona ciliata*) and bijayasal (*Pterocarpus marsupium*) in western Terai.
- Soft-wood for builders' wood work, furniture, parquet, packaging materials for domestic market using, chir pine and alder in all 3 hill regions; chilaune (*Schima wallichii*), katus (*Castenopsis* spp.) in central and eastern hill regions; blue pine (*Pinus wallichiana*), fir (*Abies* spp.), raj sallo (*Cupressus torulosa*) and spruce (*Picea* spp.) produced in all 3 mountain regions; deodar (*Cedrus deodara*) and pangar (*Aesculus indica*) produced in western mountain region.
- Handicrafts and wood carving for domestic and international market using asna (*Terminalia tomentosa*), sissoo (*Dalbergia sissoo*), satisal (*Dalbergia latifolia*), karma (*Adina cardifolia*) and jamun (*Syzygium cumini*) produced in all 3 regions of the Terai; bijayasal (*Pterocarpus marsupium*) from western Terai region; okhar (*Juglans regia*), fir (*Abies* spp.), raj sallo (*Cupressus torulosa*) in all 3 mountain regions; deodar (*Cedrus deodara*) and pangar (*Aesculus indica*) from western mountain region.

NTFPs

- Medicinal herbs – yarshagumba (*Ophiocordyceps sinensis*), chiraito (*Swertia chirayita*) and satuwa (*Paris polyphylla*) in all mountain regions of Nepal; kutki (*Picrorhiza scrophulariiflora*) and atis (*Aconitum heterophyllum*) in the western mountain region.
- Essential oils – jatamansi (*Nardostachys grandiflora*) and sugandhawal (*Valeriana jatamansii*) in western mountain region; wintergreen from eastern and central hill regions.
- Natural fibres - argeli (*Edgeworthia gardnerii*) in eastern and central mountain regions, lokta (*Daphne bholua*) in all hill and lower mountain regions; allo (*Girardinia diversifolia*) in eastern and western hill and mountain region.
- Wild food - morel mushroom in western mountain region.
- Spices - large cardamom (*Amomum subulatum*) and cinnamon in all 3 hill regions and timur (*Zanthoxylum*

armatum) in western hill region of Nepal.
- Bamboo and rattan - bamboo in all 3 Terai and hill regions; rattans in western Terai region.
- Others - chir-pine (*Pinus roxburghii*) for rosin and turpentine and khayar (*Acacia catechu*) for kattha in all 3 hill regions of Nepal.

Forest Carbon
- REDD+ in community managed forests especially in all mid-hills region and government managed forests in all regions of the Terai.

Ecotourism
- Trekking - for foreigners and domestic tourists in all mountain regions and in eastern and central hill regions.
- Forest walk, licensed wildlife hunting, picnic and homestay - targeting mostly the domestic tourists and foreigner in eastern and central hill regions.
- Bird watching, jungle safari and homestay - targeting mostly the international tourists and domestic tourists in all 3 Terai regions.

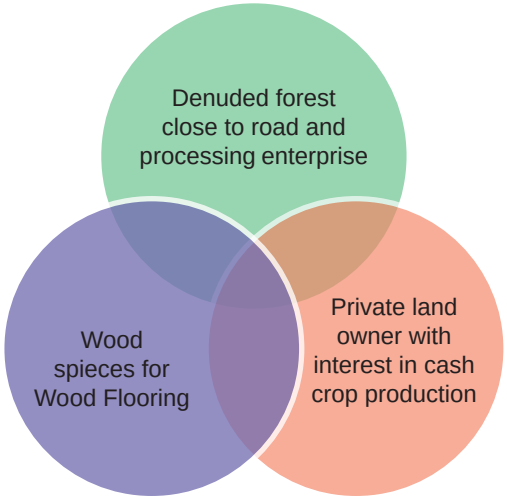
Forest Bioenergy
- Fuel-wood from hard-wood species with high calorific value for meeting fuel wood demand mostly in rural households especially for cooking, room heating during winter, preparing livestock feed (e.g. kudo), liquor production and for sale in the local market – sal (*Shorea robusta*), sissoo (*Dalbergia sissoo*), karma (*Adina cardifolia*), jamun (*Syzygium cumini*), saj (T*erminalia tomentosa*), sirish (*Albizia* spp.) and botdhangero (*Largestromea parviflora*) in all 3 regions of the Terai; chilaune (*Schima wallichii*), katus (*Castenopsis indica*) and alder (*Alnus nepalensis*) from all 3 hill regions.
- Fuel-wood from soft-wood species except oak and rhododendron with high caloric value for meeting demand in rural households especially for cooking, room heating, preparing livestock feed and liquor production - using blue pine (*Pinus wallichiana*), fir (*Abies* spp.), spruce (*Picea smithiana*), rhododendron (*Rhododendron* spp.) and oak (*Quercus sps.*) in all 3 mountain regions.
- Briquettes and pellets - forest weeds (e.g., eupatorium and lantana) and other forest-based biomass waste - herbs, litter, shrubs, woody climbers available mostly in community-managed forests in all 3 hill regions.
- Biomass-based electricity - forest based biomass combined with agriculture residue in all 3 regions of the Terai.

Support to map clusters of area suitable for plantation

Raw material supply is the main constraint faced by the private sector at present. There is a vast scope to promote plantation of commercially most important forest species, such as fast growing timber species in non-forested public and private lands, especially in Terai and mid hills. Figure 5.2 shows an example of scope of plantation forests. In this example,denuded forest and hence low biodiversity, yet close to road and processing facility make it a good fit for plantation of wood species to produce wood for flooring by the private land owners interested in cash tree crop production. The areas identified should then be mapped into clusters suitable for plantation of commercially most important forest plant species.

More specific support in mapping and clustering for prioritized commercially important species and products would

Figure 5.2:Three Dimensitons of Plantation Forest



provide a clear scope for private sector involvement in this lucrative business creating more employment and revenue for the country. The following list of most promising products and plant species from the plantations could be considered along with the continuous process and mechanism of identifying, assessing and prioritizing, which would be based on the emerging markets and technology of production and value addition.

Preliminary list of commercially potential products from plantations:

Timber

- Soft-wood for builders' wood work and furniture especially for plywood and veneer for domestic and international market using teak (*Tectona grandis*), eucalyptus, mango (*Mangifera indica*), sissoo (*Dalbergia sissoo*), paulownia (*Paulownia tomentosa*), kapok (*Ceiba pentandra*) and tooni (*Toona ciliata*) produced in all 3 regions of the Terai.
- Soft-wood for builders' wood work and furniture especially for plywood/veneer for domestic and international market using blue pine (*Pinus wallichiana*), chir-pine (*Pinus roxburghii*), alder (*Alnus nepalensis*) produced in all 3 hill regions.
- Handicrafts and wood carving for domestic and international markets using sissoo (*Dalbergia sissoo*), teak (*Tectona grandis*), and jamun (Syzygium cumini) produced in all 3 regions of the Terai.
- Packing case for domestic and international market using Eucalyptus, mango (*Mangifera indica*) and kapok (*Ceiba pentandra*) produced in all 3 regions of Terai.

NTFPs

- Medicinal herbs – chiraito (*Swertia chirayita*) and satuwa (*Paris polyphylla*) in all mountain regions; atis (*Aconitum heterophyllum*) from the western mountain regions.
- Essential oils – chamomile (*Matricaria recutita*), menthe (*Mentha arvensis*), lemongrass (*Cymbopogon* spp.), citronella (*Cymbopogon* spp.), palmarosa (*Cymbopogon* spp.) in all 3 regions of the Terai through cultivation.
- Natural fibres - argeli (*Edgeworthia gardenerii*) in eastern and central mountain region, lokta (*Daphne bholua*) in all 3 hill and lower mountain regions of Nepal.
- Spices - large cardamom (*Amomum subulatum*) in eastern and central

hills and cinnamon in all hill regions and timur (*Zanthoxylum armatum*) in western hill region of Nepal.
- Bamboo and broom grass - in eastern hill region.
- Others – chir pine (*Pinus roxburghii*)for rosin and turpentine in all 3-hill regions and lauthsalla (*Taxus baccata*) for taxol in eastern mountain region.

Ecosystem services
- CDM – Mostly in the barren lands with scattered trees, improved management of lands in the Terai region through large-scale afforestation and reforestation as well as in some other existing land-use modalities, such as pro-poor leasehold forestry and agro-forestry in private lands.

Forest Bioenergy
- Primarily solid fuel (briquette, pellet) with some fuel-wood production from plantation with high calorific value fuel wood species – sissoo (*Dalbergia sissoo*), babool (*Acacia arabica*), poplar (*Populus* spp.), eucalyptus, bakaino (*Azadirach indica*), and mango (*Mangifera indica*) in all regions of the Terai; alder (*Alnus nepalensis*) and sirish (*Albizia* spp.), chilaune (*Schima wallichii*), katus (*Castenopsis* spp.) in all hill regions; *Salix sps.*, poplar, temperate fruits (including apple, apricot) in all mountain regions.

5.1.3 Address policy issues hindering forestry development

Nepal's forest governance is a major concern for private sector investors involved in the forestry sector for two important reasons. First, poor governance has tainted the image of Nepal's forestry sector business. Second, increased uncertainty and risk due to the poor governance has increased the transaction costs making the sector less attractive for investment. Development of clearly defined legislation and an effective enforcement mechanism, which would improve transparency, accountability, and anti-corruption measures, would be useful to improve governance of the forestry sector in Nepal. The major recommended strategies are given below.

Inform policy with science and participation from community and industry

The present process of formulating policy and regulatory provisions in general does not reflect a balance among and between the diverse perspectives of various stakeholders. Most of the policy decisions are not supported by scientific knowledge from evidence-based research and the participation of concerned stakeholders and cross-sector coordination, the decisions are supported either by personal preferences, often motivated by political or economic interests. Gaps, inconsistencies and contradictions within and between forestry and other regulations governing forest resources are a reflection of the lack of coordination in the policy formation process.

a) Define policy formulation process: It is important, at least in forestry sector, to define a policy formulation mechanism with clear basis (scientific evidence based knowledge derived from research, practice, and monitoring and evaluation of policy implementation), process and multi stakeholders' participation; and reform current policies that are unscientific and are subject to discretionary decisions that helps to provide confidence on the investors in making investment in forestry sector.

b) Give private sector a sense of stability in forestry policy while enforcing accountability: Frequently changing policies driven by ad hoc

Box 5.1: Examples of Multi-stakeholders Participation in Policy Process in Nepal

Although not institutionalized, good examples of the participatory process in developing policy and programs in forestry include the Herbs and NTFP Development Policy, Community Forestry Guidelines, and REDD Readiness Preparation Proposal. The evidence from research and grassroots perspectives, for which ANSAB was entrusted, is well integrated in NTFP policy. In these processes the MFSC took a leadership role with multi-stakeholders involvement. In an effort to seek different ideas and find common grounds, a series of workshops and consultations involved communities, researchers, private sectors, federations, NGO, bilateral projects, donors and government institutions. This process has achieved a sense of ownership among stakeholders. These examples can provide useful lessons and pathways to improve the policy-making process.

incidences, ranging from complete ban on tree felling to change in rules related to compliance to taxes and royalties, have reduced the confidence of the investors. As Nepal updates its forestry and investment policies, it could consider "grandfather clauses" for deals already underway when appropriate, make sure access to land and permits are for periods that match the business cycles of forestry enterprises (e.g. 30 years for plantations with renewal clauses); ensure that foreign currency can be repatriated; and provide for due process in the courts.

c) Develop a system of fixing royalties and prices: Develop criteria to set royalty rates for forest products. Implement provisions with criteria for royalty rates in HNDP 2004 in case of NTFPs. Current royalty rates for NTFPs under the Annex 3 of Forest Regulation, 1995 does not reflect the scarcity or market value of the products. There is a need to waive royalties for the cultivated NTFPs. Lists for waived cultivated NTFP species would be revised at least in every 5 years. Current royalty rates under the Annex 2 of the Forest Regulation do not reflect the value of timber. Sal, one of the finest woods of Nepal, is not recognized for its lifetime value attributed to its strength and longevity and the royalty is fixed at a maximum of NRs 800 while the market value is NRs 4,800 to NRs 6,000.

Eliminate policy contradictions between forest act and other regulations

Contradiction of provisions under forest act and regulations should be resolved with other sectors' regulatory frameworks and practices, such as hydropower development, expansion of road networks, resettlement of landless, declaration of protected areas, local development, environment protection, and directives from other agencies. Some of the intervention strategies to overcome the contradictions are suggested below.

a) Develop an effective mechanism to ensure inter-ministerial coordination: This is necessary to resolve conflicts and contradictions in policies and regulations including jurisdictional overlaps and conflicts across various ministries and other agencies. A high level body should be developed to resolve these issues.

b) Address contradiction over rights to use forest products: Conflicts are generated among the users because

of the overlapping rights over the resources provided under various legislations. Currently, Forest Act and Forest Regulations authorize DFO and communities managing forests to harvest and supply forest products while Local Self-Governance Act empowers DDCs with right to sale or impose local taxes on forest products. The department of forests has authority to provide permission to large private sector enterprises, which sometimes overlaps with community forestry. To resolve these contradictions a study for clearly outlining the issues and making recommendations and forming a constituency for policy lobbying would be helpful.

c) Harmonize community forestry system with environmental legality standards: As the CF guidelines already have much of the elements of IEE/EIA harmonizing it by reviewing and adding missing elements of the IEE/EIA make the whole process less bureaucratic, more efficient and effective and finally meet the larger goal of sustainable forest management. These components of IEE/EIA can be incorporated in CF guidelines and obligation of IEE/EIA in community forestry system can be removed by amending Annex 1 and 2 of the Environmental Protection Regulations to this effect. This would significantly increase production and supply of forest products for commerce.

Improve policy provisions and practices on tenure rights and access arrangement

The important issues that need to be addressed include rights of forest producer groups, issues related to use and sale of forest products grown in private land, access of private investors to land and forest resources, and rights on forest ecosystem services, including carbon.

a) Strengthen and expand rights of forest producer groups

- Expedite handover process, including that with a large area wherever available and appropriate, for the commercial production of products and services.
- Support to develop a directive and guidelines to include provision of NTFP management into community forest operational plans.
- Remove practical difficulties of community forest user groups in trade of forest products. This would involve supporting CFUG to prepare and update management plans incorporating provisions for sustainable harvesting and trade and building their capacity to improve forest management to increase productivity and production of surplus forest products to supply outside the community.

b) Resolve the issue regarding the rights to use and sell the forest products grown in private land by simplifying procedures for harvesting and trade: There are some specific issues for the trees or other NTFP species grown in private land that should be resolved by revising policy provision. Rationalization in the following three provisions and practices would improve the situation.

- First, the timber species, which are almost only grown in private land, e.g. eucalyptus, poplar and teak should be exempted from additional formalities in harvesting and trade.
- Second, for the NTFPs such as chiuri, ritha, timur and lapsi, which are grown almost 100% in private land, should enjoy the exemption of government royalty as other agricultural commodities. Several exercises have been made since 1990s on this and recently the MFSC has forwarded the proposal to the MoF. Concerned stakeholders can plan an important role for this reform.

- Third, the provision of VAT on harvest in case of privately grown timber is irrational and should be removed.

c) Support to improve access of private investors to land and forest resources

- Revise current provision on leasing forestland to forest based industries so that the private sector have access to lands that are not under conflict and are accessible to be used profitable by FBEs. Currently the leasehold forests available to the private sector are not appropriate because the land is either located in too remote location or informally used by other entities, which sometimes create tenure conflict in the area.
- Clarify tenure issue on non-forested public land and privately occupied non-registered land. Due to the ownership conflicts of multiple agencies including district administration office, district development committee, and district forest office, the plantation on public land became uncertain. Similarly, the privately occupied non-registered land has a good scope of plantation of forest products while there is no provision of harvesting and sales from such types of land.

d) Clarify and resolve issues related to rights on forest ecosystem services, including carbon

- Provide technical support to the government to resolve and clarify carbon rights issue in community forests.
- Support to build and strengthen partnership between forest producer groups and private investors.

Facilitate enterprise establishment and operations to make it affordable

To attract responsible investors in the forestry sector, Nepal needs to simplify the procedures for enterprise registration, operationalize a one-window-policy, and address labour issues and existing trade barriers.

a) Simplify procedures on registration of an enterprise including private forests and trees grown in private land: Main issues constraining registration of domestic enterprises are requirement of recommendation from local government and various other agencies, compliance with environmental regulations, registration at multiple agencies resulting relatively high charges for registration. There is a complex procedure and high transaction costs in harvesting and utilization of forest products from private land.

b) Operationalize a one-window policy for foreign investment: This will facilitate processes such as, permission, repatriation, facilities and concessions, visa arrangement, and arbitration under one window system, which will contribute to attract FDI flow into Nepal. Registration for foreign invested enterprises, it takes 1 to 4 years to complete registration while as per the FITTA 1992 provision, it is expected to be completed within 35 days. A goal of 90 days would be more realistic.

c) Address labour issues. Due to social and economic insecurity of the workers, the labour outputs are compromised: The wages are low for unskilled labourer that led to outmigration and scarcity of labour. For skill work, labour from India is largely used to run FBEs in Nepal. To change this dynamic the following actions are recommended.

- Adapt industry standards to manage trade unions and labour related conflicts focusing on forest industries.
- Revise and enforce the minimum wages. Coordinate with Ministry of Labour and Employment to revise minimum wages, which is lower than

the SAARC countries average minimum wages (NRs 250 per day for agriculture sector), and fix the minimum wages for forestry sector employment. Develop local level monitoring mechanism to enforce the minimum wages.
- Develop standards for safe working conditions for workers in forestry sector and mechanism to enforce the standards.
- Resolve conflicts created by labour and industrial policies by facilitating dialogue with the ministry to discuss on i) enforcing ILO requirements as incorporated in Nepal's legislative frameworks such as, addressing unlawful practices such as child labour, discrimination against dalits, wages discrimination among men and women, ii) effective monitoring mechanism to address labour issues in addition to the issues of machineries ensuring fair and safe environment for workers. Current monitoring practice involves inspection of machineries by engineers assigned for monitoring.

d) Simplify tax compliance and address other trade barriers
- Inform and update tax laws including tax incentives. FBEs that are cottage and small industries are eligible for several concessions such as all tax exemptions, and export tariff exemptions under the Income Tax Act, Industrial Enterprise Act, and Custom Act. Similarly, export tariff for several NTFPs are fixed at a lower rate to promote export. However, the process of receiving tax exemptions is cumbersome and costly. Another issue is frequent changes in tax that inserts uncertainty among entrepreneurs.
- Remove multiple taxes at local level and "informal fees" along the trade route and other points of transaction. Investors' decisions are influenced by changes in local tax, which are often based on past year's transaction.
- Ease tax payment by providing multiple options. Not all districts have Inland Revenue offices to collect tax requiring a long-distance travel for the payment. It is recommended to coordinate with of Ministry of Finance, Inland Revenue Department regarding tax collection system in the districts, where Inland Revenue office does not exist.
- Coordinate with relevant line ministries suggesting reforms, such as abolition of different non-tariff barriers, application of HS codes for Customs Tariff, use of the WTO Customs Valuation Agreement, and suggest simplifying process to obtain certificate of origin, producing sanitary and phyto-sanitary certificates, and payment of customs duties and charges.

e) Encourage investment in processing and trade: It is one of the most effective way to support primary producers. In other cases, the most helpful intervention may be improvements to transport and streamlined export infrastructure. The success of Himalyan Biotrade confirms that investments in processing and trade have led to increased sales and exports for NTFPs, especially for essential oils and paper. Illegal trade continues in unprocessed products due to lack of investment in processing. Tax breaks to attract investment in this area could help to create more jobs within Nepal and in the long run increase overall government revenues from the increased employment.

5.1.4 Address institutional and law enforcement issues in forestry

Without appropriate institutional set up with clear roles and responsibilities and proper law enforcement it is

impossible to promote the sector. Nepal can attract more responsible private investors by addressing the institutional gaps, overlaps and inefficiencies; improving law enforcement; and developing and monitoring standard business operating procedures.

Align roles and responsibilities of institutions to promote forest industry

A network of strong institutions is required to implement policy, enforce laws and conduct programs. Identifying gaps, redundancies, confusions, and conflicts by reviewing the roles of existing institutions and clearly defining and assigning roles that are required to promote and govern the sector are important.

a) Establish private sector support unit to promote and support forest industries: A support unit should be established to provide information, advisory services, both legal and technical, to entrepreneurs and private investors, such as information on investment opportunities, requirements for business establishment and operations, advice and technical support on business registration, enterprise management to end product marketing. The unit should compile all relevant acts, policies, directives and circulars, and make available for potential entrepreneurs. The unit can be established as a division under MFSC or Department of Forests. This unit can utilize the Forest Development Fund generated from the mandatory contributions by enterprises for the forest products trade.

b) Establish a separate entity within the MFSC or a division under DOF for managing production forests: Given the administrative and institutional capabilities of the DFOs and their overwhelming and conflicting roles, it is not practical to improve forest management with increased forest productivity. A separate entity to manage production forest with clearly defined mandate of managing production forest applying science to increase productivity would be created. This entity can have its units in different geographical regions for local unified management, which mimic private ownership incentives. It is suggested to allocate human resources for production forest management based on the total areas and intensity of forest management operation.

