UN-REDD PROGRAMME

The United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries

Ministry of Forests and Soil Conservation
REDD Forestry and Climate Change Cell

Understanding drivers and causes of deforestation and forest degradation in Nepal: potential policies and measures for REDD+

DISCUSSION PAPER

February 2014

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The forest administration in Nepal has evolved through a series of fundamental changes in the last fifty years. The changes reflect priorities of the Government's programs giving more emphasis on people's need and environmental considerations. Under the Ministry of Forests and Soil Conservation, the REDD Forestry and Climate Change Cell (http://mofsc-redd.gov.np/) is the lead institution to undertake REDD readiness activities in Nepal. The vision for Nepal's REDD strategy is that by 2013 and beyond, the country's greenhouse gas emissions resulting from deforestation and forest degradation will be significantly reduced by forest conservation and enhancement, by addressing the livelihoods concerns of poor and socially marginalized forest dependent people, and by establishing effective policy, regulatory and institutional structures for sustainable development of Nepal's forests under the new constitutional framework.

The UN-REDD Programme is the United Nations collaborative initiative on Reducing Emissions from Deforestation and forest Degradation (REDD+) in developing countries. The Programme was launched in 2008 and builds on the convening role and technical expertise of the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP). The UN-REDD Programme supports nationally-led REDD+ processes and promotes the informed and meaningful involvement of all stakeholders, including Indigenous Peoples and other forest-dependent communities, in national and international REDD+ implementation.

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Understanding drivers and causes of deforestation and forest degradation in Nepal: potential policies and measures for REDD+

TABLE OF CONTENTS

ACKNOWLEDGEMENTS iii
PREFACE 2
ABBREVIATIONS AND ACRONYMS 3
EXECUTIVE SUMMARY 5
1. INTRODUCTION 12
2. RESEARCH METHODOLOGY 15
    2.1 KEY STEPS 15
    2.2 METHODS OF DATA COLLECTION 15
3. ANALYTICAL FRAMEWORK 17
    3.1 THE POLITICAL ECOLOGY FRAMEWORK 17
    3.2 APPROACH TO CATEGORIZING THE DRIVERS OF DEFORESTATION AND FOREST DEGRADATION 18
    3.3 DEFINITION OF POLICY AND MEASURES 21
4. OVERVIEW OF LAND-USE STATUS AND CHANGE IN NEPAL 22
5. DRIVERS OF DEFORESTATION AND FOREST DEGRADATION 24
    5.1 PROXIMATE DRIVERS 25
        5.1.1 Illegal logging 25
        5.1.2 Fuelwood consumption 25
        5.1.3 Encroachment 26

5.1.4 Road construction 26
5.1.5 Regional variations of drivers 27
5.2 UNDERLYING CAUSES OF DEFORESTATION AND FOREST DEGRADATION ..
..... 28
5.2.1 Increased demand for forest land and products 29
5.2.2 High dependency on forests 31
5.2.3 Lack of a deliberative and inclusive forest policy process 32
5.2.4 Poor transparency and corruption 32
5.2.5 Weak law enforcement 36
5.2.6 Weak tenure (and the role of local governments) 37
5.2.7 Prolonged political transition and instability 38
5.2.8 Social differentiation and inequality 38
5.2.9 Population growth 39
5.2.10 Migration, pressure on resources and related conflicts 40
5.2.11 Limited access to improved technology 41
5.2.12 Summary 42
5.2.13 Future trends and scenario of D&D 45
6. PREVIOUS AND ONGOING POLICIES AND MEASURES TO ADDRESS DEFORESTATION AND FOREST DEGRADATION IN NEPAL 48
6.1 NATIONAL DEVELOPMENT PRIORITIES AND PLANS 48
6.2 FOREST SECTOR POLICIES 48
6.3 SECTORAL POLICIES AND THE EFFECTS ON FORESTS 51
6.3.1 Land-use policy 51
6.3.2 Decentralization and federalism 52
6.3.3 Road sector 52
6.3.4 Energy crisis and responses 52
6.4 ANTI-CORRUPTION MEASURES 53
7. SUMMARY AND RECOMMENDATIONS 55
7.1 CHALLENGES TO REDUCING DEFORESTATION AND FOREST DEGRADATION 55
7.1.1 Complexity of drivers 55
7.1.2 Ineffectiveness of many existing policies and measures 55

7.1.3 Inadequate capacity and preparedness of forest Sector institutions.. 56
7.2 POTENTIAL STRATEGIES TO REDUCE DEFORESTATION AND FOREST DEGRADATION AND POTENTIAL REDD+ INTERVENTIONS 56
7.2.1 Sustainable management of forests 56
7.2.2 Governance reform 57
7.2.3 Strengthening law enforcement 57
7.2.4 Agricultural sector policies and measures 58
7.2.5 Road sector policies and measures 59
7.2.6 Energy sector policies and measures 59
7.3 CONCLUSION AND FURTHER RESEARCH 60
REFERENCES 62
ANNEXES 68

LIST OF TABLES

Table 1: Illustrating the links between the drivers assessed in this study and global categories of drivers 20

Table 2: Forest and shrub land in Nepal 23

Table 3: Increasing road length in Nepal (1998-2006) 27

Table 4: Regional specificities in drivers of D&D 28

Table 5: Projections for timber demand and supply (million m^3) 29

Table 6: Projected fuelwood demand (million tons/yr) 30

Table 7: Price of alternative fuel sources (in Nepalese Rupees) 31

Table 8: Percentage of households under different average size of holding 32

Table 9: Population since 1950s 39

Table 10: Population (in millions) over the last four decades in the key regions of Nepal 39

Table 11: Changing rural–urban population ratio since 1950s. 41

Table 12: Comparing potential productivity with actual productivity 42

Table 13: Major drivers and underlying causes of deforestation and forest degradation 43

Table 14: Future trends in the underlying causes of deforestation and degradation 46

Table 15: Policies and measures that seek to address major drivers of D&D, and when known, their effects....49

Table 16: Major cross-cutting legislation that affects the forestry sector 51

LIST OF FIGURES

Figure 1: Proximate and underlying causes of D&D in Nepal 19

Figure 2: Map of forest types in Nepal.....22

Figure 3: Forecasted national projections for timber supply and demand 29

Figure 4: Forecasted national projections for fuelwood supply and demand.....30

Figure 5: Price of alternative fuel sources.....31

Figure 6: Common areas of misconduct leading to illegal logging 34

Figure 7: Population (in millions) over the last four decades in the key regions of Nepal.....40

ANNEXES

Annex 1: Forest Sector Policy Documents Reviewed During the Analysis 68

Annex 2: Priority Drivers of Deforestation and Degradation 69

Annex 3: Forestland Distributed to Sukumbasis and Encroached by Squatters 70

Annex 4: Nepal Ranking amongst Worldwide Governance Indicators (2002-2011) 71

Annex 5: Types of Misconduct at Various Levels in the Value Chain of Forest Management and Timber Trade. 72

Annex 6: Changes in Leadership of Ministry of Forests and Soil Conservation since 2006 74

Annex 7: Periodic Plans and Measures to Address Deforestation and Forest Degradation 75

Annex 8: NVC Documents Following ways of Misconduct in Forestry 77

Annex 9: Actions taken by the CIAA in the Forest Sector During 2010-2012 78

Annex 10: Recommendations (REDD+ Agriculture) 79

Annex 11: Recommendation (REDD+ energy) 80

Annex 12: Past, Current and Future Trends of the Four Major Drivers 81

PREFACE

Nepal first engaged with the Forest Carbon Partnership Facility (FCPF) of the World Bank in 2008. Subsequently, in July 2010, the Government of Nepal submitted its REDD+ Readiness Preparation Proposal (R-PP) to the FCPF.[1] This was approved in 2010. Initial funding from the FCPF has been disbursed to support the REDD+ readiness preparation phase and related activities. Nepalese stakeholders are now implementing activities identified in the R-PP and are in the process of developing the national REDD+ Strategy. The government has established a three-tiered institutional mechanism consisting of an Apex Body, a REDD Working Group and a REDD Forestry and Climate Change Cell.

In October 2009, Nepal became a UN-REDD partner country. As such the country received support in a number of ways, primarily through facilitating the exchange of knowledge and lessons with other countries in the region.

In October 2011, the UN-REDD Programme and UNDP's Democratic Governance group organised a regional workshop on anticorruption in Kathmandu in order to raise awareness, to identify specific corruption risks and to identify effective risk mitigation measures. The workshop was part of the Asia Pacific 'Integrity in Action' week. Approximately 120 participants from 12 REDD+ countries attended this workshop, including anti-corruption experts, UNDP anti-corruption focal points and non-governmental organizations actively working on corruption issues. The mitigation measures identified were included in the action plan of the UN-REDD Programme and in UNDP's Thematic Program on Anticorruption for Development Effectiveness.

In 2012, the Government of Nepal formally requested Targeted Support from the UN-REDD Programme in the two following areas of REDD+ Readiness: (i) national level fund management arrangements; and (ii) strategies for addressing drivers of deforestation and forest degradation (D&D), with special attention paid to issues related to transparency, accountability and corruption.

On the basis of this request, the UN-REDD Programme commissioned two studies. The studies were both conducted by Forest Action Nepal. The present report addresses the drivers of deforestation and forest degradation.

1 http://forestcarbonpartnership.org/nepal

ABBREVIATION AND ACRONYMS

BIPPA: Bilateral Investment Promotion and Protection Agreement

BZCF: Buffer Zone Community Forestry

CBFM: Community Based Forest Management

CF: Community Forestry

CFM: Collaborative Forest Management

CFUG: Community Forest User Groups

CIAA: Commission for Investigation of Abuse of Authority

CoP: Conference of the Parties

CSOs: Civil society organisations

D&D: Deforestation and Forest Degradation

DDCs: District Development Committees

DFO: District Forest Officers

DFRS: Department of Forest Research and Survey

DoF: Department of Forest

FCPF: Forest Carbon Partnership Facility

FSRO: Forest Survey and Research Office

GHG: Greenhouse Gas

ICS: Improved Cooking Stoves

IPO: Indigenous People's Organisations

LF: Leasehold Forestry

LRMP: Land Resource Mapping Project

MoAD: Ministry of Agriculture Development

MoFSC: Ministry of Forests and Soil Conservation

MoLR: Ministry of Land Reform

MOPE: Ministry of Population and Environment

MPFS: Master Plan for the Forestry Sector

NTFPs: Non-timber forest products

NVC: The National Vigilance Centre

RF: Religious Forestry

R-PP: Readiness Preparation Proposal

RWG: REDD Working Group

SAFTA: South Asia Free Trade Agreement

UNFCCC: United Nations Framework Convention on Climate Change

UN-REDD: United Nations collaborative initiative on Reducing Emissions from Deforestation and Forest Degradation

VDCs: Village Development Committees

EXECUTIVE SUMMARY

Under the Conference of the Parties to the UNFCCC, REDD+ has been adopted as "*Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries*". In the long term, REDD+ will provide positive incentives to developing countries to voluntarily reduce their rates of deforestation and forest degradation, and to increase forest carbon stocks.

Nepal has been working on REDD+ Readiness since 2008. Notably, the Government of Nepal has established a three-tiered institutional mechanism consisting of an Apex Body, a REDD Working Group and a REDD Forestry and Climate Change Cell. It is preparing its National REDD+ Strategy. Preliminary estimates show that REDD+ may bring between $ 20-86 million per year to Nepal - a significant amount.

One of the key aspects of REDD+ Readiness it to have a detailed understanding of the drivers of deforestation and forest degradation. This understanding is the basis for designing the policies and measures at both national and local levels that REDD+ will later support. To that end, this report assesses the drivers of deforestation and forest degradation in Nepal. It also assesses the performance of related government policies and previous measures.

This study adopted a political ecology perspective to analyse the drivers and to emphasize the underlying political and socio-cultural causes beyond the proximate drivers. Multiple data collection, analysis and validation methods were used including desk review and content analysis, expert consultations, interviews, field visits, interactions and focus group discussions, and regional and national validation workshops. The approach included an engaged and collaborative process of discussion, analysis and synthesis among the concerned actors and stakeholders.

This study built on previous work in the Readiness Preparation Proposal that had led to the initial identification of priority drivers in Nepal. Following consultations and analyses, five priority proximate drivers and eleven priority underlying causes were thus identified. These are:

Priority proximate drivers	Priority underlying causes study
■ Illegal logging ■ Fuelwood consumption ■ Encroachment ■ Roads construction	■ Increased demand for forestland and products ■ High dependency on forests ■ Lack of a deliberative and inclusive forest policy process ■ Poor transparency and corruption ■ Weak law enforcement ■ Weak land tenure ■ Prolonged political transition and instability ■ Social differentiation and inequality ■ Population growth ■ Migration, pressure on resources and related conflicts ■ Limited access to improved technology

The Table below summarises the study findings linking each driver to economic, social, governance, socio-political, demographic and technological underlying causes.

	Illegal logging	Encroachment	Fuelwood Consumption	Roads
Economic				
High demand for forestland and products	Social preferences, increased purchasing ability, timber intensive construction, constrained and unpredictable supply.	Increasing food scarcity, decreasing land productivity, large mass of landless, land speculation.	High costs of alternative fuel, and increasing number of brick factories, hotels, tourism, alcohol making.	Unquestioned development priority is given to roads, especially by local governments.
High dependency on forests	Desperate poor residing in and around forests, lack alternative income and employment, and are usually deployed by traders and smugglers.	Landless poor take refuge in forestland as a last resort.	Poor people rely heavily on fuelwood for both household use and sale.	
Policy, governance and tenure				
Lack of deliberative and inclusive process	Contested policies (both at national and local levels) result in weak ownership by stakeholders and everyday conflicts between authorities and local communities (e.g. Terai forest management, Churia, protected areas).	Conflicts between government and Sukumbasis has turned forest into a battlefield; there is little support from stakeholders at local level in maintaining forest integrity.	Fuelwood collectors cannot influence fuelwood related policies. As fuelwood collection in government forest is deemed illegal, collectors may ignore sustainable practices.	Roads that are outside the district development plan tend to ignore due process, which undermines sustainability.
Poor transparency and corruption	Corruption induces over-harvesting to meet interests of all involved parties; officials and forest user committees often turn a blind eye	Bribing influences distribution of land titles by the Land Commission officials; land mafia often encourage people to capture land and benefit from illegal transactions.	Brick factories, hotels and other commercial consumer of fuelwood bribe officials.	Corruption encourages use of heavy machines instead of labour-based approaches undermines monitoring and public scrutiny.

	Illegal logging	Encroachment	Fuelwood Consumption	Roads
Weak application and enforcement of the law	Organised criminals make life threats to Department of Forestry, whose capacity to respond is weak; political interference and a weak judiciary system often lead to impunity.	Weak District Forest Office (DFO) capacity to monitor and evacuate illegal settlers, who are often backed by political parties.	Weak DFO capacity to monitor unsustainable harvesting.	Weak enforcement of Environmental Impact Assessment and other environmental standards.
Weak tenure and local governance	Government managed forest are de facto open access, which invites unsustainable and criminal activities; local governments do not own and do not play active role in protection.	Government managed forests are de facto open access and therefore are easy to occupy and settle in illegally.	In Community-based managed forests, fuelwood is collected sustainably. In government-managed forest, this is not the case, mainly due to de facto open access situation.	Private landowners tend to influence road construction so that it happens on public forestlands.
Cultural (Socio-political)				
Prolonged political transition, instability	Transitional politics, instability and frequent changes in leadership have seriously undermined accountability, legitimacy, authority and direction of the state institutions. The priorities of the political actors is not in forest management.	State institutions are weak, society is volatile, citizens have strong sense of rights over resources, and there is little political will to resolve land issues.		Long term systematic planning is lacking; decision-makers do not base decisions on scientific evidence.

	Illegal logging	Encroachment	Fuelwood Consumption	Roads
Inequality	Inequality helps maintain patron-client relations through which poor, marginal groups and lower officials engage in illegal logging and are protected by their patrons.	Large numbers of poor and marginalised groups do not have access to land, while large tracts of land are left uncultivated.		Leaders choose heavy equipment-based approach that often replaces labour.
Demographic				
Population growth	Population growth induces high demand for timber and other forest products.	Decreasing land/ people ratio result in struggles over land and need for new land.	Increasing number of households has led to increased demand for fuelwood, especially in Terai.	Increased population in rural remote areas lead to increasing demand for roads.
Migration and population pressure on resources	Migration to Terai and towns has increased timber demand in those areas.	Poor people migrating to Terai or road heads end up occupying public forested land.	High population in certain pockets results in unbalanced demand for fuelwood.	Migration and population pressure in certain areas leads to demand for new roads.
Technology				
Limited access to improved technology	Passive management, limited use of sustainable forest management practices, has resulted into short supply of legal timber	Low productivity of land and resulting food scarcity has induced cultivation in forestland.	Little access to improved cooking stoves, biogas and other technologies leads to increase demand for and reliance on fuelwood.	Limited access/ use of sustainable technologies in road construction has high negative environmental consequences.

The study finds that neither the proximate drivers nor the underlying causes are independent, nor do they operate in isolation. There are related, with sometimes complex interactions and feedback mechanisms between and amongst them. It also finds that the scope, intensity and impacts of drivers and causes varies across Nepal, with some causes being more prevalent in some regions than others.

For the most part, forest degradation in Nepal takes place as a precursor to deforestation. Forest degradation generally starts when a few selected trees are illegally logged by timber smugglers, often protected by powerful elites, having close ties with political parties or other power centres. Subsequently, in many cases, land mafias encourage and facilitate landless people to take refuge in such lands. The settlers are then encouraged to harvest and to uproot the remaining trees, and they gradually start cultivating agricultural crops. Eventually the land mafia and the political parties assist the settlers to obtain full land titles, again usually involving the bribery of officials on the frequently formed land reform commissions. Then, the process of conversion of forest to non-

forest land is complete.

The study goes on to assess the effectiveness and impact of previous policies and measures, in both the forest sector and related sector. Overall, most measures have had limited effect. However, measures introduced to promote community and collaborative approaches to forestry, and measures to support sustainable harvesting (based on scientific management principles) do give room for optimism.