A separate unit should be established to undertake forest products sales. This would improve the existing governance system of timber sales and distribution by practicing transparent and competitive procedures. This would resolve the role conflicts by relieving forest department from timber sales and allowing them to focus on core regulatory and extension functions. This would support to improve forestry governance and reduce illegal logging.

c) Restructure DoF to streamline division of important roles and reallocate human resources to match the workload: The DFO is responsible for both enforcing the forestry laws (role of police) and interpreting them and giving a judicial decision (role of courts), while at the same time issuing licenses and permits, collecting royalties, registering CFUGs, and authorizing them to manage and sell forest products, as well as providing training, resolving forest boundary conflicts, and managing the national forests. Therefore, it is recommended to revisit DFO's role to address the need of extension services and effective forest management removing roles such as judicial and business, that conflict with law enforcement, extension and technical

roles. There should be two divisions – one for the regulatory functions and the other for the facilitation and extension services.

Further, the distribution of available staff in various districts is also unscientific; human resource allocation in district with large forest area and district with small forest area is not much different. Therefore, to make the current extension service effective, there is a need to capacitate the existing forestry professionals on forestry business and reallocate the available human resources among various districts based on the workload.

Improve law enforcement to address supply constraints

Limited technical and administrative capacities of the staffs, limited number of armed forest guards, inadequate budget, lack of logistic support for patrolling, lack of accountability, and lack of coordination among line agencies combined with lack of transparency in personnel transfer, low salaries, pressure from senior officers, unethical behaviour has led to weak law enforcement with illegal forest products trade, corruption and insecurity. Some actors even explore loopholes in policies and legislations and tend to undermine and disobey the rules. While improving the effectiveness of high-level bodies including National Vigilance Centre and CIAA for effective monitoring and law enforcement and the implementation of civil service regulation with a transparent personnel transfer mechanism are very important, the forest sector can take the following steps to improve the law enforcement.

a) Develop mechanism for local level monitoring of resources by involving multi-stakeholders including communities as an effective tool for reducing illegal activities.

b) Develop a mechanism of publicly sharing database of forest stock, annual harvest plan with quantity and schedule and have provision to annually monitor these from independent bodies such as relevant academic institutions, professional organizations or Nepal Foresters' Association.

c) Establish provisions for rewarding socially and environmentally responsible entrepreneurs and punishing those involved in illegal logging, such as blacklisting and suspending licence of entrepreneurs and ban them from timber auction for a number of seasons depending upon the nature and size of illegal transaction.

d) Find space and ways to formally and legally involve informal actors currently involved in forestry business legally or illegally. To reduce the costs of transaction due to security facilitation would be needed to bring the informal groups to the table and discuss about the implication of their activities in the whole chain and provide them employment or develop partnership in business. Building entrepreneurship and helping them understand the transparency of the business, the value chain, and importance of technology, capital and market for upgrading through training and coaching. This would also help prevent unintended social consequences, such as disturbance of peace, conflicts and extortion.

Develop and monitor timely, regular and transparent harvesting, auctioning and transportation procedures

The procedures for harvesting and trading forest products are very cumbersome. Sometimes the costs

and risks are so high, producers or traders simply give up the operation. It needs to be simplified and enforced uniformly in a transparent way. Basic weaknesses in forest inventory, harvest prescriptions and scheduling, especially in the government-managed forests, prevent the application of effective controls on timber sales, transport and revenue management. Under the current provision,harvesting is done by the DFOs and is monitored by the Regional Forest Directorate. The untimely harvesting and prolonged auction process increases the uncertainty over the availability of raw materials. Due to the lack of budget release by the government, private contractors are informally involved in harvesting. It is suggested to support to develop and monitor standard operating procedure to implement timely, regular and transparent harvesting, auctioning and transportation procedures, for which the following specific strategies will be useful.

a) Develop a legal provision of requiring up-to-date scientific forest inventory, harvest prescriptions and scheduling.

b) Simplify procedures for harvesting and trade of NTFPs, especially the practice of issuing collection and transportation permits to contractors, scheduling and time period for this, and anomalies in enforcement.

c) Institute an independent monitoring authority for timber harvest and auction that consists of representatives from local government as well as associations of forest-based enterprises and forest producer groups, e.g., FenFIT, NEHHPA and FECOFUN.

d) Widen the use of e-bidding system and support community forests in adopting e-bidding provision.

e) Develop a method to fix the amount of deposit required for auction by consultation with relevant stakeholders.

f) Implement the seal-mark system effectively and remove unnecessary hassles along the transportation route.

5.1.5 Promote to adopt standards for sustainable forest management and responsible business practices

Nepal should take aggressive action to meet all regulations and use them as a market-driven requirement to enforce much needed laws and changes outlined in this study to improve overall forest production and sharing of benefits among the many stakeholders. Specifically provide supports to attain strategic certification that will make Nepal's forestry products competitive. This will address the issue related to compliance with international forestry and trade regulations, which is the number one concern of responsible businesses when purchasing from Nepal and in considering investments in forestry. Ultimately, this will support to improve social image of the forestry business and investors and change public perception of forestry business as a clean business to attract more equity investment.

Nepal's forests provide environmental services, such as biodiversity conservation, watershed protection, recreational use, soil formation, pollination, colonization and carbon sequestration. These services are positive externalities from the forests, and the managers of the forests are not paid for the services. Certification and payment mechanisms demonstrating and capturing the full range of ecosystem

services and their economic values over the long term would increase incentives for local community groups, community based forest enterprises, and governments for forest conservation. Application of such standards not only improves the forest management practices but also maintains the transparency in the value chain and promotes equitable benefit sharing. Details of role of forest certification, and how it can contribute to promote green and fair value chains and methods to adopt are discussed in the concept paper, and the suggested strategies for achieving this are summarized below.

Expand strategic certification and provide government support for industries to gain certification

While there are many certification standards, for Nepal, sustainable forestry certification, particularly Forest Stewardship Council (FSC), for wood, some NTFPs, and ecosystem services; organic certification for natural products used in personal care and food products would be appropriate. Chain of custody certification, a part of forest certification, tracks the forest products throughout the value chain so that retailers, consumers and verifying body know that the products sold and bought are sourced from a responsibly managed forest and are legally harvested. This helps to gain trust among the value chain actors and support from multiple stakeholders including political commitment.

Strategically expand and advertise certification

For many forest products, specific certification while still technically voluntary, is becoming a requirement of buyers and investors. For example the study noted: organic certification for essential oils used in personal care and food products; sustainable forestry certification for wood products to help ensure adherence to increasing international social and environmental standards; International Organisation for Standards - ISO for product safety, quality and reliability, and PES specific certification, e.g. Gold Standard Climate Community and Biodiversity Alliance (CCBA) and Plan Vivo. For the forestry sector, Nepal does have some certified companies that have organic, FSC, and ISO with others under development including CCBA and Plan Vivo, yet they are not showcased in a unified manner.

A tangible and simple first step Nepal could take is to feature “sustainable forest products” on the Government of Nepal Ministry of Commerce and Supplies, Trade and Export Promotion Centre website. Currently, NTFPs including essential oils and paper products are buried under the “other category”. Trade shows are listed, but focus primarily on gift and handicraft sector. Nepal used to attend trade shows that featured sustainable and green products from the forestry sector, including the Natural Products Expo, but this was cut back in recent years. No prominent mention is made of any certifications that various companies hold. Certifications should be featured on the trade website.

India is providing incentives for certification for their handicraft artisans (Manoharan 2013) and with a modest investment Nepal could make the similar efforts for its wood artisans. Nepal could also feature a wood workers’ studio and market centre that could be developed as a tourist attraction and sales showroom for international buyers. Indonesia and Cambodia have done innovative public-private partnerships that have developed workshops/schools/showrooms for their wood artisans with great success in sales,

job growth and support of traditional arts and customs.

Continue to build sustainable forestry and good business practices models at the community forestry, private and government lands

a) Introduce and promote enterprise-oriented sustainable forest management at all levels from policy and plan through implementation in all ecological regions in all three management regimes - government, community and private. Coordinating at all levels – policy, industry, NGOs, donors, and community the enterprise-oriented sustainable forest management would be promoted by including this in government programme and budget allocation.

b) Start with showcasing the success stories Nepal has in successful community forestry enterprises. Collect and consolidate the good buyer and investor relationships that have succeeded and start publishing articles and features to get the word out. Right now when one does an Internet search on Nepal forestry products it overwhelmingly brings up older articles (1996 – 2009) that focus on corruption or discussions of what is needed to be pro-poor. More articles are needed that stress good business practices, reliable suppliers, and growing sales and relationships. Examples of good business models include the Aveda and Body Shop buying relationships for NTFPs and need to be featured better.

Develop a strategic plan for attracting and approaching responsible investors

Having a strategy in place helps to attract and approach the right kind of investors. The plan should have the priority list of most promising investment opportunities and practical tools and methods for establishing and doing business including the partnership. The following recommendations are suggested to include in the plan.

a) Track and provide reliable information on supply and demand: Private investors need assurance of raw materials to stay in business and consider further investment. The irregular supply of raw materials is the main problem for processors and manufacturers of forest-based industries including timber and NTFPs. To address this, activities to develop database on potential production, current supply, demand and consumption as well as to make the information easily accessible to existing and potential entrepreneurs and BFIs should be supported.

Presently, the main source of raw material supply is government-managed forest, but it is highly uncertain in terms of quantity as well timing. To improve this, a system of preparing business plan for the government-managed forest units with long term vision of sustainable commercialization of the forests would be useful. Based on available supply, the private investors can plan their involvement and decide on the size of investment and level of technology to be applied. This information along with a provision of harmonization during the registration and licencing would help to develop more realistic business. By providing and checking the supply situation before the registration and license issue, the government can support the entrepreneurs to develop realistic business plan with clear plan of raw materials supply. This would immediately improve the situation, especially in case of sawmills, veneer producers, kattha processors, and resin processors.

b) Target CSR companies for buying relationships and forestry investment: A mechanism that can be considered is public private partnerships in which

grant funds are available from bilateral and multilateral institutions to help develop and foster a private sector investment. These types of investments typically include an NGO that assists with the community development and safeguards social issues (indigenous people, women, intellectual property, labour rights, etc.). Nepal has already had successful examples of these public-private partnerships that include civil society organization, local Nepali forestry companies, community forest user groups, and multi-nationals based in Europe and the United States. Funding from the European Union, United States, IFC, and other funds are available for public-private partnership investments.

Nepal should also become more educated on the opportunities with individual and institution investors. A new form of funding is crowd sourcing where a project/ investment is presented via the Internet and Individual "donate" funds to fund the project or investment. This could be an important source of capital for community level forest enterprises. For example a Community Forest User Group (CFUG) could post their plan to expand their essential oil distillation enterprise with an appeal to help fund a new distillation unit. The CFUG would need to present the returns that would be earned and the social and environmental benefits.

c) Develop a model investment contract that covers intellectual property, labour laws, technical barriers to entry, indigenous rights, etc. that references the international standards, but does not go overboard and hence discourage investors.

5.1.6 Expand business development services including infrastructure and finance

Affordable and effective business development services are needed to make Nepal's forestry enterprise into successful business models. Higher business professionalism and quality will attract more private sector participation. The following strategic interventions are suggested to improve the both demand and supply sides of BDS including infrastructure and finance.

Strengthen supply of Business Development Services (BDS)

Starting with the most urgent and demanded business services along with the stimulation of the demand, the potential service providers from government, civil society or private institutions, who are likely to be effective in providing the needed services for a long period, would be identified to strengthen their capacities.

a) Support universities to develop courses and train students on forestry business: There is a need to develop courses on forestry business for undergraduate and postgraduate students to address the serious lack in business orientation among forestry graduates from Nepal. This can be started with Tribhuvan University (IoF and KAFCOL) and Agriculture and Forestry University and can be expanded to Kathmandu University for MBA students.

b) Support training institutions, CSOs and private companies to develop training packages, curricula and Training of Trainers (TOT) for the delivery of most important business services: The service providers are needed for building capacity and providing technical services in resource inventory; enterprise-oriented forest management planning; forest management incl. plantation; entrepreneurship development, business planning and operation; product development, testing and promotion; and internal trade facilitation and exports.

The service providers can be developed in partnership with training institutions, CSOs and private companies for which the programme such as MSFP can support to develop curricula, training packages and at the beginning provide tuition fees for the participants. To avail the required skilled labourers to the forest industries, there is a scope to collaborate with training institutions, such as CTEVT and processors and manufacturers, who are interested to develop such training programme to produce skilled human resources needed by forest industries.

c) Improve government extension services re-orienting it in support of enterprise-oriented forest management: In the Department of Forests and its district offices, there is inadequate technical manpower with knowledge on enterprise development and commerce. Further, the distribution of available staffs in various districts is also unscientific; human resource allocation in district with large forest area and district with small forest area is not much different. Therefore, to make the current extension service effective, there is a need to capacitate the existing forestry professionals on forestry business and reallocate the available human resources among various districts based on the workload. Most importantly, there is a need to reorient the department of forest to plan and execute the programs focussing on enterprise-oriented forestry.

There is need to support to develop service providers and technical human resources needed for enterprise-oriented planning, management and monitoring of forests. While developing service providers, special attention should be given to meet the requirements of community forest user groups to transform them into enterprise-oriented forest producers. Furthermore, demonstration of enterprise-oriented forest management at various eco-regions for each of the management regimes would be helpful.

d) Develop and mobilize local training resource persons: Given the number of community-based forest management units (FMU) in the country, the existing capacity of DFO, in terms of number of staff as well as subject matter is inadequate, especially to promote enterprise-oriented forest management. The number of FMUs with expired operational plans is high and increasing every year. In spite of the investment capacity of many FMUs to revise their operational plans, they are unable to do so mainly because of lack of technically sound personnel to carry out the work. As a result, their forest operations are considered as illegal and becoming a barrier to sell their forest products in markets. To overcome the situation, development and mobilization of local resource persons (LRP) to provide services in forest management works, such as developing forest management plans, delivering training on sustainable forest management including harvesting and post harvest handling, and providing market information will support FMUs to grow commercially.

e) Facilitate to increase access to inputs and technologies: Forestry investors need inputs, such as quality planting materials, fertilizers and pesticides, tools and equipment. So, there is a need to develop service providers in forestry sector so that the entrepreneurs can easily access the required services. Capacitating and expanding the business of existing service providers in agriculture, such as agro-vets, agri-inputs and machinery suppliers, would be the most practical way to do this along with tapping into international forestry trade and industry

associations and networks that offer a wide variety of training supports.

f) Strengthen R&D in production, harvesting, processing, product development, and marketing: Strengthen capacity and provide fund for much needed research and development. The important areas that need support include research and development on tree improvement, introduction of new crops, domestication of NTFPs, improving regeneration, production of quality planting materials, silvicultural practices, disease and pest management, soil nutrient management, harvesting and processing technologies, product development and marketing.

Stimulate demand for BDS

To stimulate the demand for BDS, raising awareness, creating platform, and improving access to information and markets for entrepreneurs, who can benefit from the use of BDS, are suggested.

a) Raise awareness through training and meeting: The entrepreneurs especially located at grassroots levels hardly realize the need of business development service in their business. So the awareness raising program, such as training with showing the financial benefits to use service providers, and the meetings between service providers and the entrepreneurs would be helpful to realize the importance of BDS.

b) Facilitate to create a platform for promoting business development services: This can be started with the development of a directory of relevant service providers to the entrepreneurs. The directory would include detail address, areas of expertise and fee structure of the service providers. As numbers of providers and users increase, an Internet based platform will be effective to improve access and quality of services. Initially, this can be supported by the proposed private sector support unit and eventually developing an independent private entity.

c) Improve access to extension materials: Support in producing quality, needful extension materials on priority basis would stimulate enterprise-oriented forestry. Highly demanded items identified from this study include domestication of NTFPs, timber plantation, disease and pest management, resource inventory and good agriculture and collection practices for major NTFPs.

d) Improve access to market. No timely, reliable market information is one of the most important barriers for almost all types of forestry value chain actors: There is a clear need to have a mechanism for market information in place. This can be built on the existing platforms, such as ANSAB - http://www.ansab.org/market-information/ and AEC/FNCCI or developed new platform within the Department of Forests. The platform can also organize regular meeting between buyers and sellers that helps to reduce the mistrust and promote fair trade practices. Similarly, support in market infrastructure development, trade fair and exhibition participation and certification can also help to increase the access to market for Nepali forest products and services.

Improve basic infrastructure to support forest-based industries

Addressing the challenges related to infrastructure is beyond the scope of the forestry sector and the related programmes. However, coordination, networking and small support could be practical strategic steps to take.

a) Participate and remain informed about the on-going programmes and projects related to improving basic infrastructure, especially energy, road and communication, which support all functions of value-chain.

b) Develop value-chain specific infrastructure and technologies, such as collection centres, cold stores, warehouses and laboratory facilities for NTFPs; wood seasoning plant, efficient sawing and manufacturing technologies for various value-chains as provided in section for subsector specific strategies.

c) Support entrepreneurs to explore other sources of electricity, especially biomass-based electricity generation.

d) Collaborate with local political bodies for development and maintenance of small but important infrastructure for enterprise development such as link roads, gravity ropeways, and micro-hydro to facilitate forest enterprises.

Expand financing options for the private sector

There needs to be an organized effort to improve access to finance. Developing risk mitigation measures in financing FBEs and helping bankers to understand the opportunities in Nepal's forestry sector are essential. In this situation, bankers need support to develop financial products and a minimum assurance of payback and incentives from the government for lending in this sector. So, Bank and Financial Institutions (BFIs) need support to develop loan products with some payback assurance. The following intervention strategies are suggested to expand financing options for the forestry sector.

a) Support BFIs to extend their credit facilities in the forest sector: Most of the BFIs have provision and interest to extend their credit facilities to FBEs, but do not have knowledge and appropriate products that suits the FBEs. More specifically, it is suggested to provide the following supports.

- Support BFIs for developing forest-specific loan products. Support in market research, and developing appropriate loan products to meet the requirement of FBEs at various level including the terms and conditions addressing issues including long moratorium period for plantation and need of big amount for short-term for traders.

- Provide up-to-date knowledge and financing opportunities in sustainable forestry. Generation of information about forest-based industries, training and awareness raising programs, and facilitation of interactions between BFIs and FBEs would be helpful.

- Minimize risks of BFIs. Investment in many FBEs is associated with risks from fire, pests, and mortality of saplings during transplantation. Without risk mitigation measures it is difficult for BFIs to disburse loan. Since this is a new area for finance, most BFIs need a minimum assurance of payback of their investment, which would be helpful to develop their confidence. Silent guarantee for the brand new products and insurance for others would boost the confidence of BFIs.

b) Support FBEs in accessing finance: Nepal's FBEs are facing constraints in accessing finance due to their capability and internal characteristics including informal and unorganized nature of business; financial illiteracy and difficulty in ensuring credit worthiness; long moratorium period;

inability to produce enough collateral; lack of appropriate insurance coverage; information management system; and the reputation of forestry sector in general. These FBEs can be supported through the development of business service providers and raising awareness about the opportunities available for FBEs.

- Establish partnership of FBEs with banks and financial institutions and private investors for developing forest enterprise based loan products and making equity investment.
- Mobilize service providers to support FBEs with accessing finance. The main areas on which FBEs need assistance to be eligible for financing are a) developing and executing business plans, b) building managers' capacity, c) linking with lenders and assistance in financial negotiations, and d) books and accounts keeping.
- Provide information about the NRB directives that favour flow of finance in forestry sector. In order to increase loan volume for the productive sector that include forestry sector, NRB has issued directive for mandatory disbursement of 20%, 15%, and 10% of total loan volume of respectively class A, B, and C banks to the productive sector (including agriculture, forestry, energy) by the end of FY 2014/15.

5.2 Promote Industrial Competitiveness and Growth of Most Promising Forest Value Chains

The broad forest intervention strategies presented above are needed to create base for the private sector investment and promote all the forest subsectors. While it will be necessary to identify the promising specific subsector such as wood flooring and end market characteristics to design product specific value chain interventions (see Table 5.1 for an example), this section provides specific interventions for each of the four subsectors – timber, NTFPs, ecosystem services (especially carbon and ecotourism), and forest bioenergy based on the dynamics of the value chains domestically and globally. The interventions are organized around three main categories as illustrated in Figure 5.3.