The study finds that neither the proximate drivers nor the underlying causes are independent, nor do they operate in isolation

Finally, the study shows that REDD+ could potentially support a range of measures to reduce deforestation and forest degradation. Some of the potential areas for intervention with a REDD+ programme include: designing sustainable management of forests; establishing clear linkages between governance reform, reduction in deforestation/ degradation and increases in payment to local forest managers; strengthening law enforcement; supporting technological and economic incentives to farmers for agricultural intensification; bringing sustainability of roads into public debate; and promoting technological and institutional innovations related to clean energy sources and energy use. However, for each measure more technical analysis and consultation are required.

This report does not recommend further delays before pilot action. It is important to initiate pilot REDD+ actions in Nepal, not only to achieve results in terms of forests, but also because piloting leads to lessons learnt based on concrete experience. Such piloting should be implemented within a monitoring framework in order to optimize lesson learning.

However, the complexity revealed by this report implies that further study is warranted in a range of areas. This includes studies dedicated to the detailed design of future REDD+ interventions and studies targeting several specific issues identified as weakly understood in this report.

INTRODUCTION

As a developing country, with large areas of fragile ecosystems, the Government and the people of Nepal are well aware of the causes and the potential impacts of climate change and are working towards reducing greenhouse gas (GHG) emissions whilst pursuing economic development. Accordingly, Nepal is a signatory to both the United Nations Framework Convention on Climate Change (UNFCCC, signed in 1992) and to the Kyoto Protocol (in 1997).

Under the Conference of the Parties to the UNFCCC, REDD+ has been adopted as "*Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries*". REDD+ will provide positive incentives to developing countries to voluntarily reduce their rates of deforestation and forest degradation (D&D), and to increase forest carbon stocks, as part of an anticipated post-2020 global climate change agreement.

REDD+ is not development assistance but a results-based compensation mechanism. Hence, implementation of REDD+ will require beneficiary countries to have the necessary institutions, policies, information and capacities to meet the performance requirements. Meeting these demands is referred to as acquiring 'REDD+ Readiness'. Nepal has been working on REDD+ Readiness since 2008, with the support of the Forest Carbon Partnership Facility (FCPF), hosted by the World Bank. Notably, for the proper implementation of REDD+, the Government of Nepal (GoN) has established a three-tiered institutional mechanism consisting of an Apex Body, a REDD Working Group (RWG) and a REDD Forestry and Climate Change Cell (REDD Cell).

- The Apex Body is an inter-ministerial institution that ensures multi-sectoral coordination and cooperation for planning and implementation of REDD activities at the highest level. It is chaired by the Minister of Forests and Soil Conservation (MoFSC), who is responsible for the overall coordination of REDD activities. As an inclusive body, the Apex Body encompasses top level officials from eleven ministries, representatives from private sector, public sector and civil society organizations, and the National Planning Commission.
- The RWG has been formed under the leadership of the Secretary of MoFSC to ensure representation of different forestry related stakeholders. Currently, the RWG comprises of 12 members, among them nine members represent government while three are from non-governmental sectors.
- The REDD Cell is established as an extended arm of the MoFSC as the lead institution to undertake REDD+ Readiness activities in Nepal. The REDD Cell is headed by a Joint-Secretary. The REDD Cell is responsible for coordinating the Readiness process at the national and sub-national levels among diverse stakeholders.

In order to pursue REDD+ Readiness, under the leadership of the REDD Cell, Nepal has initiated the following[2]:

- preparation of the National REDD+ Strategy;
- analytical work on reference levels and Measurement, Reporting and Verification (MRV);
- analytical work on carbon rights;
- preparation of the Strategic Environmental and Social Assessment (SESA) framework;
- and research into potential national level fund management arrangements.

2 These initiatives are at various stages of implementation/completion.

In order to secure international support for the REDD+ Readiness process in Nepal, the Government developed a Readiness Preparation Proposal (R-PP)[3], with an estimated budget of $7.48 million, and, as mentioned above, has been implementing this with support from World Bank (FCPF) (US$3.4 million). Additional development partners have committed to support implementation of the R-PP, including the Department of International Development of the United Kingdom, the Swiss Agency for Development and Cooperation, the Finish Government, the United States Agency for International Development and the Japan International Cooperation Agency (MoFSC, 2010). In addition to directly implementing the R-PP, several international organizations and national Non-Governmental Organizations (NGOs) and Civil Society organizations (CSOs) have been closely engaged on REDD+ issues, through piloting activities and demonstrating their social and technical viability.

In October 2009, Nepal joined the United Nations collaborative initiative on Reducing Emissions from Deforestation and Forest Degradation in developing countries (UN-REDD). The Government of Nepal in 2012 formally requested Targeted Support from the UN-REDD Programme to help make progress in two key areas of REDD+ readiness: (i) management of REDD+ finance at the national level and (ii) strategies to address drivers of deforestation and forest degradation. This discussion paper was prepared in response to that request (together with another paper on national-level REDD+ fund management).

The Ministry of Population and Environment (MOPE, 2004) estimates that Nepal's forests have a total sequestration potential of 14.738 million tons of CO2. Assuming a price of US $5.9 per tonne in the voluntary market (Lang, 2013), this could generate US $ 86.95 million annually[4]. The Livelihoods and Forestry Programme (LFP, 2008) estimated that community forests sequestrate approximately 0.7 million tons of carbon per year, which could lead to a potential REDD+ benefit of US$ 32-48 million/year[5]. These figures have to be considered highly tentative, however they do illustrate that REDD+ is potentially significant for Nepal.

One of the key aspects of REDD+ Readiness is to have a detailed understanding of the drivers of deforestation and forest degradation (D&D). This understanding is the basis for designing the policies and measures, at national and local levels, that will be required to reduce and reverse D&D. Until present, although some exercises have been undertaken to identify the drivers of D&D in Nepal, they have focussed on limited geographic and ecological regions, hence the need for a more detailed national level study on the drivers of D&D.

This report assesses the drivers of D&D in Nepal. It includes a meta-analysis of the D&D dynamics. It also assesses the performance and effectiveness of government policies and other measures in curbing D&D. It also analyses how lessons from past initiatives to reduce D&D can be integrated into designing future policies and strategies. Specifically, the study aims to:

- assess the direct and underlying causes behind of D&D, including those originating in the forest sector and those originating from socio-economic sectors;
- evaluate in detail a number of policies and measures that may be implemented to address priority drivers of D&D in Nepal, building from existing studies;
- identify where and how gaps between the REDD+ policy process and strategies to address drivers can be addressed. It therefore provides concrete recommendations to be considered during the National REDD+ Strategy process.

3 See: http://forestcarbonpartnership.org/nepal

4 While noting that there is no clear guidance yet on the matters of positive incentives and measurement, reporting and verification (MRV) of REDD+ under the UNFCCC, these carbon and pricing figures are used only as hypothetical benchmarks for the purpose of discussion in this report.

5 Variation is due to different price scenario i.e. $12.5 and $ 18.3 per ton.

The report is organized into seven chapters. The first three chapters collectively frame the study through a description of the study methodology and an overview of the study's analytical framework. Chapter 4 describes the land use conditions and land-use change trends in Nepal. Chapter 5 identifies the proximate drivers of D&D and explores their underlying causes. Chapter 6 assesses the performance and outcome of previous policies and measures to reduce D&D in Nepal. The final chapter summarizes the findings and presents recommendations to both address D&D and for further research.

2. RESEARCH METHODOLOGY

2.1 KEY STEPS

The researchers undertook a chain of activities from developing the framework to the analysis and conclusion:

- A study team was formed comprising of a senior policy analyst, a political economist and several forestry researchers. The team was responsible for developing the analytical framework (see Chapter 3), engaging with stakeholders, collecting and analysing data and preparing the report. During the process, the team was closely supported by REDD Cell officials and an advisory team from the UN-REDD Programme and staff at UNDP Nepal. Email exchanges, skype conferences and in-person meetings were used to provide updates and feedback, and to exchange ideas.
- The methodology and analytical framework were developed based on the collective understanding of the study amongst key stakeholders. As part of this process, policy documents were collected and reviewed and secondary information was accessed through various channels, both formal and informal. Finally, the analytical framework for the study and study scope was agreed jointly between the REDD Cell, UN-REDD team and the study team through a series of skype conferences and in-person meetings.
- Data was collected from diverse sources (see Section 2.2 below).
- Analysis was carried out using several tools:
  - (i) the priority drivers were identified using a survey of forest workers and experts. Twenty-five people were surveyed[6], filling forms to score the drivers according to five criteria (see Annex 2);
  - (ii) the links between proxy and underlying drivers were established through focus group discussion and field level interactions. Likewise, the interactions between different drivers were discussed and explored;
  - (iii) the study team further analysed existing policies and measures to identify the gaps between drivers of D&D and the existing/previous policies;
  - (iv) the study team prepared draft policy recommendations for consideration and inclusion in the National REDD+ Strategy formation process.
- A draft report was prepared and debated in five local workshops, two regional workshops and one national level workshop. The comments, feedback and suggestions from the workshops were incorporated into the report. The report was then submitted to a peer review and an expert review. Subsequently, a final report was prepared addressing all the comments received.

2.2 METHODS OF DATA COLLECTION

The following six methods for data collection and analysis were used.

Content analysis: The textual content of key policy documents was analysed in order to understand the assumptions, rationales, priorities and approaches in forest policies and policies in other key sectors. Annex 1 provides a list of forest policy documents reviewed. Further, a range of policies, strategies, plans, acts, regulations, directives, guidelines and circulars that shape or influence the everyday practice of forestry stakeholders were reviewed.

6 We recognize the limitations of such limited sample size, which were due to time and budgetary constraints.

Interviews: Interviews were conducted with key policy makers at the Ministry of Forest and Soil Conservation, the Ministry of Agriculture Development and the Ministry of Land Reform. Other interviewees included forestry activists and researchers and traders of forest products. These interviews helped understand the links between proximate and underlying drivers and the interdependency of between certain drivers.

Consultation and group interactions: Two consultations were organised with forestry and REDD+ experts at the national level to obtain their inputs into framing the study. Similarly, four consultative meetings were organised with community actors and stakeholders at the local/district levels to get a deeper understanding of dynamics of D&D.

Case studies: Three case studies were prepared to understand the dynamics of D&D at the local level. These provided an important conceptual understanding of the phenomena. These cases were collected from the far western (Dadeldhura district), central (Rautahat district) and eastern (Morang district) regions of the country.

Media scanning: An analysis of media reports from 2010 to 2013 was carried out to understand the major patterns, trends, nature and features of D&D events. Both vertical and horizontal collection of media coverage[7] was used and items were analysed separately.

Secondary data collection: Secondary information was accessed through reports from various government institutions, donor agencies and civil society organisations. Appropriate data was collected from the Central Bureau of Statistics, Nepal Rastra Bank (Central Bank of Nepal), National Planning Commission and studies by various national and international agencies.

7 Three local papers (Kathmandu post, Kantipur and Gorkhapatra) for three consecutive years (2010-2012) and about ten national daily newspapers for 2012 and 2013 were scanned for this purpose.

3. ANALYTICAL FRAMEWORK

3.1 THE POLITICAL ECOLOGY FRAMEWORK

Prior to this study, work completed under the R-PP had identified a preliminary list of the drivers of D&D. This study builds upon that initial work. This study applies a political ecology framework[8] in order to analyse and to explain how political, economic and social factors, and their complex interactions, create the underlying causes of the drivers of D&D. This framework is also used, to some extent, to validate the initial list of drivers. The political ecology approach also proved useful to assess how previous policies and measures have addressed the complex socio-ecological relations behind D&D, and to initiate a determination of how REDD+ can offer strategies to addressing the underlying causes.

This study applies a political ecology framework in order to analyse and to explain how political, economic and social factors, and their complex interactions, create the underlying causes of the drivers of D&D

Following Peet and Watts (1996), the study went beyond the tradition of an intellectual exercise. It engaged in public debate in order to gain insights into the everyday interactions on forest governance, to benefit from public discourse on D&D, and to draw from an engagement with civic movements in the forestry sector. This helped forge analytical links between the relations of power, policies and institutions, and their outcomes in terms of D&D (Peet and Watts 1996).

This study also uses the concept of "policy process" when analysing the policies and measures previously adopted to address D&D in Nepal.[9] By concentrating on both the process to develop policy and the contents of policy, the study is able to deliver a more complete and nuanced understanding of policy. Moreover, an understanding of the process allows for a clearer identification of many of the barriers to addressing D&D, and ensures that recommendations for future interventions are more realistic. However, while emphasising the social and political aspects of environmental change, the study recognises the dangers of over-emphasizing political factors and so neglecting biophysical and economic ones (Vayda and Walters 1999).

The causes of environmental degradation in Nepal, particularly D&D, have long been contested (Blaikie and Brookfield 1987) and the debate continues to this day. Two parallel powerful discourses have been maintained over time and there is no widely accepted evidence to finalize this debate. The dominant discourse is that the ordinary men and women that live in and around forestlands are the main agents of D&D. This discourse emphasises the over-harvesting of forest products, grazing, unsustainable use and encroachment as the major causes of D&D. The alternative discourse holds that D&D can be primarily attributed to the corrupt behaviour of politicians, government officials and local elites – these all establish illicit relations with timber smugglers and

8 Political ecology is the study of the relationships between political, economic and social factors with environmental issues and changes (source: Wikipedia).

9 Policy process is meant to refer to the framing agenda, and to deciding a particular course of action and its implementation (Keeley 2001:5). As indicated in the literature, a policy process is inherently a political process involving actors, institutions and discourses (Blaikie and Sadeque 2000:19; Long 2001:30). In other words "policy is the stuff of politics and people, knowledge and power" (Keeley and Scoones 2000:116). It involves bargaining, transactions and negotiation between different interest groups (Keeley 2001:5). It can be argued that a post-empiricist approach to policy focusing on the actors and their interactions rather than just on the objective facts may provide a more relevant understanding to help address the problem of D&D (Fischer 2003).

land mafia in order to maximise unseen rents. This study holds that neither discourse provides a complete picture of the dynamics of D&D. Both discourses project simplistic causal relations and fail to adequately analyse the complex interactions between diverse actors and nuances that are at play around D&D.

3.2 APPROACH TO CATEGORIZING THE DRIVERS OF DEFORESTATION AND FOREST DEGRADATION

The proximate drivers of D&D are the visible and immediate human actions on land use that directly cause the changes to the forest (Turner et al. 1990). Following Geist and Lambin (2001), 'proximate' refers to the land-based human activities that directly result in loss of forest area or its quality. Proximate causes are the most visible and most immediate, and any analysis on land-use change including D&D must start with their identification and analysis, before gradually moving on to the less obvious, deeper underlying causes.

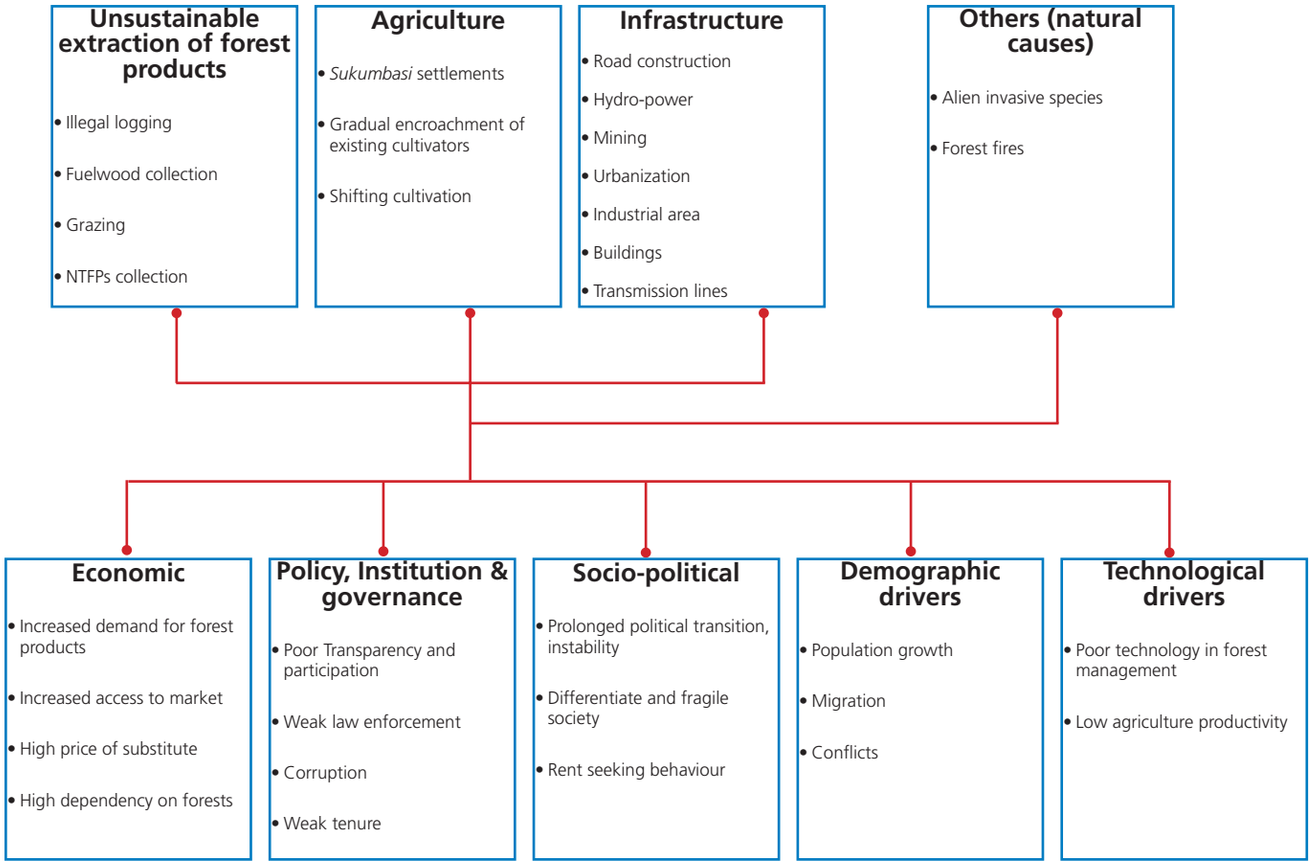
These underlying causes may be social, economic, cultural or other forces that lead to the proximate drivers. 'Underlying causes' refers to the fundamental socio-economic and institutional forces that underpin the more obvious causes of D&D. These constitute initial conditions in the human-environmental relations that are systemic in nature and may operate at different levels, from local to global (Kaimowitz and Angelsen 1998: 95).