5.2.1 Timber

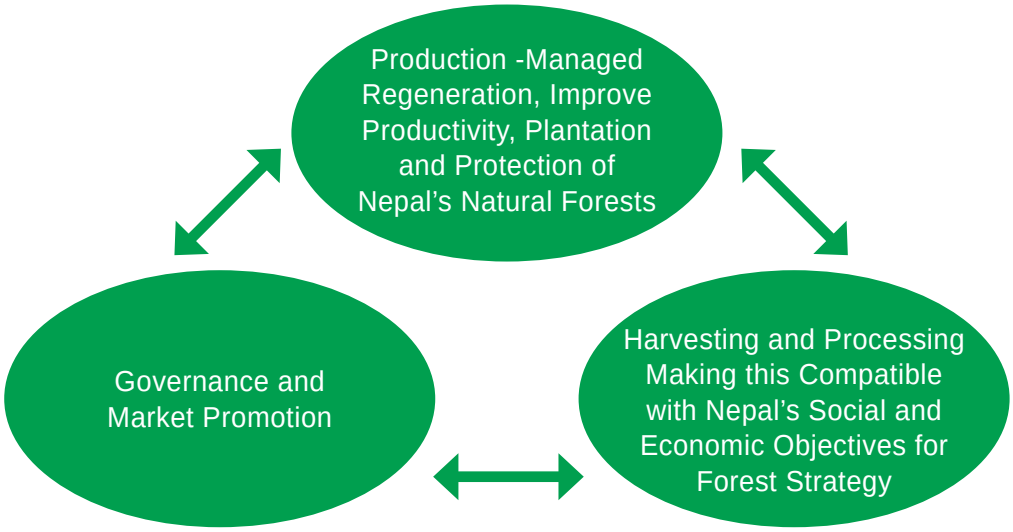
For timber, the emphasis should be on plantations and land management models that allow for private sector investment and cultivation of key species rather than overall biodiversity. With science-based management and sustainable harvesting of natural forest, there is ample scope

Table 5.1: Summary Value Chain Interventions for Export of Select Wood Products

Major Products	Cultivation/Wild Harvest	Processing	Manufacturing	Trade
Wood Flooring	Investor opportunity for plantation species; need policies that allow for long-term land and sales rights (30 year rotations)	Drying, and first stage wood processing need to be prioritized; efficient saw milling for first cuts to maximize wood recovery	Efficient wood flooring manufacturers in US, Canada, Europe, and Asia will make it hard for Nepal to immediately compete as manufacturer, ISO needed, consider regional markets first	Nepal is not known in trade circle and with modest investment should join trade associations, attend the major trade shows; build reputation for on time, high quality deliveries

Veneers	Buyer opportunity for exotic species with distinctive patterns, wild harvested	Inspection of each log to maximize unique grains and patterns	Upgrading of technology to produce smooth and consistent sheets	Nepal not known among buyers, start to contact specialty exotic wood furniture shops; start by joining wood manufacturer associations
Certified Wood Handi-crafts	Opportunity for use of select trees from sustainable management certified community forests	Select woods for grains and dry properly so carving do not crack when exported to dryer climates	Check stains and finishes for environmental compliance in importing countries, stress fair trade and sustainable managed forest sourced wood	Number one market for Nepal is the US followed by Germany, these contacts should be used to expand wood handicrafts as many are positioned as fair trade; register for FSC small-holder marketing support

Figure 5.3:Major Areas to Consider in Forest Value Chains Improvement



to expand the timber industry of Nepal as well as develop plantations in appropriate denuded areas. But, there needs to be support to producers and forest managers for enterprise-oriented forest management planning. Upgraded harvesting and processing along with policy changes and improved marketing will increase the quality of Nepal's timber products and lead to expanded employment and income.

Forestland management and production

- Develop a specialized function for timber production within Forest Office that takes into account Nepal's forestry characteristic and the requirements of wood products industry. The functions include facilitation of forest management plan with proper resource inventory, annual allowable harvest, regeneration, grazing, and fire management for each timber management regime that will enable enterprises to forecast supplies.
- Select and introduce appropriate tree species for various ecological regions,

land types, and farming systems. Use the list given in Section 5.1.2 to start with, which can be refined more effectively in collaboration with DoF, DFRS, DPR and universities.

- Ensure a reliable supply of quality planting materials. While producing planting materials, the private sector (especially private nursery and tissue culture laboratory owners) should be encouraged to be involved. In this intervention, the government can play a role of facilitator, especially to provide technical backstopping and regulator, especially quality control of planting materials.
- Produce extension materials for commercial plantations and build skills of the tree growers. Product specific extension materials and skill are needed on nursery management and propagation techniques, plantation and woodlot maintenance, and harvesting techniques.
- Support plantation establishment. There is a good scope for plantations in non-forested public and private lands. The entrepreneurs should be supported with a package of best practices for plantations including appropriate tenure instruments, access to quality planting materials, proper silviculture practices and harvesting and post-harvest handling.

Harvesting and processing

- Improve identification of trees to harvest, grading of logs and measurement system to obtain higher quality wood and reduce stock holding time of the harvested timber.
- Reduce the costs of gathering timber. This can be made possible by ensuring sufficient security in log yards and during loading and transportation of auctioned timber; and expedition of the auction process and reducing stock holding time so that the loss of timber can be minimized. Reducing the amount of deposit required for participating in auction and reducing various informal fees presently in practice at various stages of doing business, such as getting release order will also boost efficiency.
- Develop a detail plan to utilize sal forest. While planning commercialization of sal forest, recognize its strength and longevity,target markets that value the most for its products, and manage harvesting for those markets.
- Upgrade timber and wood product enterprises professionalism though increased access to business development services. As timber entrepreneurs are lacking proper access to BDS, and are doing business with sub-standard professionalism and with low efficiency, which can be improved through the development BDS market.
- Introduce latest technologies for harvest, sawing, seasoning, composite wood making and furniture making so that the losses is minimized and the quality of products improved.
- Support to meet quality requirements while exporting specialized wood products. The quality is determined by moisture content, consistency, finishes, glues etc. Nepal should attend a wood products trade show and check their quality against competing products.
- Develop skilled manpower in collaboration with technical training institutes and private sector esp. processors and manufacturers.
- Develop safety provisions in enterprise operations and provide safety training to workers.
- Organize private producer groups and networks that can increase economies of scale in production and sale of timber.

Governance and market promotion

- Clarify tenure issues of non-forested public land and allocate the land to responsible firms for plantation. In plantation, species should be of high yielding and fast growing tree species and varieties, such as paulownia (*Paulownia tomentosa*), so that investors are easily attracted.
- Provide incentives for private tree growers. This can be in the form of seedlings, technology support and finance.
- Simplify policies for harvesting and trade of timber grown in private land. The timber species, which are grown on private lands, such as *Eucalyptus* spp., poplar (*Populus* spp.), paulownia (*Paulownia tomentosa*), and teak (*Tectona grandis*), should have the legal provision similar to agriculture crops.
- Improve transparency in timber trading. This can be done by enforcing e-bidding process from government-managed forest and developing a mechanism of e-bidding to CFUGs. Further, forming a multi-stakeholder timber trade monitoring committee consisting of government, private sector and civil society organisations in each district would be helpful to improve transparency in timber trade.
- Develop a reliable market information platform with information on resource and trade from different forest management regimes that will help to reduce the mistrust among the value chain actors and eventually enhance the industry efficiency.
- Improve value chain governance by identifying and supporting responsible lead firms. The areas that need support include capacity to apply principles of responsible business practices, access to resources, technology, product development, and marketing.
- Expand forest certification programs. For example, FSC certification, which considers social, economic and environmental aspects, can be expanded in timber product certification. As an initial step, the government agencies can decide and use only certified forest products in their offices. It will also help to improve the image, traceability and promote legal business.
- Support certified wood handicrafts expansion and model showrooms through providing support to the handicraft producers for certification of their products.
- Build skills to access European markets. European markets and in particular Scandinavian countries prize sustainable wood, but Nepal will need to meet stringent industry standards and global best practices that include regulation and third party certifications to attract buyers and investors. Nepal should invest in meeting European standards, as this is a promising future market, but in the near term could look to regional investors that could help with more efficient harvesting, grading, and wood processing to increase recovery rates.
- Promote timber products through participation and organized representation in trade fairs and exhibitions and engaging more with industry associations. Nepal is not known by industry for flooring or wood veneers; while there are many associations and potential buyer, Nepal should prioritize buyers that emphasize sustainable management of forests. The International Wood Products Association specializes in sustainably managed forests and it is recommended that Nepal explore membership.

5.2.2 NTFPs

For NTFPs, emphasis should be on sustainable harvesting from natural forests and commercial cultivation in private lands and non-forested public land. Value addition through processing and product development and diversification of markets are the much-needed areas of interventions in this subsector.

Forestland management and production

- Concentrate on managed regeneration of NTFPs, supplement with cultivation when possible, and secure organic certification along with FSC or CCB for NTFPs harvested from the wild.
- Develop inventory guidelines and conduct national level resource inventory of each of the commercially important NTFPs available in natural forests. The most important are yarsagumba (*Ophiocordyceps sinensis*), kutki (*Picrorhiza scrophulariiflora*), chiraito (*Swertia chirayita*), atis (*Aconitum heterophyllum*), satuwa (*Paris Polyphylla*), timur (*Zanthoxylum armatum*), ritha (*Sapindus mukorossi*), morel (*Morchella esculenta*), tejpat (*Cinamomum tamala*), jatamansi (*Nardostachys grandiflora*), lokta (*Daphne bholua*), argeli (*Edgeworthia gardenerii*), allo (*Girardinia diversifolia*), khote sallo (*Pinus roxburghii*) and khayar (*Acacia catechu*).
- Develop extension materials on sustainable harvesting, cultivation and commercialization for most promising NTFPs.
- Develop a mechanism to ensure regular supply of quality planting materials to the producers through i) a regulation on quality planting materials along with specific guidelines of each of the cultivated NTFPs, ii) supporting private entrepreneurs to establish NTFP resource nurseries in major cultivation potential areas, and iii) facilitating private laboratories to produce planting materials through tissue culture of important NTFPs, such as satuwa (*Paris polyphylla*), large cardamom and chiraito (*Swertia chirayita*).
- Promote cultivation with proper extension services. Currently neither DFO nor District Agriculture Development Office (DADO) is technically equipped to serve NTFP producers. Therefore, there is an urgent need to designate an agency to provide extension services in NTFP cultivation; the most urgent service is needed for the cultivation of essential oil bearing plants (especially chamomile (*Matricaria recutita*), menthe (*Mentha arvensis*), *Cymbopogon* spp. (lemongrass, citronella, and palmarosa) and medicinal herbs, such as satuwa (*Paris polyphylla*) and chiraito (*Swertia chirayita*).
- Capacitate DFO staff on identification, resource inventory, collection methods and commercialization of NTFPs and mobilize them for technical backstopping of harvesters.
- Develop service providers at local level for resource inventory, CF operational plan development, cultivation techniques, business planning, etc.
- Build capacity of producers and technicians (private and government) on variety and seed selection, cultivation, post harvest handling, and enterprise operation and management.

Harvesting and processing

- Provide support to research institutions including universities for R & D especially in cultivation, harvesting, processing, product development and marketing. Think ahead since, NTFP product development takes 5-10 years. In direct conflict with the often-faddish

nature of NTFP markets is the fact that the development of a new product requires at least 5-10 years and a significant investment of resources.

- Prepare and disseminate harvesting guidelines for major NTFPs with proper training to harvesters in major production zones. There is an immediate need to develop appropriate harvesting tools, especially for timur (*Zanthoxylum armatum*) and ritha (*Sapindus mukorossi*).
- Support to explore and identify value addition and quality maintenance technologies from small-scale processing to a large scale processing and manufacturing.
- Build capacity of manufacturers on good manufacturing practice (GMP), quality assurance (QA) and quality control (QC) and support to upgrade their processing facilities.
- Develop clusters of supplies and processing. Wild harvested products in particular can be very unreliable in the quantities, qualities and even locations of production due to the biology of the organism and vagaries of the weather. Developing clusters of community forest users groups and village level processing allows for Nepal to meet international market needs by pooling supplies from a variety of locations.

Governance and market promotion

- Support the government to redefine the criteria (adding raw material availability) of enterprise registration. The enterprises should be registered based on the availability of raw material supply. Currently, *Resin* and *Kattha* processing enterprises are running either under capacity or already shut down.
- Capacitate entrepreneurs on CoC paperwork. Chain of custody (CoC) paperwork essential in US Lacey act applies to all plant products including NTFPs, Nepal has some companies that have chain of custody paperwork in place and more need to put in systems to meet this increasingly common requirement worldwide.
- Streamline collection and export approvals. Collection and export bans that can be "overcome" through a government approval process raise concerns for reputable buyers and investors. They worry approvals could take too long and they miss their delivery dates with buyers and/or will be asked for extra payments to clear paperwork. Nepal needs to streamline these approvals to attract reputable investors to the NTFP processing sector.
- Support to construct collection centres and warehouses. Initially, an auction centre in Nepalgunj and collection centres in Surkhet, Birtamod and Banepa are suggested.
- Form and strengthen producer groups and their networks and BMOs and support in developing code of conduct to control unhealthy competition.
- Support to develop practical and sustainable mechanism for compilation and dissemination of market information of NTFPs (price, quality, buyers etc.); the existing MIS platforms can be strengthened.
- Carry out the study on "trade analysis of MAPs from Nepal to China/Tibet and India.
- Support entrepreneurs to participate in trade fair and exhibitions, such as biofach, natural product expo, and explore buyers for Nepali products.
- Consider "cross-over markets for NTFPs. For example an herb may have traditionally been sold for tea blends, but not may be an ingredient in a personal care product. Essential oils could be considered for aromas in candles.

- Focus on niche markets. Selling products to mainstream markets is probably beyond current "organized" supply levels in Nepal therefore a variety of "green" (community forestry, biodiversity) and "fair trade" niche markets will be the most useful starting point. Nepal has increased quality and secured certifications for NTFPs, which have led to several long-term buying arrangements with US and European buyers and most recently resulted in a direct investment.
- Facilitate in export promotion through i) supporting to establish accredited laboratories for quality certification (equipping the DPR laboratory with modern analytical instruments in PPP model) and improvement of biotechnology lab to develop protocol and progeny testing of important endemic and exotic plants, ii) supporting to identify the chemical constituents, biomarker and quality standard analysis of major MAPs, iii) facilitating government to designate HS code, iv) developing quality system and profiling Nepal standard for export potential products, such as crude herbs, essential oils, handmade paper, and *allo* fabrics.
- Consider two growing trends - Access and Benefits Sharing (ABS) and Convention on Biodiversity factoring into sales of NTFP from wild. "The implementation of clear national biodiversity legislation may be critical in establishing favourable conditions to attract companies seeking countries in which to buy natural products. Costa Rica's early start in dealing with these issues, for example, has led to a steady growth in bio-prospecting agreements (Eberlee 2000)". With Europe signing on to the Biodiversity Convention, it will soon be a requirement in NTFP wild harvest products trade and Nepal could become a leader in this if made a priority.
- Invest in quality packaging - poor packaging can cause a shipment to be rejected by customs and is the first impression customer has of product. From initial export errors with buyers, poor packaging and contamination with foreign materials was a major complaint. For example, essential oils containers that frequently leaked and one shipment had had a chicken feather in the oil.

5.2.3 Ecosystem services - forest carbon

In early stages of the carbon market, developing appropriate institutional mechanism, capturing the insights and anticipations of the stakeholders and building their capacity on carbon value chain functions are important. Significant interventions are needed for setting up the governance structure and market promotion.

Forestland management and production

- Identify key actors and stakeholders willing to invest in or pay for emission reduction including forest managers, government, civil society, private sectors and other stakeholder.
- Build the capacity of the stakeholders, such as government, communities, civil society organizations, and private sectors for understanding about the potential projects they could develop, and their roles in forest carbon project management.

Consolidation

- Build technical capacity of the project proponents (private or government) for developing forest carbon PDD, establishing the reference levels and reference emission levels and conducting MRV.

- Determine organizations serving as a project aggregator. Since the project aggregator or project proponent is missing in the current carbon value chain, organizations serving these roles should be determined. For this, existing or new institution need to be developed as project aggregator for managing relatively large number of small forest parcels that would be the part of the project.

Governance and market promotion

- Make clarity on the current tenure right. There is a need to make clarity on the current tenure right on forest ecosystem services. Private investors and project developers will not invest in REDD+ activities unless clear land and carbon ownership systems are in place. This requires clear understanding and consultation process with the communities regarding how this type of investment would impact their access to forest resources, and the development of clear benefit sharing mechanisms clarifying who has rights to benefits that flow from carbon and to what extent.
- Support development of an appropriate institutional mechanism for incorporating different management regimes for developing carbon projects. Given the disintegrated nature of forests often characterized by different management regimes within a landscape, an appropriate institutional mechanism should be developed to incorporate these regimes and develop carbon projects.
- Make banks and financial institutions aware of opportunities. Banks and financial institutions should be made aware of opportunities to provide long-term financing for carbon projects or offset their emissions and those of their clients. REDD+ and other carbon project opportunities could also be brought to the attention of large companies with a corporate social responsibility orientation.
- Define product positioning and target appropriate market. Nepal's forest carbon cannot be considered as only carbon as it is associated with other co-benefits, such as biodiversity, livelihood contribution, watershed protection and disaster risk reduction. These co-benefits should be bundled with carbon while trading. Furthermore, preparing Nepal for compliance REDD+ market would take long time; therefore the government should focus on sub-national projects targeting voluntary markets.
- Explore and expand the existing markets. To motivate private sector investment and involvement in carbon projects at scale, it is also necessary to explore and expand the existing markets. In addition to the voluntary markets, where the demand and price levels are not sufficient to drive private sector investment at scale, compliance-driven demand for carbon credits could be explored to incentivize large-scale private investment.
- Support government to make appropriate decisions with regard to sub-national pilot PES deals that include carbon - while carbon markets are soft and prices have declined, there are still strong voluntary markets where trades are happening; Nepal would be attractive to voluntary and CSR markets.
- Help certification of forest carbon. A study conducted by Centre for International Forestry Research (CIFOR) shows that acceptance level and willingness to buy certified forest carbon is high compared to

non-certified carbon in international market (Meijaard *et al.* 2013). As certification helps to build trust between forest managers (producers) and forest carbon buyers, the certified carbon can take better market share with better price.•

- Use a respected and established third party standard/certification for the carbon deal you choose. Plan Vivo and Verified Carbon Standard (VCS) with Climate Community and Biodiversity Alliance (CCBA), and Clean Development Mechanism (CDM) with Gold Standard are all well respected mechanisms. Plan Vivo will be the lowest cost for Nepal to enter the markets with and two groups have already started the process with Plan Vivo that can be restarted if government policy is determined. VCS and CCBA have also been studied and methodology development for VCS is still needed, which can run from $200,000 to $500,000 as can the CDM process.

5.2.4 Ecosystem services – ecotourism

Nepal's tourism activities are confined to certain areas and the current ecotourism practice is not well differentiated from conventional or mass tourism around protected areas. Development of ecotourism products and their advertisement for the emerging markets, promotion of new touristic area and targeting of new market segment are needed.

Forestland management and production

- Discover and develop new products and sites that would be helpful in expanding the duration of international tourist stay, where majority of the tourist activities are currently limited at Kathmandu, Chitwan and Pokhara triangle.
- Develop ecotourism products and sites focusing on tourists from neighbouring countries including China, India and other South East Asian countries, which are promoting their visit in Nepal. Recently, the neighbouring country – China, which has recently been among the largest tourist exporting countries in the world, has listed Nepal as one of the outbound destinations for Chinese tourists.
- Facilitate community forest user groups for ecotourism product development and promotion. This can be done through providing tourism and business skills training to local businesses and community members.

Governance and market promotion

- Support to certify ecotourism sites. The certification could lead to the increase of the high-end nature tourists to the country. The tourism board, hotels, trekking agencies, and protected area management committees can promote the certified sites using certification as a marketing tool. The potential sites for certification are national parks, protected areas and some of the community forests. For this, some examples of ecotourism certification from the governments of Australia and Costa Rica could be used as examples for developing certification system.
- Support in advertising Nepal's destination market and receptive people. As compared to competing international destinations, such as Bhutan, the tourism products are offered at a much cheaper price in Nepal. In addition, Nepalese are known as service-oriented and courteous people among the international tourists. Nepal's tourism can also be advertised embedding with the products. As an example, Aveda is promoting its products since 2007 embedding the story from nature and people of Nepal.

- Establish a dedicated desk at Nepal Tourism Board for the promotion of ecotourism.

5.2.5 Forest bioenergy

In the present capacity, Nepal should focus on proven solid biofuel technologies - such as briquette and wood pellets - to generate energy from forest biomass. Most importantly, with the proper harvesting and combustion of fuel wood, there is a scope to increase energy efficiency of fuel wood.

Forestland management and production

- Support producers and forest managers on resource management. There is a scope to increase production of forest biomass with improved forest management practices, such as timely thinning and pruning and utilization of invasive weeds.
- Develop and maintain fire lines and pre-season controlled burning in fire prone areas.
- Support farmers to grow fodder tree in private and community lands that would supply fodder requirement and help to reduce animal grazing in the forests.
- Focus on energy substitution and biofuel strategies that maximize land productivity and do not compete with food production.

Harvesting and processing

- Introduce appropriate harvesting tools so that the losses of biomass would be minimized.
- Support machine fabricator to develop efficient torrefaction and densification technologies.
- Introduce and apply, wherever possible, improved technologies on torrefaction and densification, which would help to convert biomass into an energy-dense fuel carrier.
- Support entrepreneurs to develop appropriate combustion technologies and user friendly and efficient stoves.
- Support to test and demonstrate gasification technology in some of the biomass rich community forests.
- Support to explore and install technologies for the utilization of by-products of wood-based enterprises into energy.

Governance and market promotion

- Provide research and development support for the development of briquette and wood pellets production technology at large scale, resolving of issues related to efficiency, handling of products and ignition.
- Capacitate community based enterprises in leadership development, enterprise management, entrepreneurship development and marketing.
- Recognize forest biomass as an important source of alternative energy. The potential fuels from forest biomass are bio-briquettes, pellets, and electricity from gasification. In this process, the government can expedite the progress through a systematic plan of activities with a defined target for short-term and long-term.
- Support for policy formulation. Provisions of financial incentives, investment subsidies and credits required for the private companies for their establishment and sustainable operation in the policy can attract the investment of private sector in bioenergy. Appreciating that bioenergy is linked to heavily subsidized and politics of oil industry, global subsidies for traditional oil-based fuels will continue to make it difficult for biofuels; tapping into various bioenergy grant programs is necessary to “level the playing field”

and Nepal should look to grant and soft-loan programs of development institutions and various global energy funds.

- Facilitate to establish community-private partnership. With improved management, the total stock of forest biomass is increasing; this is more obvious in community forests. In regular forest management, there is significant waste biomass from each of the community forests. To utilize the biomass derived from regular forest operation, the present experience of community-private partnership in bio-briquette value chain is noteworthy. This model can be expanded in other parts of the country with support in scaling up of the production and market.
- Strengthen producer groups and association. Capacitate briquette producer association and facilitate to increase the membership base.
- Develop domestically first rather than export. There is a good scope especially for solid biofuels – pellets, briquettes for commercial and households. Himalayan Naturals has developed a very successful bio-briquette product that uses leaf litter and forest waste and should be further promoted and expanded in Nepal.