In the context of REDD+, it is important to initially consider all proximate drivers and their underlying causes in order to develop a holistic picture of D&D. Moreover, this knowledge must be completed by assessing the analytical links between and amongst the proximate drivers and underlying causes.

In order to simplify this discussion and explain these complex phenomena, this study adopts the analytical framework developed by Geist and Lambin (2001). It identifies three aggregate proximate causes of D&D (biomass extraction, agricultural expansion and expansion of infrastructure)[10] and five broad categories of underlying causes (economic, policy/institutional, politico-cultural, technological and demographic), illustrated in Figure 1.

10 It also defines a fourth category of proximate driver, termed as 'others' in this report, and this is typically regarded as the 'natural causes' of D&D. This is used mainly to refer to phenomena such as fire and invasive alien species. Although natural, even these drivers are not free from social and institutional influence.

Figure 1[1]: Proximate and underlying causes of D&D in Nepal



Based on the four general proximate causes illustrated in Figure 1, Nepal's REDD Readiness Preparation Proposal (R-PP) specified nine proximate drivers of D&D. These are: high dependency on forests and forest products; illegal harvest of forest products; unsustainable harvesting practices; forest fire; encroachment; overgrazing; infrastructure development; resettlement; and expansion of invasive species.

These nine proximate drivers are the starting point in this study. Using five key criteria, 50 people from different forest sector stakeholder groups were asked to prioritise these proximate drivers, and to include any additional driver based on their judgement. The stakeholders were further asked to rank the proximate drivers in terms of importance, from 1 to 5, based on the five criteria, and to do this separately for the Mountain, Hill and Terai regions of Nepal.

This lengthy, consultative process led to the determination of the *top four* proximate causes of D&D in Nepal: illegal logging, encroachment, road construction and fuelwood consumption.

A similar process was applied to identifying the priority underlying causes of D&D across Nepal. This led to the selection of eleven priority underlying causes. The four priority proximate drivers and the eleven priority underlying causes are presented in Table 1.

1 **Source:** Adapted from Geist and Lambin 2001.

Table 1: Illustrating the links between the drivers assessed in this study and global categories of drivers

Proximate Drivers		
Categories (from Geist and Lambin)	**Examples in Nepal**	**Specific drivers selected for detailed analysis in this study**
Biomass extraction/ Unsustainable extraction of forest products	■ Illegal logging ■ Fuelwood collection ■ Grazing ■ NTFPs collection	■ Illegal logging ■ Fuelwood consumption
Agricultural expansion/ Agriculture	■ Sukumbasi settlements ■ Gradual encroachment of existing cultivators ■ Shifting cultivation	■ Encroachment
Expansion of infrastructure/ infrastructure	■ Road construction ■ Hydro-power ■ Mining ■ Urbanisation ■ Industrial area ■ Buildings ■ Transmission lines	■ Roads construction
Others/natural causes	■ Alien invasive species ■ Fires	Not applicable
Underlying Causes		
Categories from Geist and Lam	**Examples in Nepal**	**Specific causes selected for detailed analysis in this study**
Economic	■ Increased demand for forest products ■ Increased access to market ■ High price of substitute ■ Poverty and high dependency on forests	■ Increased demand for forestland and products ■ Poverty and high dependency on forests
Policy, institution &governance	■ Poor transparency and participation ■ Weak law enforcement ■ Corruption ■ Weak tenure	■ Lack of a deliberative and inclusive forest policy process ■ Poor transparency and corruption ■ Weak law enforcement ■ Weak land tenure

Socio-political	■ Prolonged political transition, instability ■ Differentiated and fragile society ■ Rent seeking behaviour	■ Prolonged political transition and instability ■ Social differentiation and inequality
Demographic drivers	■ Population growth ■ Migration ■ Conflicts	■ Population growth ■ Migration, pressure on resources and related conflicts
Technological drivers	■ Poor technology in forest management ■ Low agriculture productivity	■ Limited access to improved technology

3.3 Definition of policy and measures

Beyond identifying and understanding the drivers of D&D, this study also conducted an initial assessment of the policy and measures adopted in recent years to mitigate drivers. This assessment looks at the assumptions, intent, content, implementation, impact and monitoring of the policies and measures.

Policies aimed at curbing D&D can primarily be categorised into two major groups: (i) those targeting proximate drivers such as ensuring sustainable harvesting through scientific forest management principles and compliance with rules and (ii) those aimed at addressing underlying causes by promoting good governance, reducing corruption, and changing incentive structure.

The study also explores the gap between the identified drivers on one hand and the priorities of policies and measures on the other. The policies and measures are assessed against the major identified drivers, in order to obtain better insights as to whether the current efforts adequately appreciate and understand the gravity and complexity of the drivers. One of the explicit interests is to determine whether REDD+ incentives would give added value to the existing policies and measures towards halting D&D.

One of the explicit goal of the study is to determine whether REDD+ incentives would give added value to the existing policies and measures towards halting deforestation and forest degradation

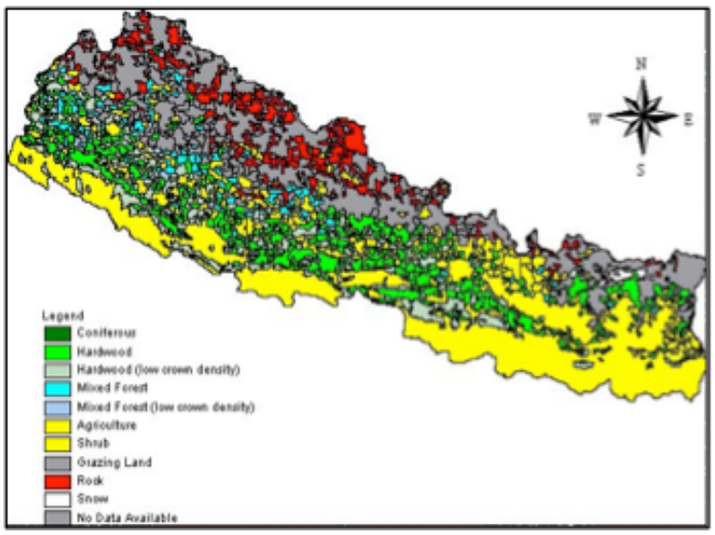
4. OVERVIEW OF LAND-USE STATUS AND CHANGE IN NEPAL

This chapter provides a general picture of land use practices in Nepal related to forest cover and change. It introduces the status of land use and it provides information on the key trends. The major form of land-use change appears to be from forests to shrubs and then ultimately to agricultural land or settlement areas.

Nepal has high physiographic, ecological and biological diversity with over 118 ecosystem types and 35 forests types with associated flora and fauna (GoN 2002:3). It is divided into three physiographic regions: High Mountains (19%), Middle Hills (64%) and Terai (17%). Currently, Nepal's total forest area is 39.6% (this includes both forests, 29.0% and shrub land, 10.6%) (DFRS/FRISP 1999). According to DFRS/FRISP (1999), other land uses include: agricultural land (21%), non-cultivated land (7%), grassland (12%) and others (20%). This latter includes the Himalayas, barren rocks, rivers and roads (CBS 2008). Figure 2[11] provides a map of forest types and other land-uses in Nepal.

Nepal has high physiographic, ecological and biological diversity with over 118 ecosystem types and 35 forests types with associated flora and fauna

Figure 2: Map of forest types in Nepal



A series of inventories undertaken at different periods (see Table 2) reveals that forest cover shrank continuously over the last four decades (Acharya et al. 2012). As per the National Forest Inventory, annual deforestation rate was 1.7% during the period 1978-1994 (DFRS/FRISP 1999). Similarly, the Food and Agriculture Organization (FAO) estimated a 1.63% deforestation rate for the period 1990-2005 (FAO 2005:10). A recent study of 20 Terai districts revealed that forest cover had decreased at an annual rate of 0.06% between 1990/91 to 2000/2001 (DoF 2005).

11 **Source:** Department of Plant Resources, Tree Improvement and Silviculture Component.

Table 2: Forest and shrub land in Nepal[12]

Report produced by:	Year	Forest		Shrubland		Total	
		000ha	%	000ha	%	000ha	%
Forest Survey and Research Office (FSRO)	1964	6402	45.5	-	-	6402	45.5
Land Resource Mapping Project (LRMP)	1978/79	5616	38.1	689	4.7	6285	42.8
Master Plan for the Forestry Sector (MPFS)	1985/86	5424	37.4	706	4.8	6210	42.2
National Forest Inventory (Department of Forest Research and Survey, DFRS)	1999	4268	29	1560	10.6	5828	39.6

According to Table 2, the area of forestland gradually decreased from 45.5% in 1964 to 42.8% in 1978, 42.2% in 1986 and finally to 39.6% in 199913. Further, a review of the figures in the detailed databases shows that during 1978-1994 the annual rate of forest degradation was higher (5.8%) than deforestation (2.6%). Moreover, the rate at which forest area decreased corresponds with increases in shrub land. This is particularly the case during the period 1986-1999 - while forest area decreased from 37.4 % to 29% (8.4%), the area under shrub increased from 4.8% to 10.6% (5.8%). Though there might be some methodological errors, it seems likely that a main trend is the conversion of forestlands to shrub lands.

In contrast to the national trends, some studies suggest that forest cover in the Hills Region increased, particularly after the expansion of community forestry (CF) (Branney and Yadav 1998; Gautam et al. 2003; Carter et al. 2011). Unfortunately, the available data is patchy, inadequate, inconsistent and non-comparable (Acharya et al. 2012).

12 **Sources:** FSRO 1967; LRMP 1986; HMG/N 1989; DFRS/FRISP 1999

13 Although measurements have been made since, there are the latest official figures.

5. DRIVERS OF DEFORESTATION AND FOREST DEGRADATION

Forests in Nepal are an integral part of the national economy and of the livelihoods of rural farmers, especially the poor and marginalised communities. They provide a range of products and services that play a complementary role, contributing to the local agrarian economy through integrated management of the 'forest-livestock-farm'. Moreover, forests are even more important for millions of poor people who collect diverse forest products or take refuge in the forestlands to draw their daily living. In addition, with the changing structure of the rural economy and a growing market interface, forest products and ecosystem services provide an opportunity for rural people to benefit from the emerging market.

However, many years of D&D have posed a serious challenge, limiting local livelihood opportunities and threatening environmental security (GoN 2010). Meanwhile, the factors driving D&D have often generated a hot debate. Since the popularisation of the Theory of Himalayan Degradation[14] in the 1970s, the official view typically emphasised that the traditional farming practices of poor farmers was the primary cause of D&D. Contrary to this dominant narrative, in recent years an alternative view, in which rural famers are seen as the stewards of local forests, has gained momentum. As a result, stakeholders' perspectives and opinions on the underlying causes of D&D are divided. There is no broadly accepted knowledge and explanation of the dynamics of D&D, and the divide continues to this day.

The factors driving D&D have often generated a debate : an official view emphasizes the role of traditional farming practices, and an alternative depicts rural farmers instead as stewards of forests

Typically, these diverse and, at times, conflicting views influence the processes to identifying the optimal policies and strategies to address D&D. In consideration of this challenge, and in order to circumvent this debate to some extent, this study adopts the analytical framework of proximate and underlying causes to understand D&D. This effectively connects the immediate and direct drivers with the relatively indirect and less visible socio-political and economic underlying factors.

While acknowledging the standard distinction regarding 'deforestation' on one hand and 'forest degradation' on the other, this study deals with the two together, due to the unique features of Nepal. First, forest degradation, rather than deforestation, is the primary concern in Nepal, though small scale illegal logging has been reported in some places in Terai. Second, unlike in many forested countries, deforestation in Nepal is not driven by any single major economic force such as export, industry or infrastructure. Instead, it is a highly decentralised and dispersed phenomenon across the country, with diverse proximate factors. Out of the many proximate drivers that were identified, only two appear to be directly resulting in deforestation; the rest of the proximate drivers often induce and expand forest degradation, which in the majority of cases then ultimately results in deforestation. In other words, with few exceptions, most of the proximate drivers and their underlying causes induce both deforestation and forest degradation, and therefore it is essential to analyse these two processes together. Moreover, in order to design appropriate policies and measures, the distinction between deforestation and degradation is not essential. Therefore, for the purpose of

14 A dominant environmental narrative, that attributed the degradtion of hill environment to population growth and premitive agricultural practice of poor farmers in Nepal (Eckholm 1976; Karan and Shigeru 1985; Myers 1986; Sterling 1976). The grand composite narrative developed by these various researchers was later called 'The Theory of Himalayan Degradation' (Ives and Messerli 1989)

this study, deforestation and forest degradation are dealt with together.

5.1 PROXIMATE DRIVERS

The four priority proximate drivers of D&D in Nepal, namely illegal logging, encroachment, road construction and fuelwood consumption, are presented in Table 1 and described in more details below.

5.1.1 Illegal logging

Illegal logging was identified as the most important driver of D&D and has consistently drawn the attention of the state forestry authorities, CSOs and researchers. It has been a persistent issue for over six decades. Illegal logging exists in different forms, including: timber theft by smugglers and their employees; unauthorised logging to construct public buildings (e.g. schools, health posts); unauthorised felling from road or hydro dams construction sites; and harvesting in excess of licensed amount by contractors and community forest user groups (CFUGs); etc.

Illegal logging exists in different forms, including for example timber theft, harvesting in excess of licenses, and unauthorized felling to construct roads, public buildings or hydro dams

Although a constant driver, Illegal logging has been aggravated by political instability and social unrest. For example, rampant unauthorised felling was reported in the media in the aftermath of the 2006 political movement – it has been estimated that over one hundred thousand cubic feet of timber was illegally harvested in 2009 alone in the Terai (Khadka 2010). In view of these widespread concerns, policy interventions and official initiatives have been taken to curb D&D, such as banning the harvesting of live trees and the export of timber, and the adoption of stringent rules and enforcing institutions.

Because of the illegality of the action, the data on the number of trees felled or the volume of timber extracted is poor. Illegal tree felling is generally carried out either by local residents or by illegally organised groups, beyond the eyes of forest authorities or community forest user groups (CFUGs), and usually at night. Moreover, the harvested timber is transported and sold in informal markets and so does not appear in any official accounting figures. Finally, illegally felled trees are typically harvested without considering the sustainability of the forest or the forest operational plans, therefore having a high impact on D&D.

5.1.2 Fuelwood consumption

Approximately 84% households in Nepal use fuelwood for cooking and other purposes (CBS 2011a). Per capita annual consumption of fuelwood is estimated to be 456kg in Terai and 480kg in the hills/mountain (Kanel et al. 2012). Currently, a total of 12.5 million tonnes of fuelwood is supplied from different land uses annually. Forestland contributes over 80% of total fuelwood supply, followed by cultivated land (9.3%), non-cultivated inclusion (5.5%)[15] , shrub land (4.5%) and grassland (0.4%) (WECS 2010:39).

Currently, demand outstrips supply. According to Kanel et al. (2012), the current shortages of fuelwood will be

15 Non-Cultivated Inclusions (NCI) are government or privately owned lands consisting of degraded forests, permanent fallow, abandoned terraces and homesteads.

reversed by 2020, and, based on harvesting potential, supply is predicted to exceed demand and to continue to grow until 2030. However, there will continue to be a shortage in the Terai region due to the high current demand and population growth. In general, an improved household economic situation in rural areas leads to an increased pressure on forests, as there are more livestock (so more demand for grazing) and there is more demand for fuelwood. However, several factors associated with socio-economic development also drive a decrease in fuelwood consumption per household: falling household size; increased educational level; increases in off-farm employment and improved road connectivity (Baland et al. 2012).

Apart from the sheer volume of fuelwood collected, the collection methods affects the levels of D&D. While fuelwood is generally collected from dead and fallen trees, or from thinning and pruning (mainly practiced in community forestry (CF)), it is also taken from the remnants of logged trees and the branches of standing trees. Finally, although fuelwood is primarily used for domestic purpose, it is increasingly being consumed in the industrial sector, mainly by brick factories, hotels and in the manufacturing of alcohol.

5.1.3 Encroachment

Planned resettlement and encroachment of forestland for agricultural purpose is also one of the biggest drivers of D&D in Terai and Churia. While these two terms have different political meanings, their effects on Nepal's D&D are similar. State sponsored resettlement programmes resulted in the clearing of Terai forests on a massive scale in the 1960s and this continues in different forms today. Notably, programmes to rehabilitate the landless (widely known as Sukumbasi) and refugees from disasters and recently freed bonded-labourers have led to the loss of large tracts of forestlands. For example, a total of 22,541 freed bonded-labourers were rehabilitated by granting them forestlands to settle and cultivate in the fiscal year 2009/10 and 2010/2011 (MoF 2011: 124). The Government has formed different Commissions to distribute land to landless people over the last decades. In the past 40 years, 21 such Commissions were formed, which have together distributed over 140 thousand hectares (ha) of forestland to landless people (see more information in Annex 3).

The response to encroachment is faced with illicit support of political parties to land seekers, lack of alternative livelihoods, low capacity of forest authorities and high costs of law enforcement

In addition to these official periodic distributions of land, the latest figures show that another 100,000 ha of forestlands have also been encroachedt[16] , indicating that encroachment is also continuing. Today, over 450,000 households are landless in Nepal, and they do not have any alternative but to take refuge in and live off forestlands (HLSLRC 2010). While forest authorities evacuate the squatters from certain places, this response is overall too weak. Indeed, it faces the challenges of strong and illicit support of political parties to land seekers, the lack of alternative livelihoods, weak capacity of forest authorities and high costs of law enforcement.[17]

16 Department of Forest's latests figures show that over 97,000 ha are encroached. Previous reports had recorded as 82,795 in 2002 (CNRM 2010) and 93,132ha in 2010 (CNRM 2010).

17 In an unpublished document, the Department of Forest has estimated over NRs 6 billion just to evacuate the encroached land and its rehabilitation over next five years. However, as the government cannot release this amount this plan may never get materialised.