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ANNEXES

Annex A: Study Methodology

A-1 Study Approach

The study was guided by the following four research questions explicitly reflecting the research focus on additional employment creation in the forestry sector through an expanded private sector involvement and investment: i) What are Nepal's best forest products and service options to attract private sector involvement and investment? ii) Given Nepal's goals to conserve its unique forest biodiversity and sustainably utilize the forest to alleviate poverty, what types of private sector involvement and investment should Nepal work on to attract? Is the investment climate favorable to attract the private sector? iii) What do the targetted private sector actors look for in an investment? What are the models for their involvement and investment? and iv) Based on the above information, what are Nepal's opportunities and constraints to attract private sector involvement and investment?

A study framework (see Figure 1) was developed to answer the aforementioned research questions that includes a systematic analysis of the private sector's engagement in the forestry sector under the following three components: i) Analysis of the forest-based industries in Nepal to determine a range of products and services and their demand, ii) Analysis of the investment climate; and iii) Analysis of investors' perspectives, both national and international, to learn their level of involvement and investment models. Each component is further divided into sub-components so that the specific subject matter experts would investigate this in detail. Each subcomponent has its areas of inquiry and major methods that assess the current status and situation, help identifying the potential opportunities that are doable and within the reach of stakeholders and analyse the constraints and barriers that have limited the private sector investment and involvement.

Based on the study findings, analysis and understanding of the context, intervention strategies are recommended for increasing private sector engagement in the forestry sector of Nepal, broadly for the country's forest sector as a whole and specifically for MSFP. Both the short term and long term intervention strategies are suggested. Furthermore, five concept papers have been developed to elaborate some of the recommended strategies. Finally, some suggestions have been made to develop an information dissemination plan for making an effective use of the study results and recommendations.

A brief description of each component and its subcomponents is given below:

Analysis of forest-based industries in Nepal: This analysis helps to identify Nepal's best forest product and service options that are attractive to private sector for their involvement and investment. The tools like value chain and subsector analysis are used for the analysis of forest industry of Nepal. During the analysis, forest industries were divided into four major categories, namely, a) timber, b)

NTFPs, c) ecosystem services, and d) bio-energy. For every subsector, a detailed analysis of resource base, market trends and competitiveness, workforce, chain governance, and income and employment were done. Similarly, mapping of actors, functions and enablers of each subsector was carried out. Consultations, interviews, and field surveys are the major methods carried out to investigate each subsector.

Analysis of investors' perspectives: This component analyses the perspectives of existing and potential investors in the forestry sector and answers what these investors look for in an investment. This analysis helps to identify their interests and requirements and the value systems for them to willingly invest in the sector. Also, this helps to identify and develop suitable models for their involvement and investment in sustainable business in a responsible ways. The perspectives of investors were analysed for their engagement basically in: a) production enterprises, b) processing enterprises, c) manufacturing enterprises, and d) trading enterprises. The investors' perspectives were analysed for domestic investors and international investors, both from the private sector and public sector investors including donor agencies and international financial institutions. Information was gathered mainly from consultations with the existing and potential investors and through a questionnaire survey of existing enterprises. The international perspective was obtained from interviews with leading sustainable forest product/ service industry representatives, such as brokers, NTFP-based companies, and large forest product based companies.

Analysis of investment climate: This provides information on whether the investment climate is favourable for investment by the private sector in forestry and helps to determine the potentiality of these types of investment. It also suggests the type of private sector involvement and investment that Nepal should look for. The investment climate was mainly analysed through the study of: a) policy and regulatory environment governing the forest sector, b) political environment, c) institutional framework governing the forest sector, d) policy and institutional environment governing finance, e) infrastructure, and f) research, capacity building and extension services. More specifically, the analysis highlights the implications of present state of these factors in terms of opportunities and constraints due to existing provisions, actual practices, gaps, contradictions, overlaps, inappropriateness, and inefficiencies. Review, consultations and interviews were the major methods used to collect the information regarding investment climate.

A-2 Data Collection

Both primary and secondary sources were used for the collection of data. The study area, sampling, the major methods used for the collection of data and analysis are presented below.

Study Area: The issues identified for analysis had local, regional, national, and international dimensions. The study covers the whole of Nepal. National level data and information collection was required for providing a broader scenario of national forestry sector and subsectors in various social and ecological regions, status of forestry sector in the national economy, and the national investment climate. To some extent, the study also covers international dimensions as these relate to the forestry sector. In order to obtain international private sector's perspectives on investing in the forestry sector of Nepal, current and prospective international companies were consulted

Figure 1.1: Study Framework

and interviewed. In addition, this study was supported by a detailed district and local level study of the private sector actors of both the enterprises and financial institutions in the 28 sample districts, and the regional market centres (Figure 2).

Sampling: Multi-stage stratified purposive sampling was used to select the various levels of study units. The first stage stratification criteria for the selection of sample districts were: a) altitudinal gradient along the north-south axis, namely, mountain, hill and terai; b) regional variation along the east-west gradient, namely, eastern region (Mechi, Koshi, Sagarmatha, Janakpur), central region (Bagmati, Narayani, Gandaki, Lumbini, Dhaulagiri) and western region (Rapti, Bheri, Karnali, Seti, Mahakali); and c) MSFP and non-MSFP districts. This gave a frame of three by three grids or nine strata representing major ecological regions of Nepal. A total of 28 districts, including 8 MSFP program implemented districts, were purposively selected ensuring the representation of at least one district from each stratum (see Table 1). The districts with resource availability, trade volume, access to road, communication and energy, which are needed for forest-based enterprises to exist, were selected.

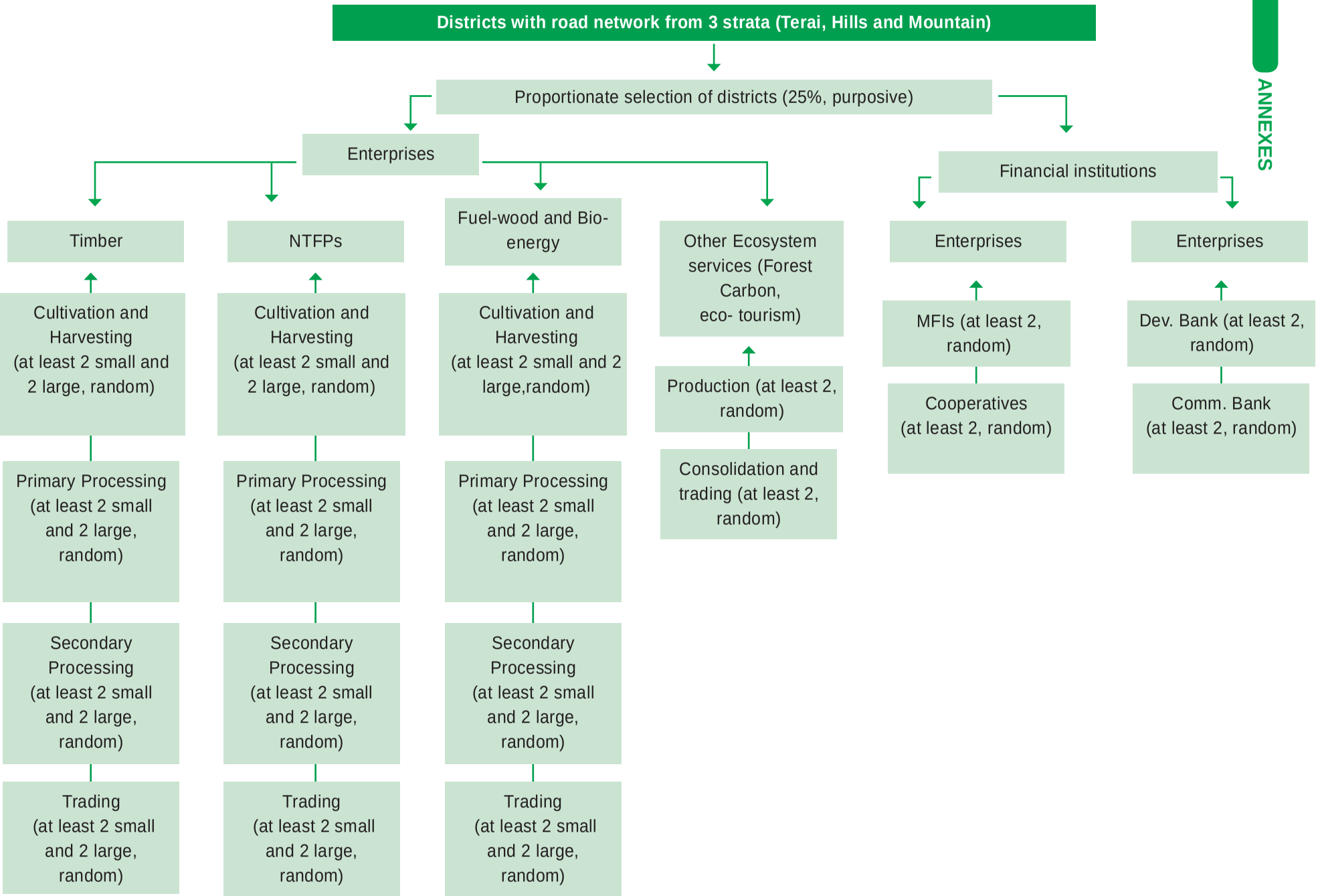
In the second stage, enterprises and financial institutions were selected. The stratification criteria for enterprises included: a) subsector types; b) function within subsectors; and c) size of enterprises in order to make sure that each type, function, and size of enterprises are represented in the study. The major subsectors included timber, NTFPs, bio-energy, and ecosystem services. The major functions in timber, NTFPs and bio-energy are production, primary processing, manufacturing, and trading whereas for ecosystem services function comprises production, and consolidation and trading. Similarly, enterprises were selected based on their size: a) small: those enterprises categorized as cottage and small enterprises in the Industrial Enterprises Act, 1992 and b) large: medium and large enterprises as categorized in the Act. At least one small and one large enterprise were sampled purposively in each district depending upon accessibility of road, operational status and income and employment generation.

In case of FIs, at least two financial institutions were selected purposively from local financial institutions, such as microfinance institutions (MFIs) and cooperatives at the district level. Similarly, at the national level, financial institutions, such as development banks, commercial banks, and finance companies were sampled for consultations and survey interviews. The sampling framework is presented in Figure 2.

Table 1: Selected Districts by Ecological Regions

Ecological regions	Eastern	Central	Western
Mountain	Sankhuwasabha	Sindhupalchok	Jumla
Hill	Dhankuta, Ilam, Ramechhap, Udaypur	Gorkha, Baglung, Palpa, Kaski, Kathmandu	Dailekh, Doti, Dadeldhura, Surkhet
Terai	Sunsari, Sirha,Jhapa, Morang	Nawalparasi, Chitwan, Rupandehi, Bara	Dang, Banke,Kailali, Kanchanpur

Figure 2: Sampling Framework



Primary Data Collection Methods

The primary data collection was done by field visits to the sample districts as well as regional and national market centres. Three teams were formed for field data collection, one for each region, namely eastern, central and western, in order to have organized and timely data collection. The field teams collected information and data by conducting i) consultations and interviews with stakeholders and experts ii) focus group discussions, and iii) surveys of enterprises and financial institutions in each of the sampled districts. The major activities undertaken for field data collection are listed along with the number of events desegregated by regions in Table 2. The detail on the methods used is described below.

Table 2 Summary of the Field Data Collection Activities

Activities	Eastern Region	Central Region	Western Region	Total
Consultation with district level stakeholders (BMO, Govt., Projects)	44	43	40	127
Focus group discussion	12	16	16	44
Interaction with entrepreneurs	16	23	9	48
Survey of entrepreneurs	164	191	177	532
Survey of financial institutions	18	29	16	63
Visit to regional market centres	4	6	4	14
Interaction at customs & quarantine offices	4	6	2	12
Total	262	314	264	840

a) Stakeholder consultations/ interviews: Stakeholders from various agencies, backgrounds, and locations were consulted and interviewed in order to identify the potential opportunities and constraints in the forestry sector and discussions were made on possible collaboration with different institutions in future. Consultations were done at four levels: i) local level, ii) regional level, iii) national level, and iv) international level. For the consultations and interviews, four sets of checklists were prepared, one each for producers, traders and processors, enablers and facilitators, and financial institutions. Specific questions for each of the subsectors (timber, NTFPs, bioenergy and ecosystem services) were also included in all sets of checklists.

At the **local level,** consultations were carried out with district level government and non-government stakeholders such as District Forest Offices (DFOs), District Chambers of Commerce and Industries (DCCIs), District Cottage and Small Industries Offices (DCSIOs), District Development Officers (DDCs), district chapters of the Federation of Community Forest Users, Nepal (FECOFUN), local NGOs and other relevant supporting and facilitating organizations. Similarly, local level forest entrepreneurs and local financial institutions were also consulted.

At the **regional level,** consultations

were carried out with regional level government and non-government stakeholders. Major regional market centres, such as Birtamod, Biratnagar, Janakpur, Birgunj, Narayanghat, Butwal, Pokhara, Nepalgunj, Birendranagar, Dhangadhi, Mahendranagar, Tatopani, and Kathmandu were visited to consult with traders, processors and manufacturers. Similarly, consultation was done with customs and quarantine officials of Kakarbhitta, Biratnagar, Birgunj, Bhairahawa, Nepalgunj, Mahendranagar and Tatopani.

At the **national level,** consultations were carried out with related government departments and ministries associated with forestry, commerce and trade, customs and quarantine, national planning, and investment. Similarly, consultations were also made with BMOs, such as Federation of Nepal Chambers of Commerce and Industries (FNCCI), Federation of Forest Based Industry and Trade, Nepal (Fen Fit), Nepal Herbs & Herbal Products Association (NEHHPA), Handmade Paper Association (HANDPASS), Jadibuti Association of Nepal (JABAN), and Herbal Entrepreneurs Association of Nepal (HEAN). Further, related INGOs, NGOs and donor agencies were also consulted. Representatives of financial institutions, and national level entrepreneurs including public companies were also consulted.

At the **international level,** interviews and consultations were done with 20 leading sustainable forest product/ services industry representatives. This included Aveda – a leading cosmetics company using forest based products, brokers of forest based goods and services including carbon credits, some of the leading large forestry companies including FSC certified companies, and some of the progressive NTFP companies to learn what they would want to be able to invest.

b) Expert discussions: Discussions were carried out at the national level with professionals from the government, private sector and non-government communities with expertise on forest policy, forest industry, private sector development, export and import, and finance, among others (Listed in Annex C-1). International experts were consulted to understand the drivers of international private sector engagement in forestry. Study methodology and preliminary findings were shared with various international experts including Mr John Hudson (Chair of the Board of Directors of the Rights and Resources Initiative), Mr Antti Rytkonen (Senior Advisor, Ministry of Foreign Affairs of Finland) and Mr Gavin Jordan (Director, Interface NRM Ltd. UK).

c) Surveys: Sample surveys were carried out at local (district level), regional and national level for 1) forest-based enterprises, and 2) financial institutions. Three survey groups were mobilized in three different regions (as categorized in sampling), namely, Eastern, Central and Western Nepal for data collection.

Survey of forest-based enterprises: Forest-based enterprises involved in timber, NTFPs, bioenergy, and ecosystem services in the sampled districts were surveyed. A general questionnaire designed with the objective of understanding the perspectives of various categories of firms at various locations for each subsector about the investment and employment conditions, their interest and requirements for growth, and the opportunities and constraints faced by the entrepreneurs. The questionnaire was customized for all types of producer

enterprises, processors/manufacturers and traders for each subsector except for the other ecosystem services. For other ES, two sets of questionnaire, one each for producers/consolidator and traders, were designed.

The questionnaires were used to collect information about the typology of the firms, financial support available to the firms, the level of skills and technology used by the firms, trade volumes and value of forest products, interests and motivation of the entrepreneurs, availability and access to resources (raw materials), infrastructure, utilities, business development services (BDS), and markets. Questions on the interests and requirements of the private sector for increased engagement in the forestry sector and the key constraints that has limited private sector investment and engagement in the forestry sector were included along with open-ended questions on their suggestions for increasing their investments and involvement. A total of 532 entrepreneurs were interviewed using the questionnaire. A list of respondents is attached in Annex D.

Survey of financial institutions: Asurvey of financial institutions (FIs), namely, microfinance institutions, cooperatives, development banks and commercial banks was done. A set of questionnaire with some common and some specific questions for each type of FIs were developed. Financial institutions (FIs) including savings and credit cooperatives and microfinance institutions (MFIs) at the local level and development banks, finance companies and commercial banks at the national level were surveyed using a questionnaire. The questionnaire was designed to understand the financial products available and administered for financing the forestry sector, interest rates, FI's interests and conditions to invest in the forestry sector, the constraints faced by FIs, potentials for increasing financing in the forestry sector, and environment required for the same. A total of 63 FIs were interviewed using the questionnaire. A list of FIs interviewed is attached in Annex D.

d) Focus group discussions (FGDs): A set of checklists was prepared to conduct FGDs systematically for the groups of producers, processors/ manufacturers, and traders of selected subsectors in the sample districts and market centres in all the three study regions. The checklists focused on the current status of production, processing, marketing of various forest products, investment in forest-based enterprises and its trend, and employment generated by the forestry sector as well as the opportunities and constraints for each type of value chain actors in each subsector. The FGDs were guided by the checklists to allow the participants to express their opinions on the range of topics for specific groups. List of FGD participants is provided in Annex D.

Secondary Data Collection Methods

The study team members reviewed relevant literature and collected data from the secondary sources following the orientation programme. The literature review included: i) review of forest and forest relevant policy documents, documents on various domestic and international regulatory frameworks including the acts, regulations, and directives; and ii) review of important published and unpublished journal articles, reports and documents.

Publications and official records from the national, regional and district level government forest offices and other relevant agencies were referred to for

collection of existing information on general forestry resources of the nation, regional variation of the resources, forest use administration, and economic aspects of forestry at the national level. A major part of the subsector analysis that led to identification of representative categories of enterprises in each subsector was supported by data collected from aforementioned agencies. This included data for estimating demand and supply, both current and potential, such as the current and potential production volume and value in various regions of the country, trend in production and productivity, knowledge and technology on (sustainable) harvesting, processing industries and products. The level of investment by various types of enterprises as well as the employment and income or revenue generated was also collected.

A review of policies and regulatory frameworks including the acts, regulations, and directives on forestry and other relevant policy documents helped in analysing the provisions that constraint or support services affecting the private sector engagement in the forestry sector and in identifying favourable and adverse impacts created by the policy provisions and changes required to address the challenges. Publications and reports on the drivers of investment climate, such as infrastructure including transportation, communication, and energy facilities; access to finance; political environment including national security, and political stability were reviewed to understand the status of investment climate for forest specific ventures in Nepal. Findings on engaging the private sector for development of the forestry sector elsewhere in the world were also reviewed.

Other relevant published and unpublished journal articles, reports, and documents were reviewed as needed. The data and information collected were triangulated using information from various sources and expert consultations and interviews and focus group discussions, to be discussed shortly.

A-3 Data Analysis and Presentation

The analysis was guided by the objectives and research questions. Data and information collected from the primary and secondary sources were organized, processed and analysed with reference to three major components of the study - forest industry, investment climate, and investors' perspective following the standard logic starting with the current status and situation through opportunities and potentials within the sector and constraints and barriers that hinder to realise the potentials. Based on these analyses, intervention strategies and policy recommendations are suggested.

Computer software - SPSS and MS Excel - were used for processing and analysing the data generated from the questionnaire survey. The information collected from meetings, interactions, observations and FGDs were systematically analysed and findings synthesised. During the analysis, different sources, literature, and expert opinions were used for triangulation of information and data.

A draft report was prepared presenting the data and findings from the analysis in a logical flow envisioned during the study design. ANSAB's roster of experts including board members and advisory board members reviewed the draft report. After incorporating the inputs from the experts, a final draft was shared with MSFP team for their review and feedbacks.