5.1.4 Road construction

Development of the road network has been a priority development objective in recent years, particularly at local levels. Annually, about US$ 40 million is spent on road construction (UNDP 2011). As a result, the road network doubled between 1998 and 2006 (see Table 3) and this growth has continued in recent years.

Table 3[18]: Increasing road length in Nepal (1998-2006)

Year	1998	2000	2002	2004	2006	2010
Length (km)	4740	4794	4860.96	4992.73	9399.38	10835

Road construction, particularly along forest tracts in the sloped hills and mountains, has been one of the key drivers of D&D through four pathways. First, road construction generally takes place in environmentally fragile lands such as near river banks or along steep and fragile hills. This causes massive earthworks, landslides and soil erosions – all forms of degradation. Second, roads often go through forestland due to the resistance of private landowners to provide alternative land for roads. Development agencies prefer to construct roads through forestlands as they get the land free and can also avoid diverse types of local disputes. Third, most of the roads are constructed with minimum consideration of environmental concerns during construction and management. Finally, in some cases, roads are deliberately constructed through the forestland in order to facilitate the extraction of timber (CNRM 2010).

The construction of roads can permanently change the land use type and can results in the local biophysical environment becoming prone to erosion and landslides. One study (Deoja, 1994) estimates that 3,000–9,000m3 of soil loss occurs per km of road during construction, and 400-700 m3 annually for road operations. Erosion and landslides occur in the edges of road due to: (i) the use of heavy equipment such as bulldozers and excavators; (ii) the lack of drainage arrangements; (iii) the steep gradients; and (iv) the lack of protection structures and maintenance arrangements (UNDP 2011). However, another study by Phuyal et al (2008) estimated that up to 3345m3 soil can be retained by filling the side slope if the 'green road approach' is adopted – and so on average only 465m3 of soil per km will be lost during road construction phase.

5.1.5 Regional variations of drivers

The above discussion covered only four major drivers and assessed their national level significance in relation to REDD+. However, it is noted that Nepal, despite its small size, contains a great biophysical, ecological and social diversity. Consequently, the three different ecological zones experience different drivers of D&D (Table 4), or experience the same driver to different extents and effects. This has implications on the design of policies and measures for reducing D&D.

18 **Source:** DoR 2013; GoN 2012

Table 4: Regional specificities in drivers of D&D

Ecological region	Key features of the region in relation to forest management	Major proximate drivers
Mountain	Rough mountain terrain, poor accessibility, few patches of forests, mostly rangelands; Sparse population, animal husbandry, agriculture and tourism focused activities; cold climate and therefore need for more heating	Fuelwood consumption, Forest fire Grazing, Hydropower
Hills	Gentle to sloped hills, poor accessibility, dispersed forests and settlements, rural-urban migration, burgeoning towns along the road heads, remittance, agriculture-livestock-forest the key economic activity, CF as the main forest management regime	Fuelwood consumption, Rural roads Forest fire, Mining
Terai	Plain fertile soil with valuable forest and biodiversity; dense settlement, complex demographic and socio-institutional set up, highly accessible and good market for forest products, diversity in forest management regimes, intense conflicts.	Illegal logging, Encroachment, Fuelwood, Roads, Forest fire, Mining, Grazing

However, while recognising the regional variations in the proximate drivers, this study focuses on the underlying causes – mostly taking a national level approach. There are two reasons for this. First, previous several studies have focussed on particular drivers or geographic regions, or on specific forest management regimes or perspectives (e.g. Baral et al. 2012; Gautam et al. 2003; Sherpa et al. 2010). These studies have thrown sufficient light on those specific issues. Second, this study is focused on the political economy of D&D, and so looks more deeply into general issues such as policy and tenure, governance and corruption. It therefore draws experience from different geographic and ecological regions to establish the links between the key policies, governance and institutional elements that have negative impacts on the proximate drivers.

While recognizing the regional variations in proximate drivers, this study focuses on underlying causes that are driven from the national policy level

5.2 UNDERLYING CAUSES OF DEFORESTATION AND FOREST DEGRADATION

There are a number of economic and socio-political underlying causes that induce and sustain the proximate drivers. These are less visible than the proximate drivers and operate indirectly. In most of cases, a single underlying cause can contribute to several proximate drivers. It is critical to understand these underlying causes in order to design a strategy to reduce D&D.

The eleven priority underlying causes of D&D in Nepal are presented in Table 1, and discussed in the coming sections.

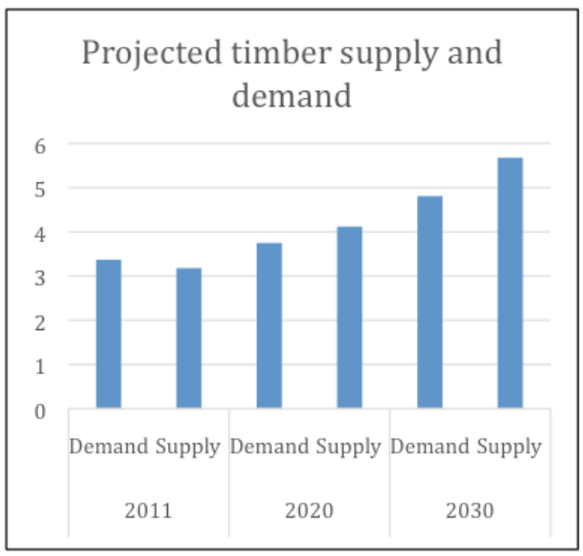
5.2.1 Increased demand for forest land and products

There has been a substantial increase in the demand for forest land and forest products in recent years. According to a recent study, demand for timber currently outstrips supply (see Table 5 and Figure 3). As illustrated by Figure 3, it is forecast that the gap between demand and supply at the national level will shrink and even be reversed in the future (before 2020). However, in the Terai (Table 5), the shortage of supply for timber will continue. It is noted that in Table 5/Figure 3, 'supply' is based on harvesting potential – and this is meaningless unless the timber is actually made available in the market.

Table 5[19]: Projections for timber demand and supply (million m3)

Year	2011		2020		2030	
Ecological region	Demand	Supply	Demand	Supply	Demand	Supply
Terai	1.46	1.15	1.67	1.53	2.23	2.13
Hills	1.72	1.81	1.87	2.32	2.33	3.2
Mountain	0.19	0.22	0.21	0.27	0.25	0.35
Total	3.37	3.18	3.75	4.12	4.81	5.68

Figure 3: Forecasted national projections for timber supply and demand



The increased income among certain sections of the society also increases demand for modern housing and furniture, particularly in urban centres and along the roadsides. The projections in Table 5 for demand are based mainly on forecast demand for new houses and building construction in the coming years. However, Table 5 does not consider the influence of the price of timber on demand and supply, notably as compared to its main alternative, aluminium.

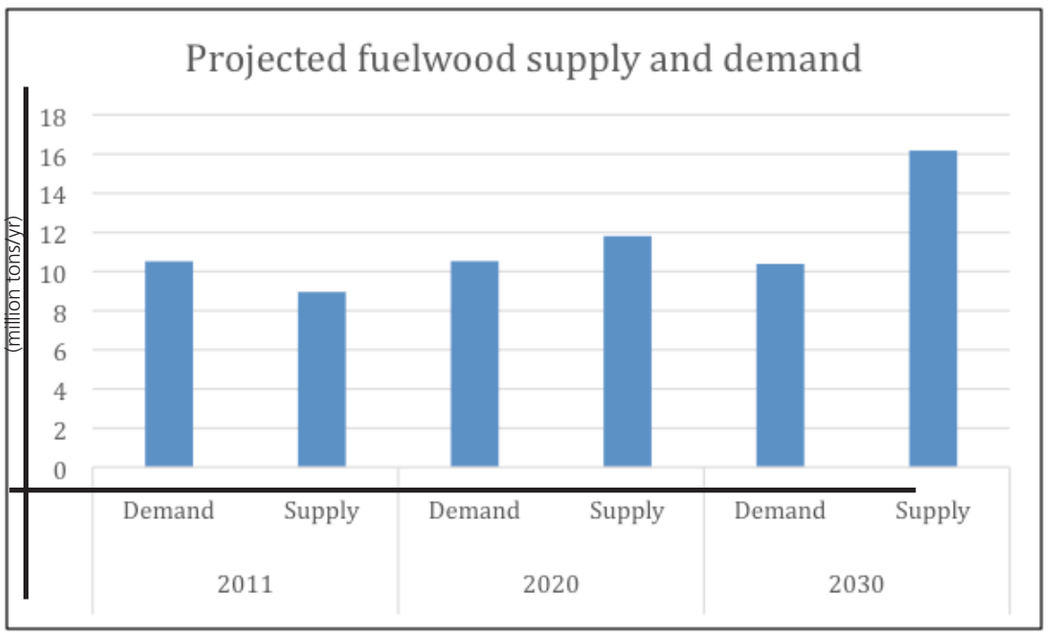
Similarly, demand for fuelwood is increasing (see Table 6 and Figure 4). Again, this is highest in the Terai and will continue into the future. Though the projection in Table 6/Figure 4 shows an oversupply of fuelwood in the future, there will continue to be a shortage in the Terai (Table 6). Therefore, the demand for fuelwood could remain a constant driver of D&D, particularly in the Terai.

19 **Source:** Kanel et al. 2012

Table 6: Projected fuelwood demand (million tons/yr)

Year	2011		2020		2030	
Ecological region	Demand	Supply	Demand	Supply	Demand	Supply
Terai	5.3	2.58	5.48	3.72	5.62	5.07
Hills	4.4	5.44	4.27	6.96	4.05	9.6
Mountain	0.82	0.94	0.78	1.13	0.72	1.51
Total	10.52	8.96	10.53	11.81	10.39	16.18

Figure 4: Forecasted national projections for fuelwood supply and demand



Increased purchasing power, improving living standards and changing lifestyles have led to increased demand for timber. The Government of Nepal, particularly since the 1990s, has adopted liberalised economic policies recognising the market as an engine of growth and structural transformation. The expanding road network has helped increase rural people's accessibility to markets. Whereas in 2003 only 27% of the population was within 30 minutes of a road, this percentage climbed to 66% in 2010 (CBS 2011b). The growing market for agriculture and forestry products has offered households an opportunity to specialise in the production of certain commodities, based on their comparative advantage, and thereby enjoy welfare gains from trade. Remittance in particular has substantially increased purchasing power and increased preference for improved housing, thereby inducing a timber demand.

In contrast, fuelwood remains almost entirely a non-market commodity[20]. In essence, for the large proportion of the rural population that resides close to the forest, due to low opportunity costs of labour, it is a free good. However, on a limited scale, it is collected from government forests (often illegally) and sold in small towns, usually at road heads. This bought/sold fuelwood is used mainly for commercial purpose in brick factories, hotels, etc. At the same time, the price of alternative sources of fuel has grown rapidly. A review by the Nepal Oil

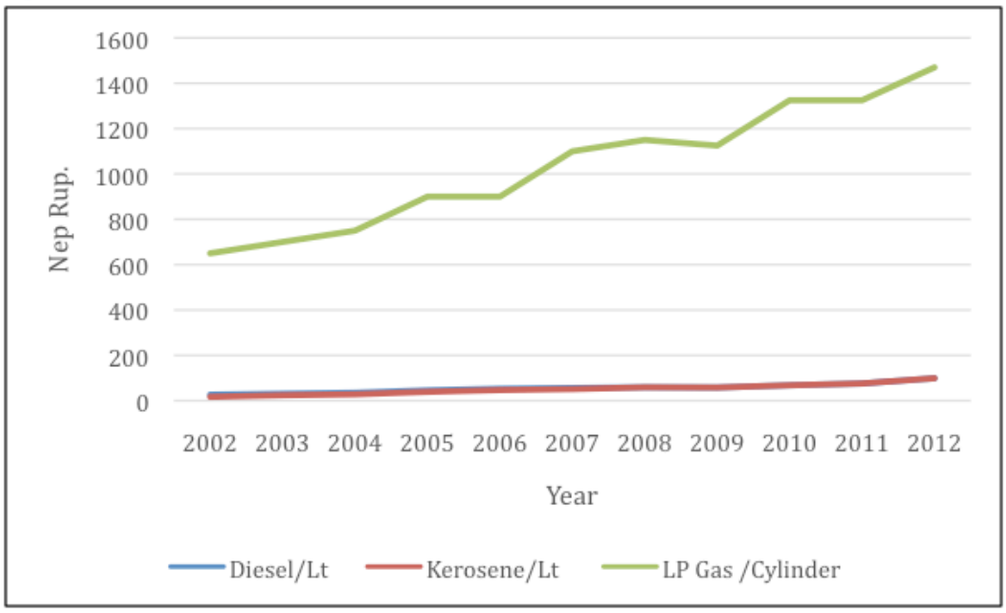
20 From an economic perspective, this may not be accurate. It is more accurate to say that it is not properly priced since the actual costs of the resource are not factored into the price of the final product. So it gives the wrong price signal = it appears cheaper than its alternatives.

Corporation of price trends in Nepal shows that the price of diesel increased fourfold during 2002-2012, that of kerosene fivefold and Liquefied Petroleum (LP) gas twofold (see Table 7/Figure 5).

Table 7[21]: Price of alternative fuel sources (in Nepalese Rupees)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Diesel/Lt	26.5	31	35	46	53	56	59	58	68	76	99
Kerosene/ Lt	17	24	28	39	47	51	59	58	68	76	99
LP Gas / Cylinder	650	700	750	900	900	1100	1150	1125	1325	1325	1470

Figure 5: Evolution of prices of alternative fuel sources



5.2.2 High dependency on forests

Nepal is among the least developed countries, with per capita Gross Domestic Product (GDP) of US$ 644 and Human Development Index 0.463 (157th among 187 countries) (UNDP 2013). Almost 50% of children under five are malnourished (MoHP et al. 2007) and a significant proportion of the population has little or no access to primary health care or safe drinking water, and has below the recommended minimum calorie intake. While the national figure for the population living below the poverty line is 25%, it is 15% in urban areas and 27% in rural areas (CBS 2012). Rural poverty is higher, and 80% of the poor live in rural areas - where people mostly rely on subsistence agriculture.

Land is the primary source of livelihoods and over 76% of households are engaged in agricultural activities (CBS 2012). Access to productive land is therefore a key factor affecting the economic status of these households. However, access to agricultural land has been gradually decreasing. As shown in Table 8, there is trend towards smaller landholdings for households. For example, whereas the numbers of households with less than 0.1ha, 0.5ha and 1ha of land have all increased during 1996 to 2011, the number of farmers with more than 1ha has decreased during the same period (Table 8). This describes an important phenomenon: the increasing number

21 **Source:** NOC 2013

of households lying in the category of small landholders. In turn, decreasing landholding sizes combined with a lack of employment opportunities, has resulted in income poverty. In such a situation, those close to the forests tend to rely on public (forest) land for the collection (including for sale) of wild fruits and vegetables, roots, leaves, herbs and fuelwood among others (Poudel 2009). In addition, some of those illegally collecting timber from government managed forests (and therefore risking being punished) are informally employed by timber smugglers.

Table 8[22]: Percentage of households under different average size of holding

Land size (ha)	Year		
	1995/1996	2003/04	2011/12
<0.1	6.44	7.3	9.1
<0.5	39.9	44.8	52.7
<1	66.14	72.9	80.1
>1	33.86	27.1	19.9

5.2.3 Lack of a deliberative and inclusive forest policy process

Historically, the character of the Nepalese state has remained coercive and extractive (Regmi 1978; Gelner 2002). Historical analysis of forest governance in Nepal shows that: (i) ordinary citizens were excluded from mainstream political decision making; (ii) centralized bureaucracy designed and issued policies; and (iii) emerging actors, particularly the diverse constituencies of citizens, were not able to effectively participate and contribute to the policy process (Malla 2001; Ojha et al. 2007). Consequently, most policies were not fully owned by stakeholders – including sometimes even those stakeholders within the government system. In many cases, other sectoral line agencies and local governments were not fully convinced of policies, which created confusion when implementing forest policies and laws (Kanel 2005). In fact, the forestry arena has been crippled with conflicts at every level of forest governance (state-community; community–community; and community-household levels) (Satyal and Humphreys 2012).

In recent years, policy development processes have recognised and adopted multi-stakeholder approaches, primarily at the national level. Now, multi-stakeholder bodies include representatives of government officials, private sector, CSOs, NGOs and donors. However, these multi-stakeholder bodies have largely been subjected to strategic manipulation by powerful actors, particularly the government, in different ways. First, the government can include or exclude a particular actor by nominating (or not nominating) selected actors. Second, the government chooses the policy agenda for which such processes are to be used - and usually such participative processes are avoided in the more controversial policy areas. Third, the venue, timing and actual structure of the participation is such that many stakeholders have only a limited opportunity to adequately voice their concerns. Moreover, the policy processes have suffered from deliberate inequalities, representation issues and accountability crisis (Ojha 2013). This lack of a participatory and deliberative policy process has made agreement on certain collective policy visions and strategies very difficult. Indeed, almost every new policy decision is contested, leading to implementation risks. In some cases, the government has pulled back on decisions in the face of strong opposition from CSOs; and in others the implementation has been weakened.

22 **Source:** CBS 1996, 2004, 2012

5.2.4 Poor transparency and corruption

Overall country context as depicted by various rankings

Nepal ranks 116th out of 183 countries in Transparency International's Corruption Perception Index (CPI, no. 1 being the least corrupt) (TI 2013). Although such aggregated perception indices do not paint a full picture and need to be complemented by more evidence-based or proxy indicators, and although comparisons across years poses methodological challenges, it should be noted that Nepal's ranking improved markedly in 2013, with Transparency International listing Nepal as one of the "biggest Corruption Perceptions Index improvers this year".[23]

Yet Nepal's CPI score of 27 remains, an indication that there is a number of issues outstanding, and a more detailed 2012 Nepal Integrity Study revealed issues on key governance elements including corruption (TI 2012). For some of the indicators, the executive and law enforcement agencies scored 38.9 out of 100, while other public sector agencies scored only 34.7. Some of the identified forms of corruption in the TI report (2012) were: (i) encroachment of public property; (ii) unauthorised use of public fund and resources; (iii) nexus between politicians, smugglers and public servants to evade government revenue; and (iv) misinterpretation of rules and regulations to benefit those who give bribes; (v) misuse of political, diplomatic, and official privileges. TI (2012) further classified corrupt acts in Nepal as: (i) corruption involving large sums of money and usually high ranking officials and political leaders; (ii) corruption involving small amounts and lower ranking officials, and (iii) corruption at community levels.