Annex B: Data and Information on Forest Based Industries

TableB-1: The floor price of timber logs of major species sold by DFO

Name of Forest products and grades	Selling price (NRs/cft)
Sal grades	
A	800.00
B	500.00
C	300.00
Sissoo grades	
A	1000.00
B	800.00
C	500.00
Tooni log	
A	300.00
B	200.00
Khote salla grades	
A	200.00
B	150.00
Champ	500.00
Simal	125.00
Jamun and Karma	300.00
Mango	100.00

Table B-2: TCN Prices for round wood timber

Species	Grade	Length (ft.)	Girth class (ft.)		Average Price (NRs)
Sal			5-7	>7	
	A	5-8	1382	1403	
		8-11	1391	1406	1397.80
		>11	1395	1410	
			4-6	>6	
	B	4-8	1050	1072	
		8-11	1055	1076	1067.00
		>11	1065	1088	
		2.5-4	705	760	
	C	>4	795	800	765.00

Wild sissoo			5-7	>7	
	A	5-8	1555	1618	
					1595.00
		>8	1571	1636	
			5-6	>6	
	B	5-7	1105	1135	1126.00
		>7	1125	1140	
			2.5-4	>4	
	C	2.5-5	665	750	717.00
		>5	680	775	
Asna, Jamun, Karma, Tooni, Sirish			5-7		
	>7				
	A	5-8	592/-	600/-	598.00
		>8	597/-	605/-	
			2.5-4	>4	
	B	2.5-5	465/-	501/-	493.00
		>5	498/-	510/-	
Pine			5-8	>8	
	A	5-8	412/-	424/-	420.50
		>8	416/-	430/-	
			2.5-5	>5	
	B	2.5-5	357/-	370/-	
					365.50
Plantation sissoo		>5	361/-	374/-	
			>4		
	A	>4	612/-		612.00
			2.5-4		
	B	>2.5	377/-		377.00

Table B-3: TCN prices for round wood timber (without specific grades)

Species	Length	Price (NRs)		Average Price (NRs)
		Girth 2.5-4 ft.	Girth >4 ft.	
Deodar	2.5-5	378.00	395.00	391.00
	>5	388.00	405.00	
Pterocarpus marsupium	2.5-5	615.00	625.00	624.50
	>5	624.00	634.00	
Michelica champaca	2.5-5	831.00	845.00	844.00
	>5	842.00	858.00	
Anogeissus latifolia	2.5-5	210.00	22.00	222.00
	>5	215.00	238.00	
Eucalyptus, poplar, *Alnus nepalensis*, *Magnifera indica*	2.5-5	236.00	245.00	242.75
	>5	238.00	252.00	
Termina chebula, Terminalia belerica, Schima wallichi	2.5-5	320.00	350.00	347.50
	>5	335.00	385.00	
	2.5-5	255.00	275.00	268.75
Bombax ceiba	>5	265.00	280.00	
	2.5-5	2033.00	2204.00	2140.00
Dalbergia latifolia	>5	2076.00	2247.00	

Table B-4: TCN Price of sawn wood for Kathmandu and Pokhara

Length (ft.)	Thickness and width (Inches)			
	0.5-2.5	2.5-5.5	2.5-5.5	>5.5
	0.5-4.5	2.5-5.5	>5.5	>5.5
2.5-4	1600.00	2120.00	2045.00	1955.00
4-9	1845.00	2690.00	2670.00	2275.00
9-15	1880.00	2720.00	2690.00	2365.00

Average rate: NRs 2237

Table B-5: TCN Price of timber for Terai and inner Terai districts

Length	Thickness (0.5-2.5) Width (0.5-4.5)	2.5-5.5 2.5-5.5	2.5-5.5 >5.5	>5.5 >5.5
2.5-4	1530.00	2050.00	1975.00	1885.00
4-9	1775.00	2620.00	2600.00	2205.00
9-15	1810.00	2650.00	2620.00	2295.00

Average rate: NRs 2167

Table B-6: Import value of wood and articles of wood in USD (2009-2013*)

HS Code	Description	Import value in USD				
		2009	2010	2011	2012	2013*
4403	Wood in the rough	1,158	3,426	159,440	151,374	286,494
4404	Hoopwood; split poles; piles, pickets, stakes (pointed not sawn lengthwise); sticks roughly trimmed not bent or worked, suitable for walking-sticks, handles etc. etc	39	661	1151	1410	2,748
4405	Wood wool; wood flour	127,653	148,792	101,039	82,997	16,369
4406	Railway or tramway sleepers (cross-ties) of wood	52	303	83	0	0
4407	Wood sawn/chipped lengthwise, sliced/peeled	14,354	24,480	340,755	110,859	150,217
4408	Veneer sheets & sheets for plywood &other wood sawn lengthwise	2,097,624	2,234,457	4,046,477	3,596,550	2,387,485
4409	Wood continuously shaped along any edges	73,971	75,117	72,783	53,411	25,553
4410	Particle board and similar board of wood or other ligneous materials	102,816	156,907	506,496	488,498	250,895
4411	Fibre board of wood or other ligneous material	647,741	977,076	678,695	777,016	672,335
4412	Plywood, veneered panels and similar laminated wood	3,714,368	2,032,296	3,562,125	2,206,718	1,126,586
4413	Densified wood, in blocks, plates, strips or profile shapes	32,992	7,063	56,704	9,309	8,133
4414	Wooden frames for paintings, photographs, mirrors or similar object	7,002	96,787	36,978	61,621	34,888
4415	Packaging materials of wood	49,729	50,239	21,758	62,356	31,967
4416	Casks, barrels, vats, tubs etc. of wood	38	10,478	2,041	3,455	399
4417	Tools, tool & broom bodies & handles, shoe lasts of wood	12,786	15,178	24,410	17,540	169,098
4418	Builders' joinery & carpentry of wood	328,167	813,185	1,594,719	1,252,133	1,033,274
4419	Tableware and kitchenware of wood	14,004	28,440	30,928	41,815	34,130
4420	Wood marquetry & inlaid wood; caskets & cases or cutlery of woo	77,681	92,310	95,388	131,620	39,508
4421	Articles of wood, nes	164,633	164,138	175,996	191,299	140,981

** 2013 data represents only the value for 6 months*

TableB-7: Export value of wood and articles of wood in USD (2009-2013*)

HS Code	Description	Export value in USD				
		2009	2010	2011	2012	2013*
4403	Wood in the rough	0	0	0	0	0
4404	Hoopwood; split poles; piles, pickets, stakes (pointed not sawn lengthwise); sticks roughly trimmed not bent or worked, suitable for walking-sticks, handles etc. etc	0	0	0	0	0
4405	Wood wool; wood flour	0	27	28	0	0
4406	Railway or tramway sleepers (cross-ties) of wood	0	0	0	0	0
4407	Wood sawn/chipped lengthwise, sliced/peeled	0	0	0	0	0
4408	Veneer sheets & sheets for plywood &other wood sawn lengthwise	68,946	113,622	388,794	395,895	360,165
4409	Wood continuously shaped along any edges	0	105,081	129,060	34,985	0
4410	Particle board and similar board of wood or other ligneous materials	1,791,386	1,164,915	682,361	373,545	180,002
4411	Fibre board of wood or other ligneous material	749		0	0	
4412	Plywood, veneered panels and similar laminated wood	293,365	462,252	954,436	1,828,183	2,112,154
4413	Densified wood, in blocks, plates, strips or profile shapes	2,743	0	0	0	0
4414	Wooden frames for paintings, photographs, mirrors or similar object	329	154,133	727	351	55
4415	Packaging materials of wood	21,613	71,982	57,605	54,638	20,259
4416	Casks, barrels, vats, tubs etc. of wood	0	146	0	592	0
4417	Tools, tool & broom bodies & handles, shoe lasts of wood	0	373	139	2,125	0
4418	Builders' joinery & carpentry of wood	642,383	507,295	55,863	320,327	23,986
4419	Tableware and kitchenware of wood	0	0	0	11,325	2,775
4420	Wood marquetry & inlaid wood; caskets & cases or cutlery of woo	0	0	0	86,523	71,507
4421	Articles of wood, nes	0	0	55,716	97,313	33,511

** 2013 data represents only the value for 6 months*

Table B-8: Gross margin calculation of sal timber in Far Western Terai

Major Actors	SN	Activity	Far Western Terai (NRs.)
Producer	A0	Average auction price for stumpage stage	1,400
Contractor (within the production site)	A1	Marking, yarding and piling	70
	A2	Loading and Unloading	30
	A3	Transportation from field to road head	60
	A4	VAT on sawlog	203
	A5	Informal fees (incl. local gangs, political parties and government officials)	187
	A6	Commission for local agent	10
	A7	Cost due to log loss during felling, handling and storage (7%)	98
	Sub-total A: Additional costs of sawlog production		658
	Sawlog selling price in Terai		2,200
	Gross margin for contractor		142
Saw miller (of the district)	B1	Loading and unloading at saw mill	20
	B2	Sawmilling cost	70
	B3	Yarding, piling	25
	B4	Cost of loss during sawing timber (with 65% recovery rate)	810
	B5	VAT on sawn timber production	208
	Sub-total B: Additional cost of sawn wood production		1,133
	Market price of sawn timber in Terai		3,800
	Gross margin for saw miller at district		467
Saw miller (Kathmandu)	C1	Transportation cost (loading and unloading)	225
	C2	Sawmilling cost	80
	C3	Yarding, piling and other cost (rent, communication, interest)	120
	C4	VAT	65
	C5	Cost during transportation (political donations, gangs etc.)	40
	C6	Cost of loss (with 65% recovery rate)	956
	Sub-total C: additional cost in urban market		1,486
	Selling price of sawn timber for wholeseller or depot in Kathmandu		4,300
	Gross margin for saw miller in Kathmandu		615
Wholesaler or dipot (sawn timber)	D1	Transportation including load unload, yarding and piling	70
	D2	VAT	59
	Sub-total D: additional cost in urban market		129
	Selling price of sawn timber for furniture in Kathmandu		4,750
	Gross margin for wholesaler in Kathmandu		322

Furniture (builder's joinery)	E1	Additional costs (labour and joining materials)	737
	E2	VAT	163
	Sub-total E: additional cost in urban market		900
	Selling price of builder's joinery for final consumer in Kathmandu		6,000
	Gross margin for Furniture in Kathmandu		351

TableB-9: Mean annual growth rate for forests

Forests	Growth rate (m3/ha/yr)	Data Source
Terai forest	7.6	Puri *et al.* (2012)
Hill forests	3.7	Puri *et al.* (2012)
Terai forests	10	ANSAB REDD project
Hill forests	8	ANSAB REDD project
Pine forests	3	LFP (as cited by Kanel et al. 2012)
Chilaune Katus forests	2.3	LFP (as cited by Kanel et al. 2012)
Paulownia	10.0-30.0	Yamazoe et al. (1989)
Eucalyptus	3.1-12.5	Khanal (1996)

Table B-10: List of NTFPs with their Nepali, English and Scientific Names

SN	Nepali Name	English	Scientific Name
1	Alaichi	Large cardamom	*Amomum subulatum*
2	Allo	Himalayan nettle	*Girardinia diversifolia*
3	Amala	Emblic myrobalan	*Phyllantus emblica*
4	Atis	Aconite	*Aconitum heterophyllum*
5	Bans	Bamboo	*Bambusa bambos*
6	Bojho	Sweetflag	*Acorus calmus root*
7	Chiraito	Chiretta	*Swertia chirayita*
8	Chiuri	Nepal butter fruit	*Bassia butyracea*
9	Chamomile	Chamomile	*Matricariachamomilla*
10	Dhasingare	Wintergreen	*Gaultheria fragrantissima*
11	Guchhichyau	Morel mushroom	*Morchella conica*
12	Jatamansi*	Spikenard	*Nardostachys grandiflora*
13	Jhyau**	Lichen	*Parmelia nepalensis*
14	Khayar	Black Catechu	*Acacia catechu*
15	Khoto	Chir pine (resin)	*Pinus roxburghii*
16	Kutki*	Gentian	*Picrorhiza scrophulariiflora*
17	Lemongrass	Lemongrass	*Cymbopogon citratus*

18	Lothsalla	Himalayan yew	*Taxus baccata*
19	Majitho (red)	Madder	*Rubia manjith*
20	Mentha	Mentha	*Mentha arvensis*
21	Argeli		*Edgeworthia gardnerii*
22	Lokta	Daphne	*Daphne bholua*
23	Pakhanbed	Rock foil	*Bergenia ciliata*
24	Ritha	Soap nut	*Sapindus mukorossi*
25	Rudrakshya	Utrasum bead tree	*Elaeocarpus sphaericus*
26	Satawari (Kurilo)	Wild asparagus	*Asparagus racemosus*
27	Satuwa (big)	Love apple	*Paris polyphylla*
28	Sugandhawal*	Indian valerian	*Valeriana jatamansii*
29	Tejpat	Cinnamon	*Cinnamomum tamala*
30	Timur	Prickly ash	*Zanthoxylum armatum*
31	Yarsagumba	Yarsagumba	*Cordyceps sinensis*

Annex C: Most relevant policy and legislative provisions, implementation practices and suggested reforms (including international treaties and agreements) for improving the participation and investment of the private sector in forestry in Nepal

Existing Provisions and Practices	Implications for private sector in terms of returns, risks, transaction costs and image	Recommendations
Investment Related (Foreign Investment and One Window Policy, 1992 (OWP); Foreign Investment and Technology Transfer Act, 1992 (FITTA) and its amendments, 1996, 2000; Private Financing in Build and Operation of Infrastructures Act, 2006 (BOI)		
OWP • OWP designates DOI as the 'one window servicing agency' with the Industrial Promotion Board as the focal point. It is not operational in practice due to jurisdictional overlaps across the concern agencies, policy contradictions and weak coordination among the agencies. ***FITTA and BOI*** • Foreign investors can obtain non-tourist and residential visa for the period of maintaining investment in enterprises; they need to go through a complex process to obtain visa for technical experts. • Industrial Promotion Board requires granting permission for foreign investment within 30 days from the date of application. But in practice due to complex and time-consuming procedures, it takes 1 to 3 years to complete the process for registration of an enterprise. • Industries and associated private properties are exempted from nationalization during the license period.	• OWP brings all necessary services in one place for domestic and foreign investors, which would reduce their transactions costs. Since it is not operational, practically it still takes several months to more than a year for foreign investors to start a business in Nepal. • Due to complex visa procedures, investors are not able to acquire required technical experts in time and this adversely affects timely project completion, increases the transaction costs of the business. • Foreign investors find it less attractive to establish business where the registration and renewal process is complex and time consuming. • Guaranteed security against nationalization of private property provides security and reduces risks for investors.	• Make OWP operational by resolving contradictions in the policies and regulations and jurisdictional overlaps across the concerned agencies. • Simplify the visa process and provide all relevant information on visa obtaining process in Gov website. • Develop capacity of the Board and DOI to provide service for establishing business within timeframe as prescribed in the FITTA. • Develop a system and mechanism for technology transfer and benefit sharing between investors and small industries after technology transfer. • Develop capacity of concern agencies (Department of Cottage and Small Industries) for the facilitation of TT process and amend the law on IPR protection.

• FITTA and BOI emphasize only on technology transfer (TT) to cottage industries, but foreign investment in cottage industry is not allowed. • There is a lack of clarity on the role of agencies for the facilitation on TT to cottage industries and the legal mechanism is weak for the protection of intellectual property rights (IPR) over transferred technology. • Facilities and Concessions: Investors are allowed to make investment in foreign currency. But there is no provision for allocating land and infrastructure. • Settlement of Disputes: provisions for settlement of disputes based on mutual consultations and arbitration; limited expertise at DOI for the facilitation of disputes related to foreign investment; the dispute settlement mechanism is cumbersome.	• There is no incentive for investors for TT to cottage industries. The huge potential for developing cottage industry in the forestry sector remains untapped. • Majority of cottage and small industries are forced to operate with outdated and inefficient technologies and are less competitive and less attractive. • Investors do not have access to land and affected by erratic supply and long hours of power cut, and inadequate and poor quality of infrastructure facilities, such as roads. • Investors are not attracted due to long and expensive process and high risks.	• Clearly define the facilities that are possible to provide foreign investors during permission and operation stages to maintain investment. • Develop human resource and arbitration capacity for the settlement of foreign investment related disputes
Industry and Trade Related (Industrial Policy, 2010; Industrial Enterprises Act, 1992; Trade Policy, 2009; Private Firm Registration Act, 1956; Company Act, 2006; Customs Act, 2007; Competition Promotion and Market Protection Act, 2007; Patent, Design and Trademark Act, 1965; Copyrights Act, 2002; Import Export (Control) Act, 1956 and its amendment 2006)		
• One objective of the policy is to promote micro enterprises, cottage and small enterprises, such as one village-one product; but due to lack of investment and BDS, it is not operating effectively. • The policy gives first priority for the industries that are based on agriculture and forest; but timber-based and bio-energy industries are not included i n the list. • Leasehold forest for forest-based industries is an important program of the policy; the forests allocated for leasehold from the government are not suitable for industrial purpose due to remoteness and tenure conflicts.	• The transaction cost is very high for the one village one product and many are unable to do business due to lack of BDS providers at local level. • Timber-based and bio-energy industries have to bear additional transaction costs (tax, customs and non-tariff barriers) in comparison to the listed subsectors. • The private sectors are not able to access suitable leasehold forest as per their requirement. • No promotion of investment opportunities in forest-based industries and the potential remain untapped. • Investors have to bear relatively high charges and more time for registration.	• Review the existing practices of one village-one product to mainstreaming it in the other relevant policies, such as local governance and environmental regulations. • Revise the priority list of industrial policy to include timber-based, bioenergy and export oriented forest-based industries in the list. • Harmonize the policy and legal provisions on leasehold and remove contradiction between legislative provisions of industries, forestry, local government and environment. • Establish special section under the ministry for the promotion of private investment in farming and forestry. • Amend the Company Act and Industrial Enterprise Act to make a legal provision of providing registration service from one agency.

• Institutions for BDS support: Investment Promotion Board is established for the mega project and there is no institution to promote private investment in forestry sector. • An enterprise needs to get registered at multiple agencies if it does multiple functions, such as production and trade.		
Trade Policy, 2009; Customs Act, 2007 • The major supporting areas of the policies are licensing for export and simplifying tax, customs duty and charges as well as certificate of origin, which are still complex procedures for export due to additional requirements for forest products and weak coordination among agencies. • Under commodity development program it has given emphasis on export promotion of handicraft goods, but the export duty is high (200%), which is at par with other timber products. • Thrust Area Development program has given special emphasis for the export promotion of herbs and essential oils, handmade paper and paper products and wooden craft products. The herbs export procedure is complex due to tax, quarantine and transportation rules of importing countries including India. • Establishment of Special Economic Zones (SEZ) and export promotion is a major program of trade policy. Due to legal contradiction over the ownership of SEZ and the lack of investment, it is yet be operationalized.	• The transaction cost is very high for the one village one product and many are unable to do business due to lack of BDS providers at local level. • Timber-based and bio-energy industries have to bear additional transaction costs (tax, customs and non-tariff barriers) in comparison to the listed subsectors. • The private sectors are not able to access suitable leasehold forest as per their requirement. • No promotion of investment opportunities in forest-based industries and the potential remain untapped. • Investors have to bear relatively high charges and more time for registration. • Exporters have to invest lots of time and resources to generate documents for completing export formalities for Nepalese forest-based products. • The high export duty increased the cost of Nepalese products and reduced the demand at international level. • Entrepreneurs are encouraged to invest in the production of these goods, but many are losing their investment due to export barriers. • Investors are not able to establish business or operate established businesses efficiently meeting the international business standards.	• Review the existing practices of one village-one product to mainstreaming it in the other relevant policies, such as local governance and environmental regulations. • Revise the priority list of industrial policy to include timber-based, bioenergy and export oriented forest-based industries in the list. • Harmonize the policy and legal provisions on leasehold and remove contradiction between legislative provisions of industries, forestry, local government and environment. • Establish special section under the ministry for the promotion of private investment in farming and forestry. • Amend the Company Act and Industrial Enterprise Act to make a legal provision of providing registration service from one agency. • Develop a transparent and web-based information system between custom and concern agencies to regulate, exchange and facilitate the documentation procedures for export promotion. • Rationalize export duties by reducing it for prioritized products for export, such as wood handicrafts. • Include this agenda in the trade negotiations with India and other countries. • Enact special legislation and procedures to establish and operate SEZ.

Company Act, 2006 • Private Firm Registration Act 1956 and Company Act 2006 has internalized a simplified online procedure for the registration and operation of companies. The decentralized procedure to register company is yet to be operationalized in all districts. ***Competition Promotion and Market Protection Act, 2007*** • Provisions of competition law are not applicable for the trade of raw materials including forest products. • Private sector can register their innovation as an IPR in Nepal. There is no provision to establish a collective trademark, which would be more suitable for Nepalese NTFPs/MAPs.	• Potential entrepreneurs in the districts, which lack this facility, bear the additional burden for registration and renewal. • It has created practical difficulties to maintain fair competition between private investors to collect forest products as a raw material. • Small entrepreneurs are not able to develop trademark.	• Develop a transparent and web-based information system between custom and concern agencies to regulate, exchange and facilitate the documentation procedures for export promotion. • Rationalize export duties by reducing it for prioritized products for export, such aswood handicrafts. • Include this agenda in the trade negotiations with India and other countries. • Enact special legislation and procedures to establish and operate SEZ. • Provide authority to the District Office of Cottage and Small Industry for the registration of a company in the district. • Develop fair competition policy for forest based industries or amend in the act accordingly. • Amend the existing laws on IPR to recognize the collective brand of Nepalese NTFPs/MAPs.
Fiscal (Value Added Tax Act, 1995; Income Tax Act, 2001; and Excise Act, 2001)		
Value Added Tax Act, 1995 • VAT Act exempts VAT on NTFPs and its extraction, firewood, equipments related to bio-energy, and local production of cottage industries; VAT is still levied in harvesting and trade of timber and Khair/ Kattha and the other forest products, which are included in the Annex-6 of Forest Regulation 1995. ***Income Tax Act, 2001*** • Income tax exempted in the production and marketing of forest products which are produced by forest-based cooperatives. • Financial Act 2013/014 has provided tax exemption in land registration for NTFP farming and processing. ***Excise Act, 2001*** • Excise Act 2001 impose excise duty in the products of Kattha, the wine produced from wild fruits, and the wine mixed with the extraction of NTFPs/MAPs.	• These provisions support private investors in this sector to reduce their transaction costs. But some of the potential NTFPs are not commercialized due to these costs, as these are included in Annex-6. • It is an important opportunity for investor in cooperative. • It is also an opportunity for private investor. • Kattha production is less attractive due to relatively high excise duty.	• Review Annex-6 of Forest Regulation to remove the forest products, which are not relevant to impose VAT, from this list and include in Annex-2. • Provide continuity and inform to all forest-based cooperatives to empower them through training. • Inform and empower through extension program. • Make periodic review to rationalize excise duty on the Kattha and reduce excise in wild fruits/MAPs based wine products.