Nepal also ranks low in most of the governance indicators used in the Worldwide Governance Indicators[24] (WGI). The WGI generates comparable data on six key components: voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law and control of corruption. Countries are classed into percentile ranks from 0 to 100, with higher values corresponding to better outcomes. Of the six components, Nepal ranks below the 26 percentile for four indicators, ranks 31 in voice and accountability, but ranks only 6.2 in political stability and absence of violence. Importantly, these figures worsened during the period of 2002-2011 (see Annex 4 for more details). Another similar index developed by Global Integrity, a Washington based independent organization, ranked Nepal 67 out of 100 (Global Integrity 2009).

In a 2003 Household Survey on Corruption[25] in Nepal, respondents indicated land administration was the most corrupt sector (followed by the custom departments, the police and the judiciary). This sector is highly relevant to forestry and to REDD+ (see section 5.2.6). A 2011 study by NORAD[26] also found out that over 55% of the corruption cases filed by Commission for the Investigation of Abuse of Authority (CIAA) at the Special Court were related to fake land certificates and certificates illegally issued in exchange for rewards (among others). The next highest number of cases relates to financial crimes such as bank fraud and embezzlement (15%). Illegal acquisition of properties (unexplained wealth) constitutes around 6% of the cases.

While, again, each ranking methodology has its own advantages and flaws, taken together the above figures

23 http://cpi.transparency.org/cpi2013/in_detail/

24 The worldwide governance indicators (WGI) are composite governance indicators based on 30 underlying data sources, which are rescaled and combined to create the six aggregate indicators. These data are gathered from survey institutes, think tanks, NGOs, international organizations, and private firms.

25 TI Nepal (2003) Household Survey on Corruption.

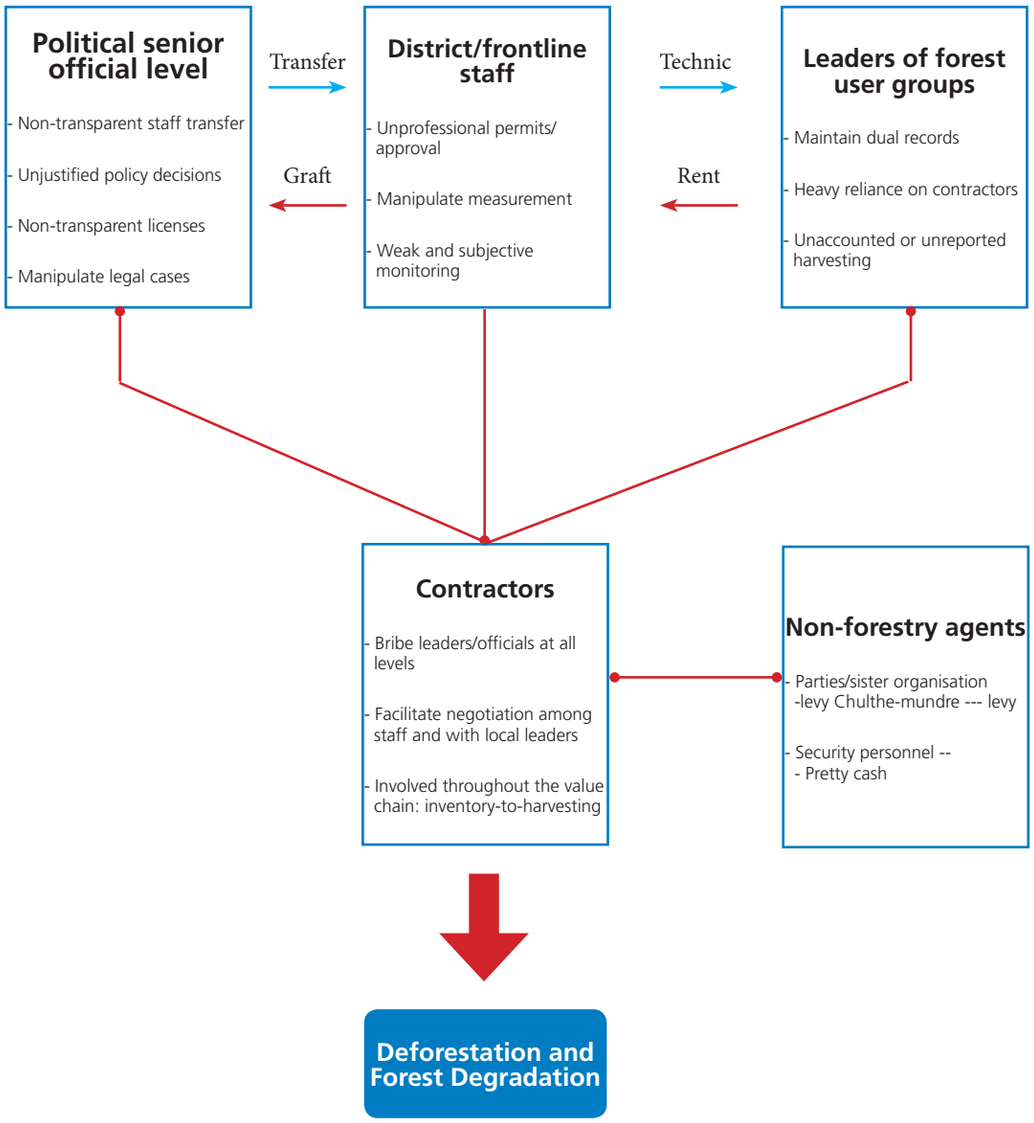
26 Norad (2011) Corruption and Anti-Corruption in Nepal: Lessons Learned and Possible Future Initiatives.

paint an overall picture of remaining weaknesses in integrity, transparency and accountability in Nepal.

The corruption and D&D link

The above discussion reveals that corruption remains a concern. Most relevant for REDD+, several studies in the recent past have described the nature of corruption in the forestry sector (e.g. CNRM 2010; Paudel et al. 2006; NVC 2012). According to these studies, there are two major forms of forest-sector corruption: (i) bribing political leaders and senior government officials to get their favour on a specific decision; (ii) bribing the same in a systematic and regular basis to get their favour in smoothing regular activities and weakening monitoring throughout the value chain of forest management (policy capture). The latter weakens regulation of processes to develop plans, to harvest and to transport forest products. As a result, diverse types of non-transparent and illegal financial transactions in the forest sector lead to D&D. Figure 3 outlines the key areas of misconduct that have been identified in recent studies and are most frequently observed (see also Annex 5), and are detailed in the following paragraphs.

Figure 6[27]: Common areas of misconduct leading to illegal logging



27 **Sources:** CNRM 2010, Paudel et al. 2006, NVC 2012

Political and senior official level. Frequently observed abuses at the political and senior official level in the forest sector include: (i) non-transparent staff transfer, so that certain people repeatedly get transferred to highly 'attractive positions'[28] and others do not, with no clear explanation; (ii) unjustified policy decisions that have implications on large financial transactions, e.g. frequent and unpredictable bans and relaxing of tree felling; (iii) non-transparent granting of licences; and (iv) selective and strategic decisions to investigate, or to not investigate, important cases of forest crime or illegal practices. Such actions directly support or indirectly facilitate the unsustainable use of forest resources.

District, forest officers and field staff levels. At this level, there are three main types of frequently observed misconducts. First are the non-transparent decisions. This occurs in the granting of permits and approvals for requests coming from local forestry groups and traders. This also includes specific permits to harvest, process and transport timber, mainly for Community Forests (CF)/Collaborative Forest Management (CFM). Moreover, the approval of operational plans, periodic reports, renewal processes, and other specific requests - are often decided in a discretionary manner rather than through predictable and formal processes. Second is the manipulation of measurements during the inventory, the calculation of annual allowable harvest, and calculation and verification during harvesting and transportation. As there are several grey areas in forestry science, intended and unintended gaps in such measurement create opportunities for over and unsustainable harvesting. Third is a weak and subjective monitoring of activities throughout the timber market value chain.

Local level At the very local level, particularly for CF and CFM, three types of misconducts are observed. First, many forest user groups either do not keep proper records or maintain dual records of the timber that is harvested, distributed and traded – this is primarily used to conceal the unsustainable harvest. Second, forest user groups rely heavily on contractors to prepare the required documents, to get approval of these documents and to harvest/transport the timber. This provides contractors with an opportunity to under report on the harvest, or to mix unaccounted harvest of timber into a legal package. This usually occurs through a tripartite understanding involving the District Forest Office staff to ensure a smooth process. Third is the unreported and unaccounted harvesting. This can be for various purposes including household use, supplying local infrastructure and illegal sale to compensate for unaccounted expenses of the groups (or individuals in the group).

In addition to the three major categories described above, several **non-forestry** actors also directly benefit from misconducts in forestry. These first include political parties and their sister organisations who impose donations on forestry officials, contractors and user groups (extortion). A second such group is the security personnel, especially the police who should assume specific roles in curbing forest crime and the illegal transport of forest products but rather benefits from it. A third is the emerging group called *Chulthe-Mundre*[29] who have good connections to the political leadership and enjoy a lavish lifestyle without formal sources of income, and therefore indulge in diverse illegal activities.

At the centre of all these actors lie the timber contractors who facilitate the channelling of rent through timber business. They forge special relations with individuals at every level, often by bribing political leaders, forest officials at different levels, forest user committee leaders and external actors such as *Chulthe-Mundre*. They facilitate negotiations among government staff and also with user group leaders. Most importantly, they are involved throughout the value chain: from CF handover and inventory to harvesting and transportation (the latter largely applying to government-managed forests).

28 Attractive positions are those government positions and areas which provide potential opportunity for illegal and unaccounted personal earning.

29 A local term especially used to denote gangsters.

Many of these misconducts can be defined as corruption. The net effect of all these misconducts by different actors at all level is unsustainable harvesting of forests, leading to D&D. Their cumulative effects are visible at the ground in different forms. These include: (i) felling of unmarked, straight and good quality trees instead of the marked ones, mostly in CF; (ii) felling from more accessible plots/areas instead of less accessible areas; (iii) constructing hard-surfaced roads based on the permission to construct a fire line and then felling of trees along the track (mostly in CF); and (iv) over felling of trees in the name of infrastructure (transmission lines, construction sites, etc).

Corrupt acts facilitating different drivers occur at the political and senior level, district level and local level. Yet while degradation is enabled by both negligence and manipulation, policy level corruption is more prevalent in deforestation than in forest degradation

The above discussion on corruption-associated misconducts and the resulting D&D focuses on organised activities of forest authorities and local forest user groups. However, a significant part of unsustainable harvesting takes place outside these organised actions. For example, timber theft/smuggling by individuals or by small groups of organised criminals occurs mainly in government-managed forests of the Terai, and in the high altitude regions bordering Tibet. Though there may not be a fully developed corruption network, these activities are made possible by weak law enforcement, which is partly the result of corruption (see section 5.2.5).

Finally, the heavy environmental toll of road construction is often linked with corruption, and low transparency. For example, non-deliberative planning, non-transparent tender processes and slow release of funds leads to delays in road construction projects, which then have to be completed in a last minute rush. Accordingly, this favours inadequate planning and the use of heavy machinery - both factors contributing to the high environmental impacts of road construction. Then, as there is a rush to complete the task, the use of heavy equipment is preferred. The use of heavy equipment on sloped hills is environmentally damaging and has a 30% lower return than the use of labour based technology (UNDP 2011). Second, the delayed fund release and the rush to complete the project in a short duration often undermine the due process of transparent and participatory implementation. The potential for corruption involving politicians and the resulting D&D is usually higher in those projects that are not properly planned, and may not even be part of regular local road plans or follow the proper planning process. Such quickly constructed roads usually avoid the rigorous environmental assessment and other consultative processes, do not comply with the safety standards, and therefore provide opportunities for corruption. In effect, powerful forces manipulate the planning, approval, design and construction processes, which leads to D&D as a side effect. To conclude, the lack of integrity in a number of forest-related decisions and practices facilitates several direct drivers of D&D.

5.2.5 Weak law enforcement

Weak law enforcement is one of the key challenges to addressing D&D. This is firstly due to capacity issues: the Department of Forest (DoF) and its local offices do not have adequate number of staff, transport equipment, access to information, and other technology. They do not have instruments nor numbers to monitor, detect and stop overharvesting, or otherwise unauthorised extraction of forest products, such as illegal logging, poaching and other criminal activities (NFA 2009). Second, structural issues, including low staff morale, short tenure, limited incentives (for example a lack of performance evaluation and rewards) to take risks in fighting criminals have also weakened law enforcement. Facing them are highly active and equipped criminals.

A third factor undermining law enforcement is corruption, since criminals are often connected to higher political and bureaucratic levels, and therefore aware of ways of avoiding any action against them. Even when caught, criminals are often able to use powerful political influence to get the charges against them weakened and even dropped. This has largely resulted in an impunity for many criminals and offenders. When proceedings go to court, a weak judiciary often softens the case against criminals, due to bribes and/or political influence. These issues compound one another, as they not only discourage forest officials against taking actions, but also fail to provide the criminals with any disincentive for continuing and expanding their illegal practices.

One of the most visible impacts of weak law enforcement is the unplanned settlement and encroachment with direct impacts on D&D in Terai. Political parties usually induce, support and capitalize on *Sukumbasi* (landless) movements. Recently, freed bonded-labourers and flood victims have joined together in the movement in search of land. When a new party leads the government, it declares that it will provide land to *Sukumbasis*. Officials at the Ministry of Land Reform conduct surveys and allocate land, political parties support this and NGOs provide humanitarian aid to the settlers - while the local administration serves merely as a spectator. In this situation, the District Forest Officers (DFO) are largely helpless. The practice has been ongoing for the last four decades. The problem has never been resolved and the number of *Sukumbasis* seeking land continues to increase (CNRM 2010:22).

5.2.6 Weak tenure (and the role of local governments)

According to the Interim Constitution of Nepal (GoN 2007), Forest Act 1993 and National Park and Wildlife Conservation Act 1973, the state owns the forestlands. For management purposes, the state forestland is divided into six different management regimes[30]. One of these is 'government-managed' forests, in which the government forestry agencies prepare, approve and implement the management plans, sell the products and the revenue goes to the central treasury. Another form of management is the 'community forests', in which all such rights are transferred to Community Forest User Groups (CFUG). The CFUG carry out all management activities in consultation with, and approval from, the DFO. Though there are several different bundles of rights for the different types of CBFM modalities, tenure reform in favour of participatory and community based management has significantly reduced D&D and enhanced forest conservation (Gautam et al. 2004; Gurung 2006; Baral 2012). However, despite these proven successes, the government continues to hold management responsibility of over two-thirds of forestlands.

As the central government has full control over the management and benefits of most forestlands, the local governments do not have a specific role to play. In fact, there are latent conflicts between the central and local governments over the authority and economic benefits from forests. Conflicting provisions of the Forest Act 1993 and Local Self Governance Act 1999 contribute to conflicts and contestations around the forests. The local governments (Village Development Committees - VDCs, Municipalities and District Development Committees - DDCs) are generally mandated with local development functions including roads, which often drive D&D. However, local governments have no forest protection role or responsibility; conservation and sustainable management of forests can be achieved if forest authority is devolved, mandating these local bodies to do so.

The tenure issues are not fully clear even in the case of CF and other similar regimes. There are many ongoing conflicts between the authorities and the community leadership, over the roles and authorities exercised by the

30 The national forest are managed under six mangement regimes: i) protected areas (23% of total national territory); ii) protected forests; iii) government managed forest; iv) community forests (25% forests); v) leasehold forests vi) religious forests. Government has approved managment plan for collaborative forests which are part of government managed forest.

government officials and local organisations. However, after 2006, several regional and ethnic identity centred movements erupted, demanding their greater inclusion and voice in state affairs and in designing the new Nepal. These include the *Madhesh* movement, *Tharuhat* movement, *Limbuwan* movement, *Far West* movement and *Janajati* movement. Though these movements were political in nature, access and control over the forest and natural resources was embedded and implicit in their demands. These movements have two implications. First, the increased claims of local people and increased preparedness to manage resources should be recognised and addressed by the policy and legal framework in the long run. Second, the increased illegal activities that benefit from loopholes and capacity gaps during the transitional situation must be immediately addressed by functional cooperation between the state and robust local institutions.

5.2.7 Prolonged political transition and instability

Since the 1950s, Nepal has experienced several popular protests and subsequent changes in political regimes.[31] Significant deforestation took place during most of these major political transitions.[32] Unfortunately, after a decade long violent conflict and popular People's Movement in 2006, Nepal continues to suffer from political transition, instability and uncertainty. Attempts to draft a new constitution through an elected constituent assembly have failed, and although fresh elections have been conducted, uncertainty on the timely drafting of the constitution still prevails. Moreover, the leading political parties are deeply divided on most of the fundamental governance issues, and so there is little prospect of resolving the current political impasse in the near future. Consequently, there is an increasing frustration and pessimism within the bureaucracy, professional groups, private sector, trade unions and general public. This provides an environment that favours illegal activities in forests, including illegal logging and encroachment. As an example of the interconnectedness of various indirect drivers, Global Integrity 2009 suggests that Nepal's continuous political instability may have side-lined the drive against corruption.[33]

Historically, in Nepal, a small ruling class monopolised state power by controlling political and/or government institutions (Bhattarai 2003). Connected people from certain social groups, whether they be politicians, bureaucrats, security personnel, businessmen or civic actors, have developed a nexus based on wealth status, caste, ethnicity or other identities. These interconnected nexuses influence the behaviour of the state and public institutions. Members of these connected groups benefit either through direct support from the nexus or through the associated weakening of law enforcement capacity. Meanwhile frequent changes in political leadership, followed by changes in the leadership of the Ministry of Forest, have seriously hampered the commitment, institutional memory and working incentives of the many policy makers in the forestry sector. For example, there have been nine different ministers responsible for the forest portfolio during the last seven years – these changes in Minister also led to changes in the Ministry Secretary and often to the Director Generals (see Annex 6 for more details). The chain effect of this instability is experienced in many ways, including weak law enforcement. This has encouraged illegal logging, timber smuggling and encroachment onto forestlands.