Annex 2, 3 and 6 of Forest Regulation 1995 • The current system of fixing price and royalty of timber, herbs and NTFPs is not rational and the present rates given in these annexes do not reflect the market, environmental and social values of the forest products.	• There is over or under utilization of these products by private sectors, which sometimes is negatively impacting ecological sustainability and social benefits.	• Support to improve the system of fixing royalties and prices in a regular basis based on scientific criteria; can follow the example of NTFP royalty revision in 2009.
Labour Related (Labour Act, 1992; Foreign Employment Act, 1985; and Trade Union Act, 1992)		
• The Industrial Policy 2010 has recognized the no pay for no-work principle.	• It contradicts with labour law of Nepal.	• Harmonize the no pay for no work principle of policy with labour law and address labour issues.
Environment and Biodiversity Related (Environmental Protection Act, 1997 (EPA); Environmental Protection Regulation, 1997 (EPR); ...)		
• Any private sector or agencies that are interested to implement the proposals listed in the EPR require carrying out IEE/EIA. The practices of IEE/EIA are more centralized and time and resource consuming. The diverse perception, interpretation and understanding over the procedures and practices of IEE/EIA in Nepal is creating complexities to the private sector, particularly during the establishment of enterprise and collection and processing of forest products.	• Unnecessary time and resources are required to take approval/permission from various ministries and departments during the IEE/EIA process due to weak inter-ministerial coordination. • Forest producer groups have to bear additional costs for proving the compliance, most of which they already meet.	• Enhance the role of Environmental Protection Council to maintain consistency between the provisions of EPA/EPR and contradictory decisions of various agencies. • Support to harmonize community forestry system with environmental legality standards and remove this requirement for them by revising EPR.
Timber Specific (Forest Act, 1993; Forest Regulation, 1995; Forest Product (Timber/firewood) Collection and Sales Directives, 2000; Forest Product Auction Procedure Directives, 2003; Collaborative Forest Management Directives, 2011; Buffer Zone Management Regulation, 1992)		
Forest Act, 1993 and Forest Regulation, 1995 • The private sector requires obtaining license for timber trade and needs to involve in auction process to get timber from all type of forest, but the licensing system is not well defined in any law and there is a lack of linkage between forest policies and commercial laws to manage licensing system. • Frequently changing policies driven by ad hoc incidences and ban on timber harvest.	• It provides discretionary power to the agencies, creates room for corruption, and increases transaction costs. • It creates uncertainty and increases risks for investors. • This contradicts with the liberal economic policy of constitution and increases transaction costs. • The private sectors are not able to access suitable leasehold forest as per their requirement due to mismatch with the allocated forest land for leasehold; tenure conflicts has increased risks for the investor.	• Harmonize forestry policies and industrial/commercial policies to facilitate licensing system for timber trade. • Develop stable timber policy that matches the business cycles of forestry enterprises. • Make provision to allocate certain percentage of timber from all types of forest for commercial purpose to sale in the market for consumers. • Make provisions to provide leasehold forests for sustainable production of forest resources with the strong governance and safeguards mechanism.

• Community-based forest users groups can sale their surplus timber to the private sector for commercial purpose through auction system after fulfilling the demand of member of CFUGs, neighbouring local bodies and district where CF is located. • The private sector can access forest areas in lease for commercial production of forest products and industry development; most of the allocated forestlands for leasehold are either not feasible for commercial production (due to remote location) or located in tenure conflict land. • Private land owners have legal rights to sale their timber to the private sector by following legal procedure defined in forest legislation; the procedures imposed to the private forest owner form CIAA and other agencies contradict with the rights to property and legal provisions of forest legislation. • The minimum price of log timber is fixed in annex-2 of Forest Regulation 1995, which does not reflect the science-based policy-making process. • Legally there is no provisions for discriminations between private sector, TCN and semi-governmental agencies to provide timber for commercial propose from government managed forest; but in practice the agencies are providing around 50% timber to the TCN without competition with private sector. • The government has adopted e-biding system in various sectors, but the forestry sector agencies and CFUGs are still applying the traditional type of biding	• Private growers are uncertain for the return, bear high transaction costs; as a result it has also increased the uncertainty on supply of timber from private forests impacting the timber value chain. • The huge gap between stumpage value and market price of timber created a negative image and increased risks for timber traders. • It has increased the transaction costs and uncertainty in volume of supply for private sector. • It is creating threats to the private sector and the fair traders are depriving to obtain timber products for the industrial processing. • It has increased the transaction costs and demoralized the reputation of the private investors. • Lost opportunity of creating good image and brand for Nepali timber products.	• Remove all impracticable procedures by developing separate guidelines to utilize the forest products of private land and remove the provision of VAT on harvesting and trade of timber form private forest. • Develop criteria to set price and royalty for forest products based on science, market and consumer rights. • Develop policy provisions that designate private sector as the recipient of forest products in equal footing with other priority recipients, such as TCN. • Widen the use of e-bidding system and support to CFUGs in adopting e-bidding system. • Develop and effectively implement the seal-mark system to facilitate forest products to remove unnecessary hassles along the transportation route. • Adopt international forestry standards e.g. Forest Stewardship Council (FSC), for wood, some NTFPs, and ecosystem services.

system for the sale of forest products, which is giving room for illegal groups with the political protection to influence. • During the transportation of timber the check post has authority to check relevant documents particularly release order, but this power is misusing to take unnecessary benefits from the private sector. • There is no any explicit policy for adopting standards for sustainable forest management and business operations for promoting green and fair value chains.		
NTFPs/MAPs Specifics (Herbs and NTFPs Development Policy, 2004 (HNDP); Import and Export (Control) Act, 1957; Plant Protection Act, 2007; National Park and Wildlife Conservation Act, 1973 and associated regulations; Cooperative Act, 1992; Forest Act, 1993; Forest Regulation, 1995; Environment Protection Act, 1997 (EPA); Environment Protection Regulation, 1997 (EPR); Local Self-Governance Act, 1999 (LSGA); Local Self Governance Regulation, 2000 (LSGR); Resin Collection (Procedure) Directives, 2007; NTFP Inventory Guideline, 2012 and various gazette notifications		
HNDP; Forest Regulation, 1995 • The government and CFUGs can sell NTFPs to the private sector; but there are lots of conflicts between them due to lack of institutional mechanism for the collaboration among agencies, communities and private sector. • HNDP has recommended enacting comprehensive laws on NTFPs to address the issues such as royalty system and custom requirements; but due to lack of special legislation on NTFPs/MAPs, more than 10 legislative instruments that contradict between each other regulate this subsector. ***Import and Export (Control) Act, 1957*** • Few species are banned to export without processing; there is a lack of a	• It creates the scarcity of raw materials for forest-based enterprises and looses the trust and credibility in the supply of products to the market. • It has created confusion and increased transaction costs. • It increases the discretionary power of agencies, which may interpret it as per their interest creating uncertainty to obtain the document to export such products. • NTFPs and NTFP-based products exporters are compelled to follow a complex and lengthy process to obtain these documents. • The thresholds of quantity of collection of NTFPs/MAPs are low which are not practical and it has	• Develop a coordinating mechanism between inter-ministerial agencies, private sector and CFUGs to maintain regularity for the supply of raw material. • Develop special legislation on NTFPs/MAPs subsector. • Define the term ‘processing’ and make provision on it in the forest legislation or in special legislation on NTFPs/MAPs. • Operationalize one window system to provide such documents easily to export NTFPs and associated products. • Revise the annexes of EPR to make realistic provision on IEE/EIA. • Follow the provision of EPR for IEE/EIA and require cancelling all contradictory decisions of CIAA, MFSC, and

clear definition of processing with some contradictory definitions in various gazette notifications. ***Plant Protection Act, 2007*** • Quarantine certificate and letter of origin are necessary during the export of NTFPs/ MAPs and associated products; but due to procedural complexity and jurisdictional contradiction between FNCCI and Chamber of Commerce making the practice complex and lengthy. ***EPA and EPR*** • Preparation of IEE/EIA report to collect NTFPs/MAPs is require as per the provision of EPR. • EPR has banned to establish enterprise within 1 KM distance of forest areas; and the contradictory decisions of CIAA (3-5 KM), MFSC (2-3 KM), Industrial Promotion Board (2-3 KM) and EPR (1 KM) are creating confusion. r to establish forest-based enterprise. ***LSGA/LSGR*** • LSGA has given authority to DDC on resource rights over forest products, which includes the collection of tax from NTFPs/MAPs trading.	motivated illegal collection. • The confusion provides room for discretion, creates uncertainty and risks, and increases transaction costs. • Imposition of double taxation is irrational in many instances and increases the transaction costs.	Industrial Promotion Boards to remove contradictions and confusion in this regard. • Eliminate double taxation and impractical tax by amending LSGA related regulations.
Forest Bioenergy Specifics (Rural Energy Policy, 2006; Subsidy Policy for Renewable Energy, 2013; Climate Change Policy, 2011; National Adaptation Program of Action 2010 (NAPA))		
• Interim Constitution of Nepal 2007 has guaranteed the right to clean environment as a fundamental right of people. It has yet to be operationalized through policy and legislations. • Rural Energy Policy 2006 has given emphasis on research, development and	• The potential is not explored and untapped. • It is not attractive to the private sector due to lack of infrastructure; and the potential remained untapped. • The lost opportunity remained untapped. • The potential remained untapped.	• Internalize this concept in the draft bio-energy policy, which is being developed under the leadership of Ministry of Energy. • Develop infrastructures and provide incentive for both the private sector and users of bio-energy.

biotechnology through private sector; but there is a lack of infrastructure in rural areas for this purpose. • Subsidy Policy for Renewable Energy, 2013 has made provision for subsidy for bio-energy in rural areas and has also given emphasized the involvement of private sector as service provider; but due to lack of special legislation on bio-energy, it is not mainstreamed in all relevant sectors. • EPR, LSGA, Indusial Enterprise Act and VAT Act have also made some provisions to promote bio-energy through various provisions; but due to lack of harmony among the laws and weak coordination, the responsible agencies are not fully accountable to promote bio-energy.		• Develop special legislation and procedures on bio-energy and make clarity the role of private sector involvement in this sector. • Establish a coordinating mechanism for bio-energy promotion at district and national level.
Ecosystem Services Specific (Tourism Policy, 2009; National Wetland Policy 2012)		
• Tourism policy has made special provision for the involvement of the private sector in eco-tourism promotion; but there is a lack of specific policy and institutional mechanism. • National Wetland Policy 2012 has given emphasis on collection of service charges form ecosystem service users; but there are conflicting provisions on the ownership over the benefit arising from PES in wetland. • There is no clarity on forest carbon rights.	• There is no promotion and this remained less attractive to the private sector. • The private sector is not interested to invest in PES due to uncertainty. • It has created risk and uncertainty.	• Develop a specific policy, legislation and intuitional mechanism to promote ecosystem services. • Revise the policy/legal provision on ES and harmonize the provisions to attract private sector investment in ES business. • Clarify and resolve issues related to rights on forest ecosystem services, including carbon.

Banking Related (Monitory Policy, 2012 and Bank and Financial Institution Act,		
• There are provisions to mobilize loan for the development of prioritized industrial sectors, such as agriculture and forestry.	• Due to risk associated with frequent change in forestry policies, banks are hesitant to invest in forestry sector businesses.	• Inform and support to enforce the policy provisions.
International Treaties and Agreements		
CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973 • Entrepreneurs interested in trading and export of CITES listed species are required to obtain permission from Department of Plant Resources as the scientific authority and Department of Forest as a management authority. ***International Tropical Timber Agreement*** • As a consuming country, Nepal is not allowed to ban timber import. It can however impose ban on timber export. In practice, Nepal has banned export of certain timber species (*Shorea robusta, Dalbergia latifollia, Pterocarpus marsupium, Juglans regia* and Wild sisoun). ***Indigenous and Tribal Peoples Convention (ILO 169)*** • National Action Plan (NAP-169) of ILO 169 successfully incorporates indigenous people's voice in resource management; but there is a lack of consistency in understanding between IPs, government agencies and private sector about the provision.	• Private investors including NTFP/MAP collectors are facing administrative complexity and some of them are sued against violation of CITES predominantly due to lack of legal awareness on CITES. • The private sector is not able to expand their business. • It has created resource conflict and increased risk and transaction costs. • It has created risks and uncertainty for the private sector.	• Raise awareness and provide training and on CITES at local level for collectors and entrepreneurs; enact CITES act at domestic level to make clarity on NTFP harvesting. • Formulate timber-based product export regulation. • Raise awareness at all level and within all stakeholders • Enact access and benefit sharing act.

United Nations Convention on Biological Diversity 1992 (CBD) • CBD has given emphasis on access to genetic resources and benefit sharing and highly recognizes the role of private sector for this purpose; but it is not effectively implemented due to the lack of legislation.		
Monitoring and laws enforcement mechanisms		
• The existing monitoring mechanism of forestry sector and industrial sector are led by different agencies of the government (Regional Office in the forestry sector and Department of Industry in the private sector) and there is no any functional relation between these agencies.	• It creates the jurisdictional overlaps for the monitoring and also raises the conflicts, which ultimately impacts the private investment.	• Develop a joint monitoring mechanism between forestry sector and industrial sector with the involvement of relevant agencies and stakeholders including FenFit, NEHHPA and FECOFUN. • Support to improve law enforcement to address supply constraints.

Annex D: Individuals and Institutions Consulted for the Study

D-1:List of international leading sustainable forest product/services industry representatives

Subsector	SN	Institutions/Industry
Timber	1	Forest Stewardship Council (FSC) http://www.fsc.org
	2	International Wood Products Association (IWPA) http://www.iwpawood.org/
	3	Woods and Style, a custom woodwork company, Gaithersburg, Maryland
	4	International Forests Products LLC
	5	Wood Product Manufacturers Association (WPMA) http://www.wpma.org/
NTFPs	6	Aveda
	7	Howard Packaging
	8	Julien Chupin (Natural Products and Essential Oils Expert, Birdio)
	9	Natural Products Expo East (multiple firms interviewed at Expo)
	10	Commercialisation of Non-timber Forest Products – A Reality Check
PES	11	DASCO
	12	Climate Care
	13	South Pole
	14	BioClimate and Plan Vivo
	15	WildlifeWorks Carbon
	16	Asia REDD Working Group (ARWG)
Forest Bioenergy	17	IFC Private Sector Development and Financial Access Advisor – Jeff Dickenson
	18	Renewable Energy World www.renewableenergyworld.com
	19	Biofuels Digest http://www.biofuelsdigest.com/bdigest/?s=ceres
	20	International Forest Products LLC.

D-2:List of experts consulted

1. Bikash Paudel, Baglung CCI, Baglung
2. Nagendra Nepal, CSIDB, Baglung
3. Ram Sharan B.K., MEDEP, Baglung
4. Nir B. B.K., LiBird, Baglung
5. Mani Bhadra Sharma, BYC, Baglung
6. Dinesh Panta, FECOFUN, Baglung
7. Tirtha Raj Joshi, DFO, Banke
8. Sunil K. Sharma, Banke CCI, Banke
9. Bikram B. Nepali, CSIDB, Banke
10. Durpada Sharma, FECOFUN, Banke
11. Rabindra N. Shukla, JABAN, Banke
12. Pradip Shah, FenFIT, Banke
13. Raju Ghimire, Banke National Park, Banke
14. Maan B. Khadka, DFO, Bara
15. Rajendra Koirala, CSIDB, Bara
16. Binod Saha, Bara CCI, Bara
17. Shurbir Pokhrel, FECOFUN, Chitwan
18. Baburam B.K., Seed Tree, Chitwan
19. Indra Sapkota, DFO, Chitwan
20. Shiva Datta Bhattarai, CSIDB, Chitwan
21. Kamal Jung Kunwar, Chitwan National Park
22. Till C. Bhattarai, CCI, Chitwan
23. Binod Devkota, DFO, Dadeldhura
24. Madhav P. Subedi, CSIDB, Dadeldhura
25. Prakash B. Saud, Dadeldhura CCI, Dadeldhura
26. C. D. Bohora, FECOFUN, Dadeldhura
27. Dadhi Lal Kandel, DFO, Dailekh
28. Shanti P. Sharma, Dailekh CCI, Dailekh
29. Rameshwor Kafle, CSIDB, Dailekh
30. Prem K. Buda, FECOFUN, Dailekh
31. Arun Sharma Poudel, DFO, Dang
32. Madhu Sudan Vaidya, Dang CCI, Dang
33. Hari Dutta Pandey, CSIDB, Dang
34. Shovakar Sapkota, FECOFUN, Dang
35. Thakur P. Magrati, DSCO, Dang
36. Harish C. Rai, MSCFP, Dhankuta
37. Lal C. Gongba, Dhankuta CCI, Dhankuta
38. Anand Bhandari, DFO, Dhankuta
39. Nitesh K. Yadav, CSIDB, Dhankuta
40. Gopal P. Sharma, CSIDB, Dhankuta
41. Shiva Angla, FECOFUN, Dhankuta
42. Anata Ghimire, RRN, Dhankuta
43. Jay Mangal P. Gupta, DFO, Doti
44. Gopal Pokhrel, CSIDB, Doti
45. Nrendra B. Khadka, Doti CCI, Doti
46. Krishna Malashi, FECOFUN, Doti
47. Durga B. Karki, DFO, Gorkha
48. Narayan R Panta, CSIDB, Gorkha
49. Bhagat Babu Joshi, CCI, Gorkha
50. Shyam Babu Kattel, FECOFUN, Gorkha
51. Ramhari Subedi, Gorkha Ayurved, Gorkha
52. Rajendra Kafle, DFO, Illam
53. Sunil Acharya , CSIDB, Illam
54. Narendra K. Khadka, NGTPA, Jhapa
55. Indra C. Bindal, Alainchi B. Sangh, Jhapa
56. Nirmal Bhndari, Alainchi B. Sangh, Jhapa
57. Ganesh P. Subedi, Alainchi B. Sangh, Jhapa
58. Om Krishna Bimali, Alainchi B. Sangh, Jhapa
59. Hari P. Mitra, Alainchi B. Sangh, Jhapa
60. Bhakti P. Gautam, Ratuwamai FPB, Jhapa
61. Devendra Upreti, DFO, Jhapa
62. Bhisma Raj Kharel, Plywood Company, Jhapa
63. Eak Raj Karki, Veneer Association, Jhapa
64. Tilak Prashad Giri, FenFIT, Jhapa
65. Rajendra MS Bhandari, DFO, Kailali
66. Karna Kuwar, CCI, Kailali
67. Tulasi Devkota, FECOFUN, Kailali
68. Lal Narayan Singh, DFO, Kanchanpur
69. Ganesh Dutta Joshi, Kanchanpur CCI
70. Binay K. Jha, Shuklaphanta Wildlife Reserve
71. Gayatri Acharya, FECOFUN, Kanchanpur
72. Bhupendra Giri, Furniture Association, Kaski
73. Dibhakar Pathak, DFO, Kaski
74. Rajan Pokhrel, Regional Director, Kaski
75. Hari Sharma Gaire, HAN, Kaski
76. Ramji Bhandari, TAN, Kaski
77. Kedarnath Sharma, NTTA, Kaski
78. Ramit Devkota, Pokhara Tourism Council
79. Ashok Subedi, ACAP, Kaski
80. Top B. Thapa, Pokhara CCI, Kaski
81. Netra P. Bhattarai, CSIDB, Kaski
82. Sushila Nepali, BCN, Kathmandu
83. Gopal Sharma, Briquette Producers Association, Kathmandu
84. Katim P. Adhikari, FenFIT, Kathmandu
85. Suraj Vaidya, FNCCI, Kathmandu
86. Manoj Upreti, FPB, Kathmandu
87. Saraswati Rai, HBTL, Kathmandu
88. Hem Ratna Shakya, HAN, Kathmandu
89. Hima Chapagain, HPPCL, Kathmandu
90. Krishna P. Acharya, Melamchi Drinking Water Project, Kathmandu
91. Govinda Ghimire, NEHHPA, Kathmandu

92. Suman Shakya, One-Planet Solutions, KTM
93. Arbinda Shrestha, Sanima Hydropower, KTM
94. Mahendra S. Thapa, TAAN, Kathmandu
95. Krishna C. Poudel, WECS, Kathmandu
96. Shiva Raj Bhatta, WWF, Kathmandu
97. Govinda Raj Pokhrel, AEPC, Lalitpur
98. Balaram Shrestha, BSP-Nepal, Lalitpur
99. Ganesh Ram Shrestha, CRT, Nepal, Lalitpur
100. Binod Chaudhary, Chaudhary Grps, Lalitpur
101. Sushil Gyawali, Himalayan Naturals, Lalitpur
102. Yam Malla, IUCN, Lalitpur
103. Loknath Ghimire, Biogas Promotion Association, Lalitpur
104. Surendra Joshi, SNV, Lalitpur
105. Shree P. Baral, DFO, Morang
106. Mohan Koirala, ERFD, Morang
107. Mukti Nath Das, FenFIT, Morang
108. Sitaram Agrawal, FenFIT, Morang
109. Deepak Thapa, TCN, Morang
110. Dhananjay Paudel, DFO, Nawalparasi
111. Shridhar Panthi, CSIDB, Nawalparasi
112. Baidhnath Jaishwal, CCI, Nawalparasi
113. Krishna P. Gyawali, DFO, Palpa
114. Singha B. Thapa, FECOFUN, Palpa
115. C. P. Devkota, CSIDB, Palpa
116. Dhan Maya Ojha, MEDEP, Parbat
117. Bindu Mishra, DFO, Parsa
118. Bimal P. Baral, CSIDB, Parsa
119. Ghanashyam Mahat, FECOFUN, Parsa
120. Deepak Gyawali, DFO, Rupendehi
121. Laxmi P. Adhikari, CSIDB, Rupendehi
122. Krishna K. Shrestha, CCI, Rupendehi
123. Ramesh Bhattrai, CCI, Sankhuwasabha
124. Pursotam Kafle , CSIDB, Sankhuwasabha
125. Sudheer K. Koirala, DFO, Sankhuwasabha
126. Rishi Ranabhat, MBNP, Sankhuwasabha
127. Ramprit Maurya, DFO, Sarlahi
128. Madhu K. Saha, CSIDB, Sarlahi
129. Prakash K. Upadhaya, CCI, Sarlahi
130. Hem Aryal, Sagarnath Forest Dev. Project
131. Indra B. Parchhaie, DFO, Sindhupalchowk
132. Shankar Raj Jha, CSIDB, Sindhupalchowk
133. Rajendra Shrestha, CCI Sindhupalchowk
134. Lub Kumar K.C., FENFIT, Siraha
135. Sanjaya K. Mahaseth, Siraha CCI, Siraha
136. Satya N. Mahato, Siraha CCI, Siraha
137. Mahi Narayan Shah, CSIDB, Siraha
138. Hiralal P. Kushwaha, DFO, Siraha
139. Rajesh Shretha, CCI, Dharan, Sunsari
140. Raj Bahadur Rawat, DFO, Sunsari
141. Ramesh Basnet, FECOFUN, Sunsari
142. Ram P. Lama, FenFIT, Sunsari
143. B Bohora, HPPCL Tarahara Farm, Sunsari
144. Shabhu P. Chaurashiya, DFO, Surkhet
145. Padam B. Shahi, Surkhet CCI, Surkhet
146. Shaligram Ghimire, CSIDB, Surkhet
147. C. P. Thani, FECOFUN, Surkhet
148. RN Chaudhary, FenFIT, Udayapur
149. Brahamadev Mandal, CSIDB, Udayapur
150. Kishore C. Gautam, DFO, Udayapur
151. Narayan Burja Magar, FECOFUN, Udayapur