31 In 1950, the century long Rana regime was overthrown and new regime was led by a coalition of democratic forces. In 1959, a first democratically elected government was established which was dismissed in 1961 by Late King Mahendra who introduced a partyless Panchayat system. It was replaced by a multiparty parliamentary system in 1990. The last political movement in 2006 abolished monarchy; after which there has been a political stalemate towards formation of a new constitution with federal structure.

32 For example, during the 1980 referendum ruling political leaders encouraged illegal logging to generate funds to influence the referendum. In other cases, forest criminals took advantage of the political and institutional vacuum and made a fortune through massive logging.

33 Global Integrity 2009: http://report.globalintegrity.org/Nepal/2009/

5.2.8 Social differentiation and inequality

Nepalese society is highly differentiated along the lines of class, caste, ethnicity, gender and spatial dimensions. Historically, there has been oppression, subjugation and marginalisation based on these differentiations. The powerful social groups usually termed as elites at different levels have maintained their influence in state and other institutions and benefitted accordingly. While the disadvantaged groups have largely been excluded and marginalised (Bista 1991).

The social marginality is directly associated with ecological marginality (Blaikie and Brookfield 1987). The marginalised social groups often have little access to productive lands and therefore have to settle in marginal lands. This reinforces their poverty and dependency on forestlands. The decreasing access to productive land and the sheer number of landless households in Nepal illustrates the important social dimension to the problem of D&D. Consequently, these marginalized groups have been projected as encroachers, timber smugglers, shifting cultivators and are portrayed as the culprits of all kinds of environmental crisis, mainly D&D. Any effort to understand the dynamics of D&D would be incomplete unless the analysis fully captures this political ecology of social marginalisation and control over productive resources. As social inequality lie at the roots of D&D in Nepalese society, any initiative to ensure forests protection must consider nature-society relation in terms of 'no nature without social justice' (Kothari and Parajuli 1993).

5.2.9 Population growth

Nepal has experienced a persistently high population growth (Table 9) for over half a century. The population tripled to 26.6 million between 1954 and 2011, and has grown at the rate of 1.35% during the last decade. As per the CBS (2006) projection, it is forecast to reach to 33.6 million in 2020. This growth has resulted in an increased demand for food, fibre, water and other consumables and essential services. The growing population and its changing consumption behaviour have led to an increased pressure on forestland and forest products.

Table 9[34]: Population since 1950s

Year	1954	1961	1971	1981	1991	2001	2011
Population (million)	8.3	9.4	11.6	15	18.5	23.2	26.6

Apart from these gross figures, regional variations in the population growth rate and density are important, as these have implications for the local environment and on forest resources. As per the latest census, the population density of the Terai, hills and mountain regions are 392, 186 and 34 per km2 respectively (CBS 2011). During the last four decades, the population in Terai grew at a faster rate than in the mountains and hills (Table 10 and Figure 7). It is not surprising that both population density and growth are highest in the Terai, which has also experienced the highest deforestation rates.

Table 10[35]: Population (in millions) over the last four decades in the key regions of Nepal

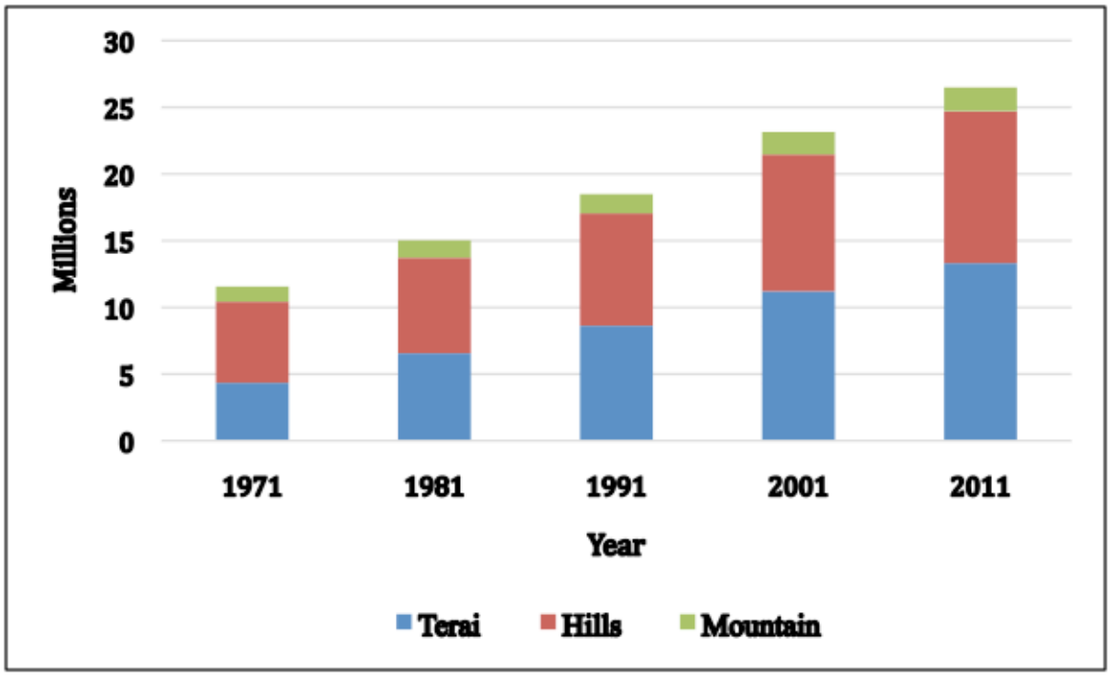
Region/ Year	1971	1981	1991	2001	2011
Terai	4.354	6.565	8.632	11.21	13.321
Hills	6.07	7.16	8.42	10.25	11.39

34 **Source:** CBS 2012

35 **Source:** CBS 2011

Mountain	1.14	1.30	1.44	1.69	1.78

Figure 7: Evolution of population in key regions of Nepal



5.2.10 Migration, pressure on resources and related conflicts

There have been three major types of migration in Nepal: from the Hill regions to the Terai; from rural to urban areas; and temporary labour migration abroad. While different drivers may have induced specific types of migration, the search for improved economic opportunities is at the centre of each. For the first category, the current phase of migration started in the 1950s, when rapid population growth in the hills and mountains led to food shortages, and to a vicious circle of poverty and environmental degradation when farming on steep slopes endangered fragile mountain ecosystems (Blaikie et al. 1980; Eckholm 1976). When the hills experienced devastating floods and landslides, the government initiated the programme to resettle to the Terai, and this resulted in heavy deforestation (Massey et al. 2010). This planned resettlement was followed by a voluntary and spontaneous mass migration to the Terai (Gurung 1988), that continues to this day.

The second important migration type, rural-urban, especially in search of better economic and career opportunities, health and educational facilities and security. This includes those fleeing from long-term domestic conflicts. As Table 11 shows, there has been a significant increase in the urban population, with a corresponding decrease in the percentage of the population residing in rural areas. Finally, the third type of migration, is temporary emigration mainly to Gulf countries and to South-East Asian countries in search of employment. Recent figures show that around 163,951 Nepalese migrated out of the country during 2011-2013 (GoN 2013). World Bank (2011) shows that Nepal has one of the highest emigration rates.

Table 11[36]: Changing rural–urban population ratio since 1950s.

Year	No. of towns	Urban population (%)
1952	10	2.9
1981	23	6.4
2011	58	17

The migration to the Terai and the urban centres has contributed to increased demand for forestland and forest products, while reducing direct pressure on forests in the hills and other rural areas. One recent study conducted in three hill Districts shows that almost one-third of the cultivated land is either completely abandoned or left temporarily uncultivated - mainly due to labour scarcity, changing lifestyles and the declining economic value of farming. A similar study focusing on the hills of Nepal has shown that migration and the remittance economy is having positive impacts on forest conservation (Tiwari and Bhattarai 2011).

Social conflicts in and around forestlands adds another important dimension to D&D. A recent study claims that social unrest is the most influential factor affecting forestland management in Nepal (Dangi 2009). Forestlands have been the locus of conflicts, notably when the hill migrants, especially the land hungry groups, began to settle in large tracts of Terai forests since the 1950s. There have been hundreds of incidents of authorities seeking to evacuate squatters from forestlands by burning their huts, using elephants to destroy the settlements, and even shooting in response to their resistance (Ghimire 1992; Shrestha and Conway 1996; Adhikari and Ghimire 2002). In more recent years, forests have taken the brunt of Nepal's decade-long violent conflict and the subsequent regional and ethnic resurgence. Also in recent years, the conflicts over forestlands have become much more complex and multi-dimensional (Satyal and Humphreys 2012). For example, during the State-Maoist conflict period, government forest offices such as Range Posts were often the targets of insurgents, as these are the most visible symbol of the state at the local level. The conflicts over forests and forestlands are visible mainly in the form of state versus community conflict, inter-community conflicts and intra-community conflicts.

5.2.11 Limited access to improved technology

Low productivity in forestry and agriculture contributes to D&D. In forestry, it is widely regarded that the introduction of sustainable forest management principles would lead to a substantial increase in the supply of timber, fuelwood and other forest products – and in turn this would significantly reduce illegal and unsustainable harvesting (CBD 2010). Similarly, low agricultural productivity compels farmers to cultivate slopes, and this leads to to migration, even pushing farmers to take refuge in forestland.

In terms of agriculture, Nepal has the lowest levels of cereal productivity among its neighbours, 2374kg/ha, compared with India (2471), Pakistan (2803), Bangladesh (3890) and China (5460) (ADB 2011). Importantly, productivity in the agriculture, fishery and forest sectors in Nepal lies far below the potential (see Table 12). Only vegetables approach a reasonable figure, and timber productivity is estimated at only 2.5% of the potential. This low productivity can, to a great extent, be attributed to poor technology (e.g. less productive seeds, poor breeds, and inadequate tools and farming implements). Improved agricultural production could reduce direct pressure on forests and contribute to mitigating several other underlying causes and proximate drivers.

36 **Source:** CBS 2011; MoHP 2011

Table 12: Comparing potential productivity with actual productivity

Product	Units	Current Production	Potential Production	%ge attained
Fish	Tonnes/ha/year	3.6	10	36
Paddy	Tonnes/ha/year	2.72	10-12	<27
Vegetables	Tonnes/ha/year	12.8	17	73
Buffalo-Milk	Litres/Lactation	900	2000	45
Timber	m3/year	0.337	13.4	2.5

Sources: For fish, [37]DOFD, 2010; for timber, [38]MPFS, MFSC,1988, for paddy, [39]MOAC 2010, & Dir. Crop Dev. DOA, for vegetables, MOAC 2010 & Dir. Veg. Dev. Dir.DOA, for buffalo milk, [40]DLS 2010.

Similarly, access to improved cooking stoves (ICS) and other fuel-efficient technologies could substantially save fuelwood. For example, in similar areas in India, the introduction of ICS has reduced fuelwood consumption by up to 33%.[41] The technology factor is even more prominent in case of road construction where the use of human labour during construction, proper drainage systems, and suitable protection structures at critical positions, would greatly reduce the D&D effects of road construction and use. This low use of improved and sustainable technologies can be attributed to poor governance and to lack of financial resources and incentives.

5.2.12 Summary

Table 13 summarises the proximate drivers of D&D and their underlying causes as assessed in this study.

It is noted that neither the proximate drivers nor the underlying causes are independent, nor do they operate in isolation. There are related, with sometimes complex interactions and feedback mechanisms between and amongst them. For example, there are close links between population growth, increased demand for forestland and products, and conflicts. Similarly, political instability, poor governance, corruption and weak law enforcement are strongly linked. These links, feedback loops and mutually reinforcing dynamics should be fully assessed and considered in the preparation of strategies and measures to address D&D.

It is also noted that Table 13 describes the generic phenomena occurring in all three ecological zones in Nepal, although some of these causes are more prevalent in some regions than others. However, most of them are more visible in Terai than in the hills and mountains.

For the most part, forest degradation in Nepal takes place as a precursor to deforestation. Forest degradation generally starts when a few selected trees are illegally logged by timber smugglers, often protected by powerful elites, having close ties with political party or other power centres. Subsequently, in many cases, land mafias

37 DOFD, 2010. Annual progress report, MOAC, DOA, Directorate of Fisheries Development, Balaju, 90pp.

38 MFSC, 1988.Master Plan for Forestry Sector, Main Report, Ministry of Forest and Soil Conservation, Nepal.

39 MOAC 2010. Statistical Information on Nepalese Agriculture.

40 DLS, 2010.Annual Technical Report, Animal Production Directorate.

41 An international Fund for Animal Welfare – Wildlife Trust of India (IFAW-WTI) supported study in India shows that introduction of improved cooking stove reduced the per capita fuel wood consumption from 2.73 kg a day to 1.81 kg per day, a reduction of about 30% (http://www.wti.org.in/oldsite/current-news/130523_Improved_cooking_stoves_to_save_a_thousand_trees.html) accessed on 22 Aug 2013.

encourage and facilitate landless people to take refuge in such lands. The settlers are then encouraged to harvest and to uproot the remaining trees, and they gradually start cultivating agricultural crops. Eventually the land mafia and the political parties assist the settlers to obtain full land titles for the land, again usually involving the bribery of officials on the frequently formed land reform commissions. Then, the process of conversion of forest to non-forest land is complete.

Table 13: Major drivers and underlying causes of deforestation and forest degradation

	Illegal logging	Encroachment	Fuelwood Consumption	Roads
Economic				
High demand for forestland and products	Social preferences, increased purchasing ability, timber intensive construction, constrained and unpredictable supply.	Increasing food scarcity, decreasing land productivity, large mass of landless, land speculation.	High costs of alternative fuel, and increasing number of brick factories, hotels, tourism, alcohol making.	Unquestioned development priority is given to roads, especially by local governments.
Poverty	Desperate poor residing in and around forests, lack alternative income and employment, and are usually deployed by traders and smugglers.	Landless poor take refuge in forestland as a last resort.	Poor people rely heavily on fuelwood for both household use and sale.	
Policy, governance and tenure				
Lack of deliberative and inclusive process	Contested policies (both at national and local levels) result in weak ownership by stakeholders and everyday conflicts between authorities and local communities (e.g. Terai forest management, Churia, protected areas).	Confrontation between state and Sukumbasis has turned forest into a war zone; there is little support from stakeholders at local level in maintaining forest integrity	Fuelwood collectors cannot influence fuelwood related policies. As fuelwood collection in government forest is deemed illegal, collectors may ignore sustainable practices.	Roads that are outside the district development plan tend to ignore due process, which undermines sustainability.
Poor transparency and corruption	Corruption induces over-harvesting to meet interests of all involved parties; officials while forest user committees often turn a blind eye.	Bribing influences distribution of land titles by the Land Commission officials; land mafia often encourage people to capture land and benefit from illegal transactions.	Brick factories, hotels and other commercial consumer of fuelwood bribe officials.	Corruption encourages use of heavy machines instead of labour-based approaches undermines monitoring and public scrutiny.

	Illegal logging	Encroachment	Fuelwood Consumption	Roads
Weak application and enforcement of the law	Organised criminals make life threats to Department of Forestry, whose capacity to respond is weak; political interference and a weak judiciary system often lead to impunity.	Weak District Forest Office (DFO) capacity to monitor and evacuate illegal settlers, who are often backed by political parties.	Weak DFO capacity to monitor unsustainable harvesting.	Weak enforcement of Environmental Impact Assessment and other environmental standards.
Weak tenure and local governance	Government managed forest *are de facto* open access, which invites unsustainable and criminal activities; local governments do not own and do not play active role in protection.	Government managed forests are de facto open access and therefore are easy to occupy and settle in illegally.	In Community-based managed forests, fuelwood is collected sustainably. In government-managed forest, this is not the case, mainly due to de facto open access situation.	Private landowners tend to influence road construction so that it happens on public forestlands.
Cultural (Socio-political)				
Prolonged political transition, instability	Transitional politics, instability and frequent changes in leadership have seriously undermined accountability, legitimacy, authority and direction of the state institutions. The priorities of the political actors is not in forest management.	State institutions are weak, society is chaotic, citizens have strong sense of rights over resources, and there is little political will to resolve land issues.		Long term systematic planning is lacking; decision-makers do not base decisions on scientific evidence. .
Social differentiation and inequality	Inequality helps maintain patron-client relations through which poor, marginal groups and lower officials engage in illegal logging and are protected by their patrons.	Large numbers of poor and marginalised groups do not have access to land, while large tracts of land are left uncultivated.		Leaders choose heavy equipment-based approach that often replaces labour.
Demographic				
Population growth	Population growth induces high demand for timber and other forest products.	Decreasing land/people ratio result in struggles over land and need for new land.	Increasing number of households has led to increased demand for fuelwood, especially in Terai.	Increased population in rural remote areas lead to increasing demand for roads.

	Illegal logging	Encroachment	Fuelwood Consumption	Roads
Migration and population pressure on resources	Migration to Terai and towns has increased timber demand in those areas.	Poor people migrating to Terai or road heads end up occupying public forested land.	High population in certain pockets results in unbalanced demand for fuelwood.	Migration and population pressure in certain areas leads to demand for new roads.
Technology				
Limited access to improved technology	Passive management, limited use of sustainable forest management practices, has resulted into short supply of legal timber	Low productivity of land and resulting food scarcity has induced cultivation in forestland.	Little access to improved cooking stoves, biogas and other technologies leads to increase demand for and reliance on fuelwood.	Limited access/ use of sustainable technologies in road construction has high negative environmental consequences.

5.2.13 Future trends and scenario of D&D

It is important to assess the likely future trends of proximate drivers and their underlying causes in order to design the most effective and realistic strategies towards reducing D&D. However, this is challenging in Nepal for to several reasons.

First, there are many proximate drivers and even more underlying causes, and they act in a range of combinations and sequences. This makes any assessment of trends complex, and makes it extremely difficult to draw any conclusions as a basis for policy making. Second, the economic and socio-political elements are intertwined, making it hard to assess them separately. Several economic trends such as remittance, increased demand for forest products or the price of substitutes can be examined and their impacts on key drivers such as illegal logging and fuelwood consumption can be predicted. However, these economic trends are heavily dependent on the political setting including the forms of governance, federalism, stability, labour market and economic development. Unfortunately, after 10 years of violent conflicts, the popular people's movement of 2006 and the constituent assembly elections of 2008, the country still remains in a political and constitutional vacuum. As discussed above, these political and associated social factors influence law enforcement, they influence the tendency to encroach forestlands, and the deliberative policy processes and corruption, and others factors. Hence any new strategy may have impacts throughout the causal chain, or its impact may be blocked by inertia somewhere in the causal chain, and so it is extremely challenging to predict future trends.

Table 14 presents a crude assessment of the trends of the key underlying causes – treating them as simple, unconnected factors. Although in Table 14 some of the forecasted trends can be considered purely speculative, others (such as economic and technological factors and population related factors) are clearly evidence-based.

Moreover, there will most likely be strong regional variations. For example, demand for timber and fuelwood is forecast to decrease in the hills, while it will continue to grow in Terai. Similarly, while increased economic status may lead to increased demand for timber, the same dynamics may reduce the demand for fuelwood, as the better off households tend to shift towards cleaner energy sources. Overall, Table 14 suggests that D&D is likely to increase at least in the near future.

Table 14: Future trends in the underlying causes of deforestation and degradation

Underlying causes	Trends	Effects on proximate drivers
Economic		
Increased demand for forest products	+ Increasing remittance + Changing lifestyle	+ Illegal logging + Fuelwood consumption
Increased access to market	+ Road network + Market demand	+ Illegal logging + Land conversion
High price of substitute	+ Price of oil	+ Fuelwood consumption
Poverty and high dependency on forests	+ Poverty reduced + Demand for agri-land	+ Encroachment
High rate of economic growth in China and India	+ Subsidised agriculture products flooding local market in Nepal + Increased supply of furniture from China + May increase demand of timber	- Encroachment - Decreased demand for timber + Illegal logging may increase to illegally export timber
Policy, institution &governance		
Poor transparency and participation	- Transparency and participation may improve + But contestation and conflicts may increase	+ Illegal logging + Encroachment + Unsustainable roads
Weak law enforcement	+ Little prospects of improving law enforcement in the near future	+ Illegal logging + Encroachment + Unsustainable roads
Corruption	- CIAA has taken good initiatives, but may remain temporary	- Illegal logging - Unsustainable roads
Weak tenure	+ No sight of tenure reform - May improve with federalism	+ Illegal logging + Encroachment
Socio-political		
Prolonged political transition, instability	- Transition and instability may be reduced along with new constitution	- Illegal logging - Encroachment
Differentiated and fragile society	- Social harmony may increase along with political settlement	- Illegal logging - Encroachment

R**ent seeking behaviour**	+ Will continue until significant attempts	- Illegal logging - Unsustainable roads
Demographic drivers		
Population growth	+ Increase but with slower rate	+ Illegal logging + Encroachment
Rural -urban migration	+ Rural to urban migration may increase	+ Encroachment in urban areas
Conflicts and movements	- May gradually find peaceful solutions	- Illegal logging - Encroachment - Unsustainable roads
Technological drivers		
Poor technology in forest management	- Sustainable forest management is being practiced and may scale out - Improved cooking stove reduce fuelwood demand	- Illegal logging
Low agriculture productivity	- Technology may improve gradually	- Encroachment

6. PREVIOUS AND ONGOING POLICIES AND MEASURES TO ADDRESS DEFORESTATION AND FOREST DEGRADATION IN NEPAL

This chapter takes a look at previous development and sectoral policies and measures related to forests and D&D. After an introduction to the overall development plans and policies, it looks specifically at forestry polices and measures, before looking at the most pertinent policies and measures in other sectors (notably, agriculture, energy and transport), as well as at anti-corruption efforts. In each case, some of the successes, failures and limits of previous polices and measures are identified.

6.1 NATIONAL DEVELOPMENT PRIORITIES AND PLANS

Nepal began national development medium term planning in 1957 with the preparation of five year (sometimes three year) plans. It is currently implementing the 13th three year plan. Poverty has been a priority on the agenda throughout these plans, although the approaches and strategies have regularly changed. Throughout, agricultural development has been recognised as the backbone of economy and has therefore received high priority. Road and hydropower development are also high on the agenda. These all present potential trade-offs with forest conservation.

In the early years, for the forestry sector, development plans focused on forest conservation and meeting the subsistence needs for fodder, fuelwood and construction materials for local communities. Then, in the poverty reduction strategy plan (2002-2007), the forest sector was expected to contribute to the goal of poverty reduction. The last three-year approach paper (2009-2012) emphasised the management and utilization of ecosystem services. The current approach paper (2013-2016) places a strong emphasis on forest protection, biodiversity and ecosystem services. A brief summary of the key priorities of these medium-term plans is presented in Annex 7.

Nepal is a signatory to most of the multilateral environmental agreements and has expressed its full commitment to comply with them. In line with these agreements, the government has developed a number of policies and legal documents. Besides, Nepal has acceded to the World Trade Organisation and hence it will gradually be exposed to the global market, including for agricultural and forestry products. Nepal has also ratified or endorsed regional and bilateral trade agreements , many of which open the window for foreign investment in Nepal for trade and business.

6.2 FOREST SECTOR POLICIES

The government has introduced several policies and measures to reduce D&D in recent years. Many of them are aimed at strengthening law enforcement to check unauthorised extraction of forest products and the use of forestland for non-forestry purposes. Notable are the following: the banning of timber export; the regulation on the export of non-timber forest products (NTFPs); the discouraging of the conversion of forestland to other purposes; and the regular monitoring of forests being carried out as part of forest conservation activities.

Table 15, for each of the proximate drivers of D&D discussed in Chapter 5, summarizes the key policies measures taken. It should be noted that one single policy or measure cannot address all the drivers. Also, as these policies emphasize specific aspects of forest management, they may have varying effects on D&D. More information on each of the policies/measures is provided in the following sections.

Table 15: Policies and measures that seek to address major drivers of D&D, and when known, their effects

Forest sector policies/measures	Effects upon:			
	Illegal logging	Encroachment	Fuelwood	Road
Protected Area (PA) management	Strong law and presence of army have reduced illegal logging, but has displaced pressure to other forests.	Substantially reduced encroachment in concerned areas.	Less fuel wood collection in PAs, but has displaced pressure elsewhere.	Discouraged roads through PAs.
Churia Conservation Programme	Conservation activities support regeneration, restrictive measures deterred logging, but have alienated local people.	Discouraged resettlement.	Sale of firewood is prohibited in Churia.	Has discouraged roads, but not stopped it.
CBFM	Substantially reduced illegal logging, timber stock has increased, a few exceptions exist.	Substantially reduced encroachment.	Helps a sustainable supply of fuelwood, but may also displace the pressure elsewhere.	Roads are constructed to ease timber harvesting.
Strengthening application and enforcement of laws	Increased cross-sector coordination, better equipment, improved intelligence and awareness.	Helps remove illegal settlers.	Increased surveillance of illegal collection.	Strengthening Environmental Impact Assessment and other standards
Periodic ban on logging	Periodic nature leads to increased uncertainty and fluctuations in timber market, and induces over-harvesting before and after the bans.	-	-	-
Sustainable forest management	Demonstrates how it is possible to increase the legal supply of timber.		May have helped increase supply of fuelwood.	
Mitigation measures in development projects	Compensation must be provided for logging of trees in project areas through the planting of trees.		Restrictions on use of firewood for project purposes.	Required to implement EIA in development projects.

Protected areas were established during the 1960s when migrants from the hill areas were clearing large tracts of Terai forests for agricultural expansion. Today 23.4% of the national territory of Nepal lies in the protected area system. While the primary motive is to protect mega fauna, this also helps reduce D&D. The protected areas are protected by the Department of National Park and Wildlife Conservation, supported by the Nepal Army. In addition, many integrated conservation and development projects help address local concerns and develop support for conservation. However, they have also incurred a high social cost in terms of negative impacts on the livelihoods of local communities and so have induced conflicts (Paudel et al. 2007; Budhathoki 2004).

Conservation of the Churia region. The government has prioritised conservation of the Churia region, which had experienced high D&D for several decades. It has introduced several related focused programmes. The Presidential Churia Conservation Programme is a national priority programme introduced several years ago to conserve the Churia region. The programme has several components that include establishing plantations, conserving watersheds, strengthening law enforcement and restricting forest products utilisation.

The introduction of **participatory and community based forestry** is another important policy intervention by the government. After research in the 1960s and early 1970s highlighted the alarming levels of D&D, the government introduced several different CBFM modalities in the early 1990s: community forestry (CF), leasehold forestry (LF), religious forestry (RF), buffer zone community forestry (BZCF) and other participatory approaches to managing conservation areas. Later, collaborative forest management was developed. These moves were legally institutionalised by the Forest Act 1993 and the Forest Regulation 1995. They have been widely supported by all major development partners. Today, approximately one-third of the country's forests are under CF and other CBFM management. Consequently, Nepal's D&D has substantially been addressed particularly in the hills (Carter et al. 2011). Despite these overall successful and encouraging results, there are some cases of unsustainable harvesting within CBFM programmes (CNRM 2010).

The government has introduced several measures to **strengthen law enforcement**. It has established an institutional framework from national to local level with a clear mandate of forest conservation. There is a network of DFOs, Illaka Forest Offices[42], Range Posts in every district, and similar structures within protected areas and for soil conservation across the country. These offices are staffed with forest officials, forest guards, and the armed forest protection force. They also draw support from Nepal Army. The local forest officials, especially forest guards, carry out regular patrolling of forest areas. In addition, there are formal coordination mechanisms among the government agencies and CSOs at the district level.[43] Both the forest authority and the police have check posts along major roads to monitor the transport of forest products - timber, NTFPs or wildlife. Secret informants are also informally engaged, especially to keep surveillance over poachers. Those accused of illegal logging and other illegal activities in forests can be taken to court as criminal cases. The DFOs and park wardens have quasi-judicial authority so that they can take the suspects into custody, investigate their case, and file the case in court.

Bans on logging and **export** are other measures adopted to address D&D. Timber export has been completely banned for last several decades. The government occasionally imposes bans on logging in accordance with the severity of the problem.[44] However, there are complaints that the logging bans are often based on emotional decisions from the political and bureaucratic leaders rather than on scientific analysis. Moreover, many of these bans have resulted, at times, in negative impacts on D&D. For example, such ad-hoc decisions distort the supply

42 Administrative unit of District Forest Office comprising of several range posts of a certain area.

43 District Forest Sector Coordination Committee is a coordinating body with representatives of all major stakeholders including DFO, CDO, local bodies, security agencies, federation of CBFMs, private sector etc.

44 The government had issued a notice in 1990, 1999, 2010 and 2011 banning harvest of Sal and Khair in any type of forest without approval of the management plan.

of legal timber and affect prices – and there have been cases of increased illegal logging directly preceding and following the temporary bans.

Many of the policies and measures discussed above adopt a restrictive and punitive approach to discourage D&D. In contrast, the government recently sought to pilot **scientific forest management** in a couple of Terai districts – which could lead to increased legal activities, thereby lessening the incentive for illegal activities. One such pilot is in Kapilvastu district. Here, the introduction of sustainable forest management practices has, initially, demonstrated that timber supply can be substantially increased without compromising the regeneration capacity of the forest. This is expected to discourage illegal harvesting and trade of timber and fuelwood.

6.3 SECTORAL POLICIES AND THE EFFECTS ON FORESTS

Chapter 5 clearly showed that sectoral policies and practices play a crucial role in shaping forest conditions and trends. That chapter also highlighted that policies and measures from within the forestry sector cannot alone address the drivers. It is therefore important to identify and analyse policy and measures from other sectors that affect D&D and sustainable management of the forests. Table 16 lists some of the more important sectoral policies that are relevant to the conservation of forests. Many of these are discussed in the following sections.

Table 16: Major cross-cutting legislation that affects the forestry sector

Policies	Influencing actors
Land use policy 2012	Ministry of Land Reform
Local-self Governance Act 1999	Local bodies (VDC, Municipality, DDC)
Environmental Protection Act 1997	Ministry of Science, Technology and Environment, private sector and local administration
Mine and Mineral Act 1985	Local governments and private sector
Hydro-power Act 1992	Private Sector
Investment Board Act 2012	Private and corporate sector
Industrial Enterprise Act 1992	Private and corporate sector

A number of government agencies are mandated to develop and enforce different aspects of environmental legislation. Due to these scattered responsibilities, it is extremely difficult to get adequate coordination for ensuring environmental sustainability. For example, in spite of the good intentions on the part of all concerned, performance on environmental matters for road construction remains poor (ADB/ICIMOD 2006). One comprehensive study on the issue suggests that the major reasons for weak environmental performance in the infrastructure sector are: the lack of adequate inter-agency and inter-stakeholder coordination; poor and weak mechanisms of control and supervision; inefficient public administration; lengthy decision making processes and government instability (ADB/ICIMOD 2006:126).

6.3.1 Land-use policy

The government has recently approved the long awaited Land Use Policy (2012). The key elements of this policy include: maintain 40% of the country's land as forestland; promote the intensive use of arable land; discourage the long-term fallowing of arable land or its use for non-agricultural purpose; only develop infrastructure on prescribed lands; resettle people away from the Churia region and; impose a provision to plant 25 trees for each tree that is felled by a development project. Stakeholders largely appreciate the land use policy. However, given the political transition and uncertainty, as well as the contradiction between sectoral policies and legislations, it may be some time before these policies are actually implemented in the field.

6.3.2 Decentralization and federalism

Conflicts between the Forest Act (1993) and the Local Self Governance Act (LSGA, 1999) (MoLD 1999) have also resulted in confusion between forest authorities and local governments with regards to management interventions and benefit sharing from forests. The LSGA gives certain rights to local governments to prepare and implement forest management plans and impose various taxes on forest products. However, the Forest Act invests such rights to the DFO and local communities. These conflicting legal provisions have resulted in tensions often with negative environmental consequences including D&D.

Another important development is the establishing of the federal governance system. This is one of the politically accepted policies in the current transitional political situation. An analysis of the draft developed by the previous Constitutional Assembly indicates that state government would play an important role in forest management. Vesting forest management authority to the state governments can bring the development and conservation agenda closer to the people, and it is expected to have positive impacts on D&D.

6.3.3 Road sector

National Transport Policy (2001) aims at developing a sustainable, dependable, affordable, safe, comfortable, self-reliant and pollution-free transport system. The policy emphasises the development of a transport system with renewable energy resources, such as from hydro-electricity and solar energy. Road transport is expected to be complemented by railways, cable cars and ropeways that run on renewable energy sources. Unfortunately, the current heavy reliance on roads has had high negative impacts on D&D. Mulmi (2009) has argued that the introduction and implementation of a green approach to road construction, while minimizing the damage to forest and landscapes, would ensure that 65% of the construction costs stay within the local economy, thereby helping to address social inequalities and disparity, and contributing to local level capacity building in road building and maintenance run.

6.3.4 Energy crisis and responses

The energy sector became a key for the first time in the fifth national development plan (1975-1980). This Plan emphasized reducing the dependency on traditional sources of biomass and imported oil by increasing the supply of hydropower and other renewable energies. Subsequently, the Hydropower Development Policies (1992 and 2001), the Water Resources Act (1992) and the Electricity Act (1992) have all stressed improving energy access through generating more electricity by encouraging the participation of the private sector. In 2009, the government issued a plan for to create 25,000 MW of electricity generation capacity within 20 years. Unfortunately, most of these policies and plans have been hardly implemented and currently electricity supply is less than 600 MW, even during the peak season (i.e. high electricity demand).

The Rural Energy Policy (2006) and Subsidy Policy for Renewable Energy (2013) are the latest policy interventions in the energy sector. These are regarded as a coherent rural energy policy that is expected to address rural energy needs. This has sought to encompass the rural energy policies of several sectoral ministries. The policy encourages a participatory process of technology development, project identification, design and implementation for rural energy. It seeks to install improved biomass technologies to meet cooking and heating energy needs that include micro-hydro, solar power and biogas among others.

6.4 Anti-corruption measures

Several initiatives aim to address corruption in forestry sector. The establishment of the Commission for Investigation of Abuse of Authority (CIAA), the National Vigilance Centre (NVC), the Special Court and the criminalization of all kinds of financial misconducts, bribe-giving and embezzlement have been important steps towards these initiatives. Box 1 lists the key laws on anti-corruption in Nepal. In addition, there are provisions related to the declaration of property and codes of conduct for public officials.

Box 1: Relevant Laws for anti-corruption in Nepal

- Local Administration Act 1971
- Commission on Investigation of Abuse of Authority Act (1991)
- Local Self-governance Act (1999)
- Prevention of Corruption Act (2002)
- Right to Information Act (2007)
- Public Procurement Act (2007)
- Good Governance (Management and Operation) Act (2008)
- Anti-Money Laundering Act 2008

The Prevention of Corruption Act (2002) is one of the key measures to ensure financial discipline, morality and good conduct among government officials and general public. The Act also established the NVC - an anti-corruption body under the Chairmanship of the Prime Minister. The NVC takes preventive and promotional measures against corruption. For example, in the year 2011, the NVC dealt with 112 forest-related cases of which 45 were resolved (67 are yet to be resolved). The NVC has identified diverse misconduct strategies in the forestry sector and accordingly warned responsible agencies to correct those practices (Annex 8).

Two parliamentary committees - one on 'Natural Resources and Means' and one on 'Public Audit' - play important roles in reducing corruption in the forest sector. The former is specifically mandated for large-scale forest governance issues, important environmental issues and other major corruption scandals related to forests; while the latter has a wider scope of scrutinizing the accounts of ministries and other government bodies to ensure proper compliance with financial laws and regulations. The NRM committee played an instrumental role in compelling the government to introduce a number of measures to address illegal logging in Terai and Churia in 2010.[45]

The Global Right to Information Rating Project has deemed the Right to Information Act (2007) as a relatively strong law, although the fact that it lacks a public interest override and its failure to override conflicting legislation are two important weaknesses. In addition, it limits the right to make access requests to Nepalese citizens, which means that refugees and migrants cannot use the law.[46] Nevertheless, although it has not yet fulfilled such functions effectively, it can provide a strong basis for civil society to demand transparency by accessing forest and REDD+ related information. Similarly, the Procurement Act (2007), was enacted to address, among other things, conflicts of interest, and provides for periodical rotation of public procurement officials.