D-3:List of entrepreneurs interacted for the study

1. Arjun Aryal, Gorkha
2. Bal B.Gurung, Dadheldhura
3. Brij Bhushwan Singh, Surkhet
4. Chhabi Lal Adhikari, Rupendehi
5. Damar B. Gurung, Narayangadh
6. Deu K. Rai, Ilam
7. Dev Shrestha, Sindhupalchowk
8. Durpada Sharma, Banke
9. Ek Raj Karki, Jhapa
10. Ganesh Datta Joshi, Kanchanpur
11. Gopal Pokhrel, Banke
12. Gopal Tulsyan, Jhapa
13. Hareram Mandal, Bara
14. Hari Thapa, Surkhet
15. Hemanta Kunwar, Kailali
16. Hom Hutung, Nawalparasi
17. Jabahalal Chaudhary, Parsa
18. Jabish Gohlyan, Kathmandu
19. Jagadishwor Shrestha, Sindhupalchowk
20. Jash Maya Pun, Parbat
21. Jit B. Chhetri, Palpa
22. K.B. Gurung, Tanahun
23. K.P Sapkota, Palpa
24. Kamal Jang Kunwar, Narayangadh
25. Kamal P, Gorkha
26. Lal B. Khadka, Doti
27. Laxmi Datta Panta, Parsa
28. Lok Nath Pathak, Kathmandu
29. Madan Nath, Dadeldhura

30. Madhav Ghimire, Palpa
31. Madhav Pathak, Sunsari
32. Moti Raj Gyawali, Rupendehi
33. Nanda P. Sharma, Dailekh
34. Narayan Timilsina, Palpa
35. Narayndra B. Khadka, Doti
36. Padam Raj Pandey, Kanchanpur
37. Pramod K. Jalan, Banke
38. Rabin Kadariya, Bardiya
39. Raghu Jalan, Dang
40. Rajan K. Salju, Baglung
41. Rajesh Karki, Udayapur
42. Ram P. Panta, Rupendehi
43. Rolak Thapa, Gorkha
44. Shyam Jaishwal, Rupendehi
45. Sudip Pariyar, Gorkha
46. Sushil Gyawali, Kathmandu
47. Usha Shrestha, Palpa
48. Yam B. Bhujel, Baglung

D-4:List of surveyed individuals

Baglung

Arjun Chokhal
Chandra B. Chhetri
Dil B. BK
Dil B. Chhetri
Himal Sharma
Homnath Sapkota
Jhapan Shirish
Jivan Acharya
Kamal Jaishi
Kamal Khadka
Karna B. BK
Karna B. Bohora
Khagendra chhetri
Kul B. Bk
Lalita Thapa
Laxman Poudel
Man B. Karki
Min B. Kc
Prem B. GC
Ravi P. Upadhya
Rishiram Sharma
Sher B. GC
Sunil Lamichhane
Thamman B. karki
Uma Bk
Yam B. GC
Yam B. Bhujel

Banke

Abhimannau P. Gupta
Bal Chharan Chhaudhary
Bashu Basnet
Damodar Gauttam
Karna B. Khadka
Kesh kumari bhandari
Krishna B. Thapa
Lal B. Rana
Laxmi Chhaudhari
Mahesh shaha
Nar B. khadka
Phatey B. B.k
Rohit man Shrestha
Shikandar haluwai
ChitwanArjun B.K.
Bharat Pd. Dhungana
Chitra B. Thapa
Dammar B.Gurung
Deepak K. Shrestha
Jay B. Gongwa
Krishna Shrestha
Lal Pratap Thapa
Lekh Bd. Thapa
Liladhar Sharma
Prachin Lal Shrestha
Ram K. Shrestha
Ruben Kharel
Sudan Shrestha
Sukmaya Bhujel
Surya B. Shrestha
DadeldhuraBal B. Grung
Binod Bohara
Chhatra Saud
Debendra Dhami
Jay B. deuba
Laxman Badi
Lok Raj Sharma
Lokendra kunwar
Mahadev Tamata
Man B. Karki
Manoj Gupta
Mohan singh Sharki
Naresh B. Mahara
Nirajan Karki
Padam Bhatta
Prakash Bohara
Raj Paneru
Raju Bhatta
Ram B. dhami
Shailendra Mahara
Surendra khadka
Tula Ram Bohara
Yandra Dev Bohara

Dailekh

Amrit k. Neupane
Ari B. Rana
Bali Ram Thapa
Bharat Khadka
Bikash Nepali
Bishnu Gauttam
Deepak Nepali
Dev parsad kashai
Dinesh Shrestha
Ganga B. Budha
Hari B. Thapa
Janaki Khatrri
Krishna hirijak
Krishna Thapa
Lal B. Damai
Man Bahadur Khadka
Nanda B. K.C
Nim B. Thapa
Prabha B.K
Prem B. Baral

Ram B. K
Rupak kumar shahi
Tej B. Budha
Topendra dhoj hamal

Dang
Arjun K.C.
Bashudev Chaudhary
Belmati B.K
Birkha B. Nepali
Chhabilal Bhushal
Dilshara gharti
Gyan B. Gharti
Hiralal Bista
Kaman Chhaudhary
Lekh B K.C.Nim B. Thapa
Parbat Subedi
Rajeev Sharma
Ram payri Chhaudhary
Rama kali Nepali
Ramu Chaudhary
Rim B. Karki
Rima Kunwar
Sadhana GurungShanta Gyawali
Shree Ram Chaudhary
Sushila sharma
Tankaman Poudel

Dhankutta
Bhim B. Rai
Bhoj Bahadur B.k
Chandra P RaiHim B.Magar
Indra Saru magar
Jal kumari Rai
Janardhan Ghimire
Khagendra Kumar Bista
Kumar DahalMahendra Shrestha
Mimilan Kumar Khadgi
Nil Rai
Richa Rai
Rohit Neupane
Sajal Bit Board Udhyog
Shreedhar Pokhrel
Tej Prasad Rai
Tek B LamaTika P. Ghimere

Doti
Amir Gahatraj
Bharat Bohara
Binod Khadka
Dhan B. Ayer
Dhirendra singh
Ganesh B. Singh
Ganesh Bom
Ghanshyam Thami
Harka Bista
Jogi Shing Kunwar
Karay Mahara
Khadga Mahara
Khem Raj Bhandari
Laxman Kami
Mahadev Awasti
Man B. Dhami
Naba raj shrestha
Nanda Singh Ayer
Ram B. Bogati
Sankar Nepali
Sharbajeet Baral
Shushil Thapa

Gorkha
Amal B. Gurung
Arjun Aryal
Babu Kaji samel
Bhagirath Khatri
Bhimsen Basnet
Dammar B. Karki
Dil B. Thapa
Jang B. Gurung
Khil B. Kunwar
Krishn Pd Dhakal
Narayan Kunwor
Pasanh Ningma Sherpa
Ram Kaji Simal
Ramesh Raman Khanal
Ramji Kulu
Saroj Babu Kunwor
Sharan Pandey
Shiva Pd. Bhantana
Yam Bahadur Khatri

Illam
Bhakti Pd. Chapagain
Chandra B. Khatri
Dilip Rai
Dinesh Subedi
Garjaman Rai
Ghan B. Magar
Nabin Parajuli
Narayan Gurung
Pasang Sherpa
Pradeep Bista
Purna Maya Adhikari
Rajendra Chauhan
Raju Parajuli
Ram P Dahal
Santa Pradhan
Tanka B. Rai
Tika Khatiwada

Jhapa
Arjun Karki
Bangalal rajbanshi
Bharat Basnet
Bhismaraj Kharel
Bir Bahadur Rai
Deepak Timilsina
Dipendra Kharel
Ekraj Karki
Gopal Kumar Tulshayan
Khagendra Prasad Lohani
Parsuram Giri
Ratan Niraula
Tilak Prasad Giri

Jumla
Battuli Bohara
Bhakta Bista
Brisha Nepali
Dal Bahadur Khadka
Damar singh Rawat
Dhanapati kami
Dipendra prasad Uppadhaya
Gorikala Sornakar
Gorinandan Acharya
Govinda Acharya
Hari Datta Neupane
Jamkali kokaya
Janga Budha
Lauray Rawat
Mailna Sagi
Mani Shankar Devkota
Min Bahadur Dangi
Naray Kami
Nawa raj Rawal
Nilo sharki
Purna shekhar Devkota

Purna singh Bohara
Ram krishna Budthapa
Ram Krishna Chhaulagai
Shihay Kunwar
Tapta raj Giri

Kailali
Amar B. bam
Bimal Bam
Deepak poudel
Deepak raj bhatta
Gokarna bhatta
Hem prakesh malla
Jhaku parsad Bishowkarma
Karna B. B.K
Kaushalya B.K
Lila dhar bista
Prakesh Bhatta
Rahish Miya
Shetu Kumari Devi Chhaudhary
Tek Bahadur Bohara
Ujjwol Datta Paneru
Ukkat Bikram Shahi

Kanchanpur
Bir Bahadur Dhami
Bir B. Chand
Dev jung thapa
Dipendra shah
Gyan mani Shrestha
Hem raj Saw mill
Janak B. Bista
Janak Shahi
Kiran Rumal
Nar B.Bista
Padam raj Pandey
Pratap singh Dhammi
Ram bahadur chand
Shyam raj Bhatta
Tek bahadur rumal

Kaski
Dharmendra adhikari
Dil B. Ranamagar
Jit B. Karki
Khem B. Gurung
Khil B. Rana Magar
Kranti Raman Pokhrel
Lal B. Pariyar
Nanda B. Tamang
Raju Bhandari
Rudra pd. Koirala
KathmanduAmar Kanta Lal Das
Bijayraj Ghimire
Bikal Thapa
Bishnu pd. Neupanae
Dinesh Hamal
Gokul K. Gautam
Jana B. Rai
Jash Maya Pun
Kedar Basnet
Krishna Kandel
Madan Lal Joshi
Manjeev Shyakya
Narayan Khatiwada
Padam B. shrestha
Rajan Subedi
Rajan Upreti
Rajaram Paudel
Raju KC
Rakesh Agrawal
Ram Baral
Ramhari Subedi
Sameer Dhungel
Shivahari Dhungana
Shovit Pd. Upreti
Singha B. Barahi
Sudarshan Sigdel
Sushil Gynawali
Umesh Raj Siwakoti
Upendra Gopal Shrestha
Vimal Thapa

Morang
Achyut Ghimire
Ashok Atal
Bhagwati Dhakal
Bhim B. Bhujel
Binod Saha
Bishnu Paudel
Chanar Dev Sahani
Chhetra Bd.Gurung
Dinesh Subedi
Durga B.K.
Hari Shankar Upadhya
Kapil Pd. Regmi
Madan Pd.Badae

Nawalparashi
Pradeep Kumar Shah
Ramesh Acharya
Rishi Mohan regmi
Shyam Rai
Sita Baral
Surendra P. Regmi
Surya Pokhrel
Tej Raj Koirala
Umalal Shah
Umesh Dhakal
Umesh Yadav
PalpaDipnarayan Shrestha
Jit B. KC
Khem B. Sharu
Krishna P. Shrestha
Nanda Kishwor Amatya

Parsa
Aachhe Lal Mahato
Brij Nanda Singh
Dishambar Raj Bhandari
Krishna Dev Sharma
Megh Raj Hajara
Om Prakash Sahun
Permeshowr Thakur
Ram Chandra Pd. Kurmi
Ramananda Rawol Kurmi
Ramesh N. Manandhar

Ramechhap
Ashali Maya Tamang
Baburam Aryal
Bhim B. Gautam
Bishnu Bhattarai
Chhabi
Dawa Chirong Sherpa
Dependra KC
Jagan Nath Gautam
Jit B. Pokharel
Keshav Raj Acharya
Maharudra Giri
Man B. Thokar
Pujan Shrestha
Purna B. Bista
Rajendra B. Chaudhary

Ram B. Malla
Ram Chandra Panthi
Ramesh Nepal
RupendehiSailung Agroforestry
Sarba B. Thapa
Shiva Sarki
Tej Narayan Paudel

Sarlahi
Asharfi mahato
Bikash Goyel
Dinesh thapa
Laxmi prasad Gauttam
Nageshwor ram yadev
Pramod kumar Chaudhary
Prem B. Bhandari
Ram babu Mainali
Ram Kebal Chaudhary
Ram Krishna Gajurel
Sabita Jaishwal
Saroj Kumar Jaishwal
Ujjur B. Basnet

Shankhuwashabha
Bam B. Shrestha
Bikash Shrestha
Daak B. Shakya
Dammar B. Shrestha
Dev B. Shrestha
Dil B. Shrestha
Fatte Lal Shrestha
Govinda B. Thapa
Haraj Lama
Harka thapa magar
Jagdeshwor Shrestha
Jhalak Rokka
Kashinath Dahal
Ladar Bhote
Lal B. Shrestha
Maan B. Rokka
Man B. Limbu
Narma Shakya
Neetra parsad Adhikari
Prem B. Shakya
Rajeev Shrestha
Sashi K. Shakya
SindhupalchowkTek B. Shrestha
Tilak B. Shakya
Uddav Thapa
Yog Raj Dhakal

Siraha
Babita Chaudhary
Baburam Majhi
Dhuran Sharma
Dinesh Shah
Gopi Bahadur Rawat
Harisharan Thakur
Jagadish Mahato
Kedar Mainali
Ramdev Thakur
Samundra Yadav
Shah B. Kephchaki Magar
Umakanta Shah

Sunsari
Anil Dhakal
Bhadbhanu Gurung
Ganga B. Rai
Hum B. niraula
Keshav shrestha
NilKanda Luital
Nir B. Rai
Prakash timilsina
Puja Katuwal
Purna B. Rai
Rakesh Goyal
Ram Kumari Rai
Ram Prasad Lama
Rama Mandal
Salam Khan
Setuman Tamanag

Udayapur
Bharat B. Thapa
Chatra B. magar
Deepak Buda Chettri
Devimaya katuwal
Durga B. Parajuli
Geeta Chaudhary
Krishna Sharma
Narayan karki
Prem B. Rashkoti
Rabindra Rajakoti
Raj Kumar Shah
Ramlal Tamanag
Shyam Lama
Tej Narayan Sherpa
Tek Bahadur Balampaki
Yam B. Rai
Yog Raj Kark

D-5:List of financial institutions surveyed for the study

1. Abhiyan Savings and Cooperatives Limited
2. Adarsha Sanchaye Cooperative Limited
3. Arun Finance Limited
4. Attarpur Savings and Cooperatives Limited
5. Bagmati Development Bank Limited
6. Bhairab Investment Company Private Limited
7. Birat Laxmi Bikas Bank Limited
8. Capital Savings and Cooperatives Limited
9. Century Commercial Bank Limited
10. Chandannath Multi Purpose Cooperatives Limited
11. Citizen International Bank Limited
12. City Development Bank
13. Clean Energy Development Bank Limited
14. Community Savings and Cooperatives Limited
15. Cosmos Development Bank Limited
16. Dhaulagiri Community Resource Development Centre
17. Dhurbatara Savings and Cooperatives Limited
18. Diprox Microfinance Development Bank Limited
19. Durga Savings and Cooperatives Limited

20. Everest Bank Limited
21. Gathebada Agriculture Cooperative Limited
22. Gaurisankar Development Bank Limited
23. Hami Sabaiko Savings and Cooperatives Limited
24. Hemja Savings and Cooperatives Limited
25. Himsikhar Ban Upabhokta Samiti Sahakari Limited
26. International Development Bank Limited
27. Kabeli Bikas Bank Limited
28. Kamana Savings and Cooperatives Limited
29. Kanchan Development Bank Limited
30. Khusi Savings and Cooperatives Limited
31. Kumari Bank Limited
32. Mahakali Bikas Bank Limited
33. Mahila Laghu Bitta Bikas Kendra
34. Manaslu Bikas Bank Limited
35. Miteri Development Bank Limited
36. Nabil Bank Limited
37. Namaste Savings and Cooperatives Limited
38. Namuna Multipurpose Savings Limited
39. Navayug Multi Purpose Cooperatives Limited
40. NCC Bank Limited
41. NDEP Development Bank
42. Nepal Agriculture and Forest Cooperatives Limited
43. Nepal Bank Limited
44. Nepal Investment Bank Limited
45. Nepal Rastra Bank
46. NIC Bank Limited
47. Paschimanchal Grameen Bikas Bank Limited
48. Pioneer Savings and Cooperatives Limited
49. Public Development Bank Limited
50. Rastriya Sahakari Bank
51. Sagarmatha Savings and Cooperatives Limited
52. Saptakoshi Development Bank Limited
53. Saral Savings and Cooperatives Limited
54. Shangrila Development Bank
55. Shri New Laliguras Savings and Cooperative Limited
56. Shri Sathi Savings and Cooperatives Limited
57. Siddhartha Bank Limited
58. Sivam Savings and Cooperatives Limited
59. Standard Chartered Bank Nepal Limited
60. Sulav Savings and Cooperatives Limited
61. Sungava Savings and Cooperatives Limited
62. Synergy Finance Limited
63. Tansen Savings and Cooperatives Limited
64. Timrbrokot Cooperative Organization
65. Tridev Savings and Cooperatives Limited
66. Triveni Bikas Bank
67. Vagarbh Bikas Bank Limited
68. Yatayat Byabasahi Tatha Majdur Bahuudeshya Sahakari Sanstha
69. Yeti Development Bank Limited

D-6:List of FGDs participants

(Total 44 FGDs- 326 participants)

Baglung

1. Mani Bhadra Sharma, BYC
10. Ganga Thapa, FECOFUN
11. Rishi Ram Gautam, Lekhani Herbal Product
2. Arjun Chakhal, HMC
3. Dil K. Thapa, DMEGA
4. Nir B. BK, LI-BIRD
5. Bikash Paudel, CCI
6. Ram Sharan BK, MEDEP
7. Yam B. Bhujel, DMEGA
8. Jivan Acharya, Sambriddi Ag-Co-operative
9. Prem Lamichhane, FECOFUN

Banke

12. Bal Charan Chaudhary, Hariyali Yuwa Club
13. Raju Ghimire, Banke National Park
14. Keshav K. Bhandari, Ramjanaki CFUG
15. Damodar Gautam, Private Forest
16. Abhimanyu P. Gupta, Rosin & Terpentine Udhyog
17. Lal B. Rana, Trifala Churna Udhyog
18. Karna B. Khadka, Bageshal NTFP Processing
19. Bashu Basnet, Veneer Udhyog
20. Mahesh Shah, S.S. Timber Suppliers
21. Krishna B. Thapa, Chandika Sawmill
22. Shikandar Haluwai, Ganesh Laxmi Veneer Plywood

Bara

23. Amit Thapa, Subash Kebal Network
24. Lal B. Saha, Mahadev Furniture Udhyog
25. Ramagya P, Lalita Sawmill
26. Imran Iraki, Napal Steel & Furniture Udhyog
27. Manoj Saha, Mitthu Furniture Udhyog
28. Shiva P. Yadav, Muna Furniture Udhyog
29. Ram B. Sharma, New Sharma Furniture Udhyog
30. Umesh Thakur, Bishwokarma Workshop
31. Prahalad , Puja Furniture Udhyog
32. Aaftab Mahamad, Federation of CSIDB
33. Birendra Thakur, Mukti Furniture Udhyog

34. Sabitri Sharma, Om Shanti Sawmill
35. Binod K. Baire, CCI
36. Binod Saha, CCI
37. Surendra Pahel, Bhagya Laxmi Furniture Udhyog
38. Ambika P., Ganga Sawmill
39. Aalam Khan
40. Madan Chaudhary, Laxmi Sawmill
41. Baidhnath Saha, Nirman Bebasaye Sangh
42. Gagan Agrawal, Nirman Bebasaye Sangh

Chitwan

43. Dr. Til C. Bhattrai, CCI
44. Khem Kanta Regmi, CCI
45. Rabindra Baral, FBAC
46. Ganga B. Gurung, FBAC
47. Purushwotam Kandel, FBAC
48. Deepak Raj Bista, CCI
49. Ira Shrestha, CCI
50. Bhagawan Joshi, FenFIT
51. Resham Shrestha, FenFIT
52. Bishnu Bhatta, Chitwan Sawmill Udhyog

Dadeldhura

53. Lok Raj Bhatta, Bikash Furniture
54. Chhandra Dev Bohara, P.C.M Furniture
55. Neetra P. Awasti, Ashigram Shamaigi Furniture
56. Tirtha B. Ayer, Shikhar Trade and Supply
57. Jay B. Ayer, Trade and Supply
58. Madan Nath, New Bhagayshwori Furniture
59. Min B. Bogati, Santosh and Sandip Suppliers
60. Tula Ram Bohara, Prabik Kasta taha Furniture
61. Govinda Ram Bhatta, Kailash Trade and Suppliers
62. Bak B. Gurung, Nirman Baybashaye Sangh
63. Chhapesh Malla, FECOFUN
64. Dharma Singh Dharmi, FECOFUN

Dailekh

65. Prem Khadka, Ridam Furniture
66. Bir B. Thapa, New Jyola Furniture Udhyog
67. Ram B. B.K, Maduban Furniture Udhyog
68. Amrita Magar, Nomrile Furniture
69. Prem B.K, Chhadebal Furniture Udhyog
70. Rupak Shahi, Malika Furniture Udhyog
71. Prabha Kumari BK, NTFP Association
72. Din B. Thapa, CCI
73. Deep B. Shrestha, CCI
74. Krishna Parasad Koirala, CCI
75. Narendra B. Bhandari, Prakesh Hotel and Lodge
76. Lok B. BK,
77. Kabi Raj Khattri, Jyolagadhi Mashala Udhyog
78. Bishal BC, CCI
79. Bir B. Pun,
80. Teeka Ram Buddha,
81. Topendra Thapa,
82. Ram B. Shingh, Bishal Khaddey Kendra Pashal
83. Dharma Kumari Khadka, CCI

Dang

84. Gaurav Khadka, Gaurav Kastha Udhyog
85. Chhabi Bhusal, Sushri Kastha Suppliers
86. Kaman Chaudhary, Shanti Furniture Udhyog
87. Bashudev Chaudhary, Karnali Adarsha Yuwa Club
88. Rajiv Sharma, Rapti Biogas
89. Raghu Upadhya, Environment Conservation Centre
90. Rohit Neupane, Sidhakali Biogas Company

Doti

91. Amir Gahatraj, Archana Furniture
92. K.B Saud, K.B Steel and Furniture Udhyog
93. Madan Bhandari, Manakamana Furniture Udhyog
94. Nabin Bam, CCI
95. Dharma Singh Dhami, Shatanaya Food Products
96. Sunil Shahi, CCI
97. Narendra B. Khadka, CCI
98. Lal B. Khadka, Bhairab Ayu Medical Store
99. Ganesh B. Singh, Gharyalu Udhyog Maha Sangh
100. Mohan Alayha, CCI,

Gorkha

101. Dhurba Timilsina, Timilsina & Kastha Udhyog
102. Krishna Dhakal, FenFIT
103. Dev Maskey, GCCI-WEDA
104. Rajendra Bishwokarma, CCI
105. Bhagat Babu Joshi, CCI
106. Raju Babu Shrestha, CCI
107. Jeevan Shrestha, CCI
108. Bhai C. Shrestha, Hardware

Illam

109. Dev Kumar Rai, NTFP Farmer
110. Vijay Khaki, Releince Trade Centre
111. Ratna Basnet, Radha Ratna Furniture Udhyog
112. Rajendra Paudel, Kristina Furniture Center

Jhapa
113. Tilak P Giri, FenFIT
114. C. B. Gurung, FenFIT
115. Shyam P. Neupane, FenFIT
116. Gokul Paudel, FenFIT
117. Kasi Sapkot, FenFIT
118. Gopal Khadka, FenFIT
119. Ganesh Raj Bhandari, FenFIT
120. Hari Basnet, FenFIT
121. Milan Kafle, FenFIT
122. Ek Raj Karki, Nepal Veneer Utpathak Sangh
123. Durga P. Bhandari, Nepal Veneer Utpathak Sangh
124. Radheshyam Goyal, Nepal Veneer Utpathak Sangh
125. Tanka Gautam, Janaki Veener Udhyog
126. Bishal Aggrawal, Balaji Veneer Udhyog
127. Suresh Aggrawal, Pasupati Venner Udhyog
128. Gopal Tulsyan, Vashnavi Woods Product

Kailali
129. Ujjwol datta Paneru, Shakti Jadibuti Udhyog
130. Hem B. Bista, NTFPs and MAPs Farmer
131. Takur Bikram Shahi, Sajedari Ban Beabasthapan Samiti
132. Lila Dhar Bista, SIC Dhangadhi NTFP
133. Deepak B. Kandel, NTFP/MAPs and SIC
134. Gokarna Bhatta, FenFIT, Nepal
135. Prakesh Bhatta, FenFIT, Nepal
136. Hemanta Kunwar, FenFIT, Nepal
137. Bimal Bam, FenFIT, Nepal
138. Om Prakash Pandey, Dinesh Furniture Udhyog,

Kanchanpur
139. Ganesh Chand, Suraj Sawmill
140. Paban Bikram Singh, Kasta Suppliers
141. Deepak Raj Chhatwat, Bhubaneshwori Sawmill
142. Trilok B. Chand, Chand kasta Furniture Udhyog
143. Dhan B. Chand, Uddamdev Kasta Furniture
144. Dev Jung Thapa, Jung Kasta Suppliers
145. Hari Khanal, Chand Sawmill
146. Nar B. Bista, Mibhakti Jadibuti Prashodhan
147. Shyam Raj Bhatta, NTFP Business
148. Padam Raj Pandey, TCN
149. Amar Singh Thapa, TCN
150. Narayan Dhamala, National Parket
151. Ganesh Datta Joshi,
152. Ram B. Chand, Everest Agro Industries

Kaski
153. Khem Gurung, Kushal Kastha Udhyog
154. Niranjan Ranjit, Sanjiv Sawmill
155. Surya N. Lamichhane, Suraj Kastha Udhyog
156. Badri Pokhrel, Naba Nagmani Kastha Udhyog
157. Shiva P, Samichha Furniture Udhyog
158. Tika B. Karki, Pokhara Kastha Udhyog

Kathmandu
159. Govinda Ghimire, AHP Pvt. Ltd.
160. Parbat Gurung, Himalayan Bio-Trade
161. Ramhari Subedi, Gorkha Ayurved Company
162. Prem Raj Tiwari, Aayu Herbal & Organic Food
163. Binod Adhikari, Classical Herbal Products
164. Saraswoti Rai, Dev Dhunga Multipurpose Coop.
165. Bishwonath Sharma, Patanjali Herbs Agro & Processing
166. Pramod Paudel, Kathmandu Gyalary Pvt.Ltd.
167. Laiku Lama, Himalayans Herbs Trades
168. Bharat K. Basnet, Gajurmukhi Herbal
169. Devendra P. Dhakal, Dhakal Herbs Traders
170. Sushil Gynawali, Himalayan Naturals
171. Parichhit Khemka, Natural Resource Industries
172. Suman Pandey, Sun Herbal Company
173. Lok Nath Pathak, Chaudhary Biosis (Nepal)
174. Surendra sarda, Nepal Furniture Association
175. K.L.Pradhan, Nepal Furniture Association
176. Y.B. Niraula, Rastriya Furniture B Sangh
177. Kavindra Joshi, NFFA
178. Suzil Shrestha, NFFA

Morang
179. Mukti Nath Das, FenFIT
180. Sitaram Agrawal, FenFIT
181. Chudaraj Neupane, FenFIT
182. Baburam Ghimire, FenFIT
183. Damodar P. Ghimire, FenFIT
184. Bimal Rijal, FenFIT
185. Narayan K. Shrestha, FenFIT
186. Bijay K. Karki, FenFIT
187. Hiranya P. Regmi, FenFIT
188. Maan B. Bhujel, FenFIT
189. Pradip K. Saha, FenFIT
190. Sardananda Jha, FenFIT
191. Kusum Raj Regmi, FenFIT
192. Radha Krishna Shrestha, FenFIT
193. Kailash Bhattarai, FenFIT
194. Bhanu Subedi, Subedi Private Forest

195. C. K. Shrestha, Plantation Forest
196. Tulashi Jang Karki, Sukuna CFUG

Nawalparasi

197. Budhiram Bishwakarma,
198. Danda Pani Sapkota, Parijat CFUG
199. Ham B. Chaudhary, Daunne Devi CFUG
200. Kabiraj Acharya, Sansarkot CFUG
201. Baburam Rijal, Sansarkot CFUG
202. Narayan Pandey, Basanta Hariyali CFUG
203. Dilip Chapangai, FECOFUN
204. Hom B. Gurung, Chisapani CFUG
205. Tichen Gurung, FECOFUN
206. Dhanisara Rijal, FECOFUN
207. Shiva Pandey, Chisapani CFUG
208. C. B. Buda, Chisapani CFUG
209. Yam B. Thapa Magar, Chisapani CFUG
210. Ram C. Pokhrel, Parijat CFUG
211. Kamal Pariyar, FECOFUN
212. Mundrika P. Chaudhary, Badera CFUG
213. Mohima Kha, Furniture Udhyog

Palpa

214. Sushant Shrestha, CCI
215. Singha B. Thapa, FECOFUN
216. Dal B. Sunari, Satyabati CFUG
217. Moti Lal Rai, Hasta Kala Udhyog
218. Dan B. Paudel, Somadi CFUG
219. Krishna P. Gyawali, District Forest Office
220. Tika Ram Neupane, District Forest Office
221. Bhimsen Karki, CCI

Parsa

222. Vidya Sagar Sharma, Ambris Furniture
223. Bashudip Sharma, Dip Raj Furniture
224. Indrajit Sharma, Sharma Furniture Udhyog
225. Madan P. Badai, Shrada Sawmill/Furniture
226. Bishnu P. Neupane, Baba Gangaram Plastic Industries
227. Laxman Saraegi, Jai Bajrang Sawmill
228. Shova Kanta Jha, Om Krishna Wood & Sawmill
229. Rajesh K. Gahat, CCI
230. Baidhnath Jaishwal, CCI
231. Ramshankar Kurmii, CCI
232. Ram C. Dhital, CG Foods
233. Surendra Adhikari, Chaudhary Group
234. Tara Chandan, Star Furniture Udhyog
235. Vishal Shrestha, CFUG
236. Laljev Bhar, Jay Maa Durga Sawmill
237. Shrikanta Madnasiya, OmSivSakti furniture
238. Ravi Bhusan Tiwari, Tiwari Kastha Udhyog
239. Babu Lal Kayap, Shree Shankar Rice & Sawmill
240. Bharat Saha, Shanti Sawmill
241. Ram C. Kurmi, Jayshwal Kastha Udhyog
242. Lakhan Lal Saha Kano, Terai Private Forest

Rupandehi

243. Krishna K. Shrstha, CCI
244. Anil P. Shrestha, CCI
245. Sanjay Gynawali, CCI
246. Bishnu P Chalise, CCI
247. Dipak Paudel, CCI
248. Dhananjay Jaishwal, MSFP- Butwal
249. Prakash Subedi, RIMS-MSFP- Butwal
250. Laxmi Thapa, FECOFUN
251. Durga B. Thapa, Butwal Industries
252. Hari P. Upadhaya, Indra Nanglo Pasal
253. Chunu Bahadur, Aloevera Cultivation
254. Gagan Nath Gautam, Aloevera Cultivation
255. Nil Khantha Khanal, Gaayo Herbal
256. Deepak Kumar, Trader
257. Udhav Gautam, Mountain Herbal Suppliers
258. Baburam Khanal, Nepal Herbal
259. Rudra Prakash Upadhaya, Sapana Furniture

Sankhuwasabha

260. Suman Shrestha, Suman Traders
261. Nana Rai, Mahila Udhyog Sahakari
262. Dili Kulung, Himalayan Allo Kapada Udhyog
263. Bahadur Sherpa, NTFP collector
264. Sandesh Shera, NTFP collector

Sarlahi

265. Bikash Gauchan, Jai Bajrang Plywood Industries
266. Rajesh Sarrafu, Venus Plywood Udhyog
267. Prakash K. Upadhaya, CCI
268. Rang Lal Agrawal, CCI
269. Mahendra K Sharma, FenFIT
270. Yam P.Dahal, Tapae Hamro Krishi Sahakari
271. Prem Nath Paudel, Sustainable NTFP Cultivators
272. Ujur B. Basnet, Kurilo Cultivators
273. Ram Babu Mainali, Shree Ram Private Nursery
274. Niranjan Mainali, Association of Private Forests
275. Laxmi P. Gautam, Shree Kalika Private Nursery
276. Kashinath Paudel, Sustainable NTFP Cultivation
277. Ramnath Paudel, Sustainable NTFP

Cultivation,Sindhupalchowk
278. Ishwory P. Chalise, CCI
279. Gopal Shrestha, NTFP Trader
280. Manoj Shrestha, NTFP Trader
281. Jagadishwor Shrestha, Plywood Factory
282. Amit Shrestha, Veneer & Furniture Udhyog
283. Purna B. Shrestha, NTFP Trader
284. Laxmi Shrestha, Timber Trader
285. Tilak B. Shrestha, Timber Trader
286. Ishwor Shrestha, Timber Trader
287. Rajendra Karki, Timber Trader
288. Udhav Karki, Timber Trader
289. Kumar Shrestha, NTFP Trader Siraha
290. Chandeshwor Singh, Manish Saw Mill
291. Dipendra Shah, Shree Rajdevi Saw Mill
292. Krishna H Gaurel, Sri Krsna Kastha Udhyog
293. Hom B. Niraula, Harshposh CFUG
294. Karna Raut, Harshposh CFUG
295. Uma Raut, Harshposh CFUG
296. Man Hira Rai, Harshposh CFUG
297. Rudra B. Basnet, Harshposh CFUG

Surkhet

298. Ram B. Chhapai, Bageshwori Sawmill
299. Parshu Ram Kandel, Deuti Harbal Udhyog
300. Shiva Ram Rokae, Karnali Jadibuti Pashal
301. Karna B. Pun, Pun Kasta Sawmill
302. Jhamak B. Jolmmi Magar, Shahakari Sansthan
303. Atish Singh Rawal, Visitor
304. Sharbajeet Gada, Trader
305. Brij Bhushwan Singh, Veneer Udhyog
306. Prem Kumar Acharya, Bheri CF
307. C. P. Dhami, FECOFUN
308. Hari C. Chhalaunni, NTFP
309. Nmadan B. Khadka, FECOFUN
310. Krishna Parasad Devkota, Kastha Baybashi Sangh
311. Hari Thapa, FenFIT
312. Udiva Dangi, CCI
313. Padam B. Shahi, CCI, Udaypur
314. Mani Ram Ghimire, CFUG
315. Maiya Rai, FECOFUN
316. Amrita Suyal, CFUG
317. Parbati Rai, FECOFUN
318. Narayan Burja Magar, FECOFUN
319. Shiva K. Adhikari, FECOFUN
320. Yograj Karki, Udaypur Kastha Udhyog
321. Dilip Niraula, Malati Furniture Udhyog
322. Khadag B. Raut, Miteri Furniture Udhyog
323. Kamala Rai, Bhagabati Furniture Udhyog
324. Ashok K. Chaudhary, FenFIT
325. Sabin Katuwal, FECOFUN
326. Anoj Karki, FECOFUN

D-7:Participants of the sharing and validation workshop organized by SSU

SN	Name	Organization
1	Akhileshwar L Karna	MSFP PCO
2	Ann Koontz	Enterprise Works
3	Bhishma Subedi	ANSAB
4	Binod Bhatta	FSS Team
5	Bishwa Nath Oli	DoF
6	Chandra Majhi	NEFEJ
7	Chudamani Joshi	Embassy of Finland
8	Dhruba Acharya	Forest Strategy Team
9	Gokul D Tamang	NEFEJ
10	Govinda Ghimire	NEHHPA
11	Jean Francois Cuenod	SDC
12	Kabir Ratna Sthapit	ANSAB
13	Kapil Adhikhari	FenFit, Nepal
14	Keshav Kanel	Consultant
15	Nerisa Vaidya	FTG Nepal
16	Netra Sharma Sapkota	USAID
17	Pem Kanel	DG, DSCWM
18	Prakash Giri	FNCCI
19	Prakash Katwal	ANSAB
20	Puspa ghimire	ANSAB
21	Rajesh Koirala	World Bank
22	Ram P Lamsal	MSFP PCO
23	Ramu Subedi	MSFP SSU
24	Rijan Tamrakar	ANSAB
25	Sabin Sharma	Rajdhani Daily
26	Shruti K Mishra	ANSAB
27	Shyam Dhakal	FenFit, Nepal
28	Sudhasuman Dhakal	Radio Prakriti
29	Sujan Subedi	MoSTE
30	Suraj Kashyap	CG - Biotech
31	Ujjwal Raj Pokharel	SNV
32	Vijay Pd. Kesari	UNDP
33	Yam Bahadur Thapa	Department of Plant Resources
34	Yam Malla	IUCN Nepal
35	Yamuna Ghale	SDC

D-8: Participants of sharing and feedback workshop organized by MSFP SSU

SN	Name	Organizatoin
1.	Ananta Bhandari	WWF Nepal
2.	Ashish Sharma	Siddhartha Bank
3.	Babu Ram Dhakal	HIPAT monthly
4.	Bal Ram Paudel	Employment Fund
5.	Ashok	FNCCI
6.	Basanta Lamsal	VLBS
7.	Basanta Rokka	Mount Rosin
8.	Bhoj Raj Bashyal	NUBL
9.	Bhola Khatiwada	COFSUN
10.	Bhupendra	FINFIT
11.	Bishal Kafle	Biruwa Venture
12.	Bhishma Subedi	ANSAB
13.	Bishwas Rana	Planning and Monitoring Manager
14.	Chandra Majhi	NEFEJ
15.	Dipesh Pyakurel	BARDAN
16.	Ganesh Karki	FECOFUN
17.	Ghan Shyam Awasthi	ECARDS
18.	Gokul Tamang	NEFEJ
19.	Govinda Ghimire	NEHHPA
20.	Govinda Poudel	Forest Action
21.	Harihar Thapa	FNCCI
22.	Jagadish c.	WWF/HBP
23.	Kabir R Sthapit	ANSAB
24.	Keshav Raj Acharya	GIZ-INCLUDE
25.	Naina Shakya	ICIMOD
26.	Nishanta Sharma	IDS Nepal
27.	Prabha Pokharel	IDS Nepal
28.	Pradhyman Pokharel	Mega Bank

29.	Prakash Katwal	ANSAB
30.	Prof. A.K Das	NFA
31.	Puspa Ghimire	ANSAB
32.	Rajendra	Dabur Nepal
33.	Ram P. Acharya	PSPL
34.	Ramu Subedi	MSFP-SSU
35.	Rita Bhandary	FWEAN
36.	Rita Parajuli	Green Foundation Nepal
37.	Ritu Pantha	
38.	Sandesh S Hamal	Hariyo Ban Program
39.	Sarba Raj Khadka	RRN
40.	Shanker Poudel	Rupantaran Nepal
41.	Sharmila Karki	NGO Federation
42.	Shekar Bastakoti	Century Bank
43.	Shristee Singh	COLARP
44.	Shyam	FenFIT
45.	Smriti Dahal	SAWTEE
46.	Stuty Maskey	PSP Officer
47.	Subin Mulmi	Biruwa Venture
48.	Sudharshan Khanal	ANSAB
49.	Suman Awale	WWF Nepal
50.	Sushil Gyawali	Himalayan Naturals
51.	Sushil Mainali	NEFEJ
52.	Uddhav Karki	RRN

D-9: Customs & quarantine offices visited for the study (Total: 12)

1. Narayan K Shrestha, Plant Quarantine Office, Kakarbhita, Jhapa
2. Hari P Pandey, Mechi Customs Office, Kakarbhita, Jhapa
3. Ram Bilash Thakur, Plant Quarantine Office, Biratnagar, Morang
4. Shayam P Dahal, Biratnagar Customs Office, Rani, Morang
5. Avdesh K Singh, Plant Quarantine Office, Birgunj, Parsa
6. Binod Dahal, Plant Quarantine Office, Bhairahawa
7. Shyam Sundar Singh, Plant Quarantine Office, Nepalgunj
8. Divya Dev Bhatta, Plant Quarantine Office, Mahendra Nagar
9. Nirmal Hari Adhikari, Tatopani Customs Office, Sindhupalchowk
10. Tilak MS Bhandari, Birgunj Customs Office, Inarwa, Parsa
11. Binod Upadhaya, Bhairawa Customs Office, Belhiya, Rupandehi
12. Krishna Paudel, Nepalgunj Customs Office, Nepalgunj, Banke

D-10:Market centres visited for the study

Ecological regions	Eastern	Central	Western
Mountain		Tatopani	Khalanga (Jumla)
Hill	Dhankuta, Gaighat	Pokhara, Kathmandu	Birendranagar, Dadeldhura
Terai	Birtamod, Biratnagar, Dharan, Lahan	Butwal, Narayanghat, Birgunj	Kanchanpur, Nepalgunj, Dang

For more information:

Multi Stakeholder Forestry Programme

Programme Coordinator's Office (PCO)
Forestry Complex, Babarmahal, Nepal
Tel: 977-1-4239531

Services Support Unit (SSU)
Forestry Complex, Babarmahal, Nepal
Tel: 977-1-4229669-70

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