The CIAA, a constitutional anti-graft body in the country, is the most influential and active institution working to curb corruption. It has a strong constitutional and legal mandate to investigate and develop cases and register those cases in a Special Court. The CIAA files cases and can bring political leaders and government officials at all levels, including parliament and cabinet members, to face justice. In addition, it also helps government Departments

45 Brief description of the parliamentary committee report on Terai D&D in 2010.

46 See UN-REDD Programme. 2013. Ensuring inclusive, transparent and accountable national REDD+ systems: the role of freedom of Information, available at: http://www.un-redd.org/Transparent_Management_REDD_Funds/tabid/54009/Default.aspx

to develop Working Manuals and establish Good Governance Units, and builds their capacity through trainings, workshops and interactions. In recent years, the CIAA has appeared to be active in attempting to control forest sector corruption, encroachment and illegal logging, taking several actions in the forest sector in the last three years (see Annex 9).

However, the result has not been not satisfactory because these efforts have been marginalised and had little effect, as a consequence of strategic moves by the government itself. For example, the post of Chief Commissioner of the CIAA has remained vacant for around 5 years (TI 2012), and was only appointed recently, and that of other Commissioners for over 20 months This situation has seriously undermined both the authority and legitimacy of the CIAA. In general, the CIAA's efforts to control corruption in government offices, through its frequent directives, appear to have failed. Over 90% of its directives go unattended.[47]

Despite the diverse anti-corruption measures, corruption continues also due to the weak capacity of the CIAA. It is widely acknowledged that the non-transparent and unaccountable practices of the political parties pose a central challenge to efforts to curb corruption. Consequently, the integrity and impartiality of investigative authorities is much undermined. Lack of technical expertise, inadequate information systems, and limited cooperation from public authorities and wider society compound the issue.

47 For instance, the Ministry of Health, which tops the list of defiant government institutions, ignored 28 directives mostly related to abuse of power and corruption in the fiscal year 2009-10 (TI 2012).

7. SUMMARY AND RECOMMENDATIONS

The analysis of proximate drivers and underlying causes in the previous chapters, and the assessment of the range of policy and measures to address D&D, clearly demonstrate the scale and complexity of the challenges that Nepal faces. The analysis of the underlying causes showed that the continuing political crisis, poverty and inequality in Nepal pose crucial challenges to reducing deforestation – while technology, practices and capacity in the forestry sector could also be greatly improved.

However, a close examination also brings some optimistic insights. Community forestry and other community based and participatory arrangements have resulted in a significant improvement in addressing D&D in some regions. Further expansion of such policies and measures may address many of the current drivers. Also, many of the drivers induced by governance, policy and institutional issues may be corrected through governance and tenure reforms outside the forestry sector.

This chapter aggregates and summarizes some of the key findings on drivers and points the way to potential intervention strategies. Building on this, section 7.2 takes a sector approach, and suggests areas where REDD+ may have a critical input on reducing D&D.

7.1 CHALLENGES TO REDUCING DEFORESTATION AND FOREST DEGRADATION

7.1.1 Complexity of drivers

The complexity of proximate drivers and underlying causes can be attributed to:

i) High ecological, socio-economic and cultural diversity. Nepal's ecological and geographical diversity has led to a diversity in forest types, its biophysical features, and sensitivity to certain management intervention. Similarly, the socio-economic and cultural diversity provides a diverse range of people – forest interactions, economic and market values, etc. Different types of interactions may result in a different nature of D&D, so that a single solution does not fit everywhere.

ii) Diversity of tenure regime and management options. The specific tenure and management approach create important governance, institutional, and behavioural elements that play a key role in shaping the D&D. Different tenure regime not only result in different bundles of rights but also diverse institutional forms which are strong determinants of forest conditions. The perception of rights, the feeling of ownership, the level of surveillance, the degree of rule compliance all depend on the specifics of the tenure and the institutional arrangements.

This complexity and diversity in the drivers means that developing solutions will be a challenge.

7.1.2 Ineffectiveness of many existing policies and measures

The fact that drivers are diverse and dispersed makes it difficult to address D&D, as no single strategy can work. More importantly, due to weak implementation capacity and low political will, many policies and measures are limited to paper only. Therefore it has been difficult to assess their impacts (Blakie and Sadeque 2000). The political transition and uncertainty, amongst other factors, have contributed to a weak performance of state agencies and other institutions. Also, the official efforts and resources to address D&D are very limited in comparison to the high stakes involved. In other words, the potential gains from illegal logging are very high and they distort the incentive

structure – i.e. the risks taken when bribing politicians, bureaucrats, forest managers and judges, employing local gangsters and equipping smugglers are small compared to the potential gains.

Further, there are ongoing debates regarding the policy agenda. Some appreciate Protected Area and see it as a success, while others disagree. Some see CF as the panacea to mitigate D&D, while others deny and even oppose it. Moreover, this undermines the potential of any policy to bring down D&D. Uncertainty about the federal structure and power sharing between central and state level also leads to confusion and uncertainty.

7.1.3 Inadequate capacity and preparedness of forest Sector institutions

As seen in the previous chapters, the prolonged political transition, the frequent changes in the government and the unstable leadership in many of the institutions has weakened legitimacy and undermined the authority of the state institutions. This has seriously undermined the capacity of the state institutions to enforce law and order, implement policies, monitor and impose certain incentives and disincentives. Low staff morale, expertise, confidence and commitment, combined with inadequate resources such as mobility, information, technology and equipment have also undermined the capacity of the forest authorities to enforce law and order. This is further worsened by weak coordination amongst concerned government agencies.

7.2 POTENTIAL STRATEGIES TO REDUCE DEFORESTATION AND FOREST DEGRADATION AND POTENTIAL REDD+ INTERVENTIONS

The large number of drivers, their underlying causes and their different combinations and sequences demand multiple strategies to reduce D&D. However, the analysis in this report only considered four proximate drivers and some of their underlying causes. Even with the four drivers, it is unlikely that REDD+ funds in the near future would be sufficient to incentivize the required behavioral changes to remove the drivers. Therefore, it is necessary to prioritize. The following sections provides some potential lines of action for REDD+ interventions for consideration.

7.2.1 Sustainable management of forests

The sustainable management of forests, possibly under different tenure arrangements, can lead to substantial increases in the supply of timber and fuelwood. This can rapidly narrow the gap between the demand and supply, and so to discourage illegal logging and discourage the unauthorized collection of fuelwood. As the government has already piloted such practices, this can be scaled out and scaled up to benefit both government-managed and community-managed forests. Note, this will also require improved technologies and institutional arrangements, notably combining modern forestry science with indigenous knowledge.

A number of studies have highlighted the huge gap between what can be sustainably produced through active forest management interventions and the current low production levels in Nepal's forests. This applies both to government managed and community managed forests. Policy makers and forest officials all agree on the need to focus on management intervention and shift away from current protection and policing approach. The MoFSC has recently approved criteria and indicators for sustainable forest management. Next, a special focus on introducing sustainable forest management principles into all types of forests is required in order to substantially increase the supply of timber, fuelwood and other forests products through sustainable and legal channels.

7.2.2 Governance reform

Measures to increase accountability and transparency, and to prevent and punish corruption, are at the heart of gaining public trust and increasing the legitimacy and authority of forest agencies. While many issues are linked to a wider social context and political transition, there are several other areas where the MoFSC can take a lead within its jurisdiction. This would include, apart from implementing the existing good policies, the facilitation of an open and constructive debate on key forest governance issues, management modalities, ways to resolve existing contestations and conflicts and to bring diverse stakeholders on board.

While increasing accountability and transparency are linked to social context and political transition, the Ministry of Forests and Soil Conservation can take a lead on a number of actions

These initiatives would help garner stakeholders' support in the formulation of more acceptable and accepted policies and strategies. This would also help effectively implement the existing policies and strategies, and discourage illegal harvests and unauthorized use of forest resources in the long-run. At the same time, this would also help to address entrenched corruption in forestry sector, thereby creating positive incentives to follow formal official procedures rather than illegal ones. Finally, these open debates would provide valuable information needed to respond to the request of the UNFCCC Cancun REDD+ safeguards, which call for providing information on, among others, the meaningful and effective engagement of all relevant stakeholders and transparent forest governance systems.

The improvement of forest sector governance must be understood in a broad sense that allows diversifying forest governance regimes, respecting the existing institutional and management practices of indigenous communities and local communities, redefining the roles of the state, local communities and private sector and engaging with market. Building on Nepal's successful experiences with CF, participatory conservation and buffer zone management, more decentralized, participatory and community based governance models should be supported, expanded and strengthened. The existing confusions around tenure and benefit distribution should be addressed in favour of indigenous people, local communities and local governments. These initiatives, over the long term, would contribute greatly to sustainable management of forests, a reduction in illegal activities and improving overall governance of the sector.

REDD+ could help by establishing clear linkages between governance reform, reduction in D&D and increases in payment to the local forest managers. With this link, there would be an increased stake and increased interest among the local forest managers to hold the key actors accountable, thereby helping in governance reform. Moreover, REDD+ international standards on participation, inclusion and informed decisions can be adopted in the forestry sector, further helping to improve governance. REDD+ funds can also support capacity building of the relatively weaker actors, local communities, Indigenous Peoples' Organizations and CSOs so that they can effectively engage, influence and contribute to governance reform.

7.2.3 Strengthening law enforcement

Overall, strengthening law enforcement must be seen in the wider context of the national justice system. Some efforts can be focused on the forest sector, for example strengthening the capacity and independence of the forest agency to effectively enforce existing laws and monitor illegal activities is of prime importance. Moreover, the forest agency needs skilled and motivated personnel; improved information and communication systems,

equipment, mobility and security and; explicit legal provisions and supportive environments.

Beyond the forest sector, an important aspect is the need for a functional and proper trail and justice system in order to punish criminals and offenders, and encourage forest officials and security personnel to take action. In parallel, it is necessary to minimize political interference, and this can be done through a variety of approaches. This may start with the development of a coherent survey instrument allowing for an adequate assessment of the types, levels, locations and remedies of judicial corruption. Next, there is a need to organize trainings and develop codes of conduct, to conduct more open trials, to provide better equipped courts, to improve judges' working conditions and/or salaries, etc.[48] Further parallel efforts to promote the demand for accountability are required. For example, the existing hotline in the CIAA to enable the Nepalese citizens to confidently report directly against any incidents witnessed is under-utilized, and the broader civil society anti-corruption project could be tapped upon to include REDD+ and forest governance.[49]

Another important element is the need to institutionalize functional collaboration and cooperation among government agencies, CSOs, media and private sector in curbing illegal logging, corruption and encroachment, based on transparency and trust. Proactive leadership from the forest agency, developing collaborative capacities and a fair level of political support would make this possible.

REDD+ payments could contribute to strengthening law enforcement in two ways. First, by providing performance based incentive to local forest managers. This would help generate strong local support in checking any forest crime by increasing surveillance, local vigilance, and ensuring compliance of the rules. Second, REDD+ funds can be used to strengthen capacity in the forestry sector: improve the management information system, providing communication and transport equipment, and providing insurance or other incentive structure to lessen the risks in fighting against forest crimes.

7.2.4 Agricultural sector policies and measures

There is a growing interest and policy awareness towards climate smart agriculture both globally and in Nepal. The current Agriculture Development Strategy appears to be adequately informed of the emerging challenges of enhancing agriculture productivity and production through agricultural intensification. However, whilst emphasizing agricultural intensification, it is also vital to respect the principles of sustainable agriculture, organic agriculture, permaculture and other forms of farming that can increase biomass and food production.

Access to productive land for poor and landless people, improved technologies that increase productivity, and the creation of off-farm employment opportunities for people living in and around forestlands are the keys to reduce encroachment in forests. The resolution of critical land issues requires strong political will. It will also require increased public and private investment in agriculture, especially in productive lands. Also, improved tenure and institutional arrangements and appropriate incentive structures will help increase investments in under-utilized lands (mainly in the hills) – thereby increasing productivity.

REDD+ payments can be used to support technological and economic incentives to farmers for agricultural intensification. Moreover, it can also help provide incentives to farmers to grow trees on farmland, both in Terai and the Hills (some potential strategies to address agriculture related drivers are summarized in Annex 10).

48 See for example http://www.unodc.org/pdf/crime/gpacpublications/cicp10.pdf and http://judicialintegritygroup.org/resources/documents/gtz2005-en-corruption-in-judiciary.pdf

49 The hotline is supported by UNDP and the civil society anti-corruption project by DFID.

However, as REDD+ schemes and policies might have socio-economic impacts on agriculture and other sectors, it is also essential to safeguard the interests and rights of small scale and subsistence farmers – i.e. those who may not get benefits directly or who even may lose out from the REDD+ scheme. For example, there are millions of poor farmers who have either small pieces of lands or are even landless. If encroachment is selected as a key driver of D&D to be addressed by REDD+, this may lead to interventions whereby the government retakes control over such encroached lands – having direct negative implications on livelihoods and food security. In such case, REDD+ funds can help compensate for their livelihood and security.

7.2.5 Road sector policies and measures

Roads are considered the backbone of the economy, and road network expansion leads to increased connectivity, mobility and profitability of the rural economy. This in-turn contributes to both farm and off-farm employment. Road expansion will continue to get high priority in Nepal. However, the environmental impacts of road construction can be substantially reduced with democratic and inclusive decisions, proper planning, use of sustainable technologies, and inbuilt maintenance and repair arrangements.

There is an increased emphasis on the green road approach to construct the rural roads in Nepal. This takes a comprehensive approach to sustainability, and ensures that the environmental and social aspects are considered along with the economic ones. This means combining democratic decision processes, participatory planning tools and sustainable technologies.

It is important that local level road construction originates and develops through a decentralized and participatory process led by local authorities. Local authorities and other stakeholders collectively should decide and develop the District Transport Master Plan. This should then be used as the basis for aligning district with national development priorities; and for the integration of economic, social and environmental aspects. Such a plan decides on road alignment, mobilisation of local resources and labor, user group formation and monitoring and maintenance arrangement.

REDD+ programme could help bring the sustainability of roads into public debate, which may result in two outcomes. First, increasing public interests and commitment to reducing emissions would generate a better understanding of the issues and help identify areas that need immediate attention. Second, the debate would help transform the road planning and construction process, so that it internalizes environmental issues, including a consideration of the relative costs and benefits of constructing roads with different levels of sustainability. At the same time, REDD+ revenues can be channeled towards supporting more sustainable technologies for road construction and maintenance arrangements.

7.2.6 Energy sector policies and measures

Strategies aiming to reduce fuelwood consumption must be integrated with strategies to ensure access to affordable, reliable and sustainable sources of energy to all. Such strategies may combine: (i) improving sustainability and efficiency of fuelwood production and use; (ii) support to biogas and other renewable energy and; (iii) increasing access to electricity, primarily through small and micro hydro. Some potential strategies to address energy related drivers of D&D are summarized in Annex 11.

Diverse initiatives have sought to promote technological and institutional innovations in producing and supplying alternative, clean energy sources. These have notably focused on small scale hydropower (usually off-grid), installation of solar power (especially in the mountain regions and urban areas), biogas (especially in Terai and

along the lower valleys in the hills) and ICS. Rural energy policies and medium-term development plans have prioritized these areas and have invested resources into it.

REDD+ can build on these policy and programmatic initiatives. It is noted that funding such initiatives not only reduces fuelwood consumption but also provides a cleaner source of energy. Apart from reducing emissions, this would benefit rural women who suffer from respiratory and other health problems associated with the use of fuelwood. Also, REDD+ revenues could fund schemes aimed at increasing the supply of fuelwood through sustainable management of forests by introducing plantation and other silvicultural practices.

7.3 CONCLUSION AND FURTHER RESEARCH

Conducting the research has been an exercise in collecting data and information, raising awareness and understanding, initiating broad consultation, and facilitating a reflection and an exchange of ideas and opinions on the drivers of deforestation and forest degradation. As a result, it has informed the beginnings of a general consensus on the priority proximate drivers and underlying causes, and on generic approaches that REDD+ could support or adopt.

It will be important to promptly initiate pilot REDD+ actions in Nepal, not only to achieve results in terms of forests, but also because piloting leads to lessons learnt based on concrete experience. Such piloting should be implemented within a monitoring framework in order to optimize lesson learning.

However, the complexity revealed by this report implies that further study is warranted in a range of areas. This includes studies dedicated to the detailed design of future REDD+ interventions and studies targeting several specific issues identified as weakly understood in this report.

➦ Designing future REDD+ interventions

This aims to strategically design REDD+ interventions. Such interventions should be designed to positively impact the proximate drivers and/or underlying causes and in turn reduce D&D. Hence, REDD+ interventions have to be selected and designed based on the following:

- A detailed knowledge and understanding of the scale of the drivers and their impacts on forests. This would require detailed data on the scale and regional distribution of the drivers, the trends, and evidence of the quantitative effects on forests;
- Consideration of related interventions that other actors may be planning. REDD+ funded measures and policies should complement or help coordinate, but not be a substitute to, other domestic or international efforts to address certain specific drivers;
- The likely success of the intervention, in the challenging Nepal context. Even if the driver is massively important, REDD+ interventions should not be contemplated if the chances of success are too small;
- The likely multiplier effect. That is, by addressing one driver, it may be possible to have knock-on effects on other drivers.

Addressing specific weakness in the understanding of D&D and Nepal

The following gaps in understanding should be addressed, either through a literature review or through a dedicated study:

- The impact of new and improved roads in terms of opening up access to forests and attracting settlements, facilitating market access thus contributing to D&D.
- Agricultural intensification does not necessarily reduce pressure on forests in itself. It can lead to increased revenues and freed-up labor, and these may drive or enable people to clear more forest to further increase production. In addition, increased revenues also mean increased consumption of food, energy, clothes and other items which may come from forest or forested lands.
- The influence of global commodity chains and development impacts from China and India, for example on road construction and the movement of goods.
- More information and analysis on the trends with regards to governance, i.e. regarding: poor transparency and participation; weak law enforcement; corruption and weak tenure
- The two-way or displacement effect of protected areas and conservation areas. These reduce available land for agriculture or other land uses, and thus raise the opportunity costs of land, and thus make conversion elsewhere more economically attractive (i.e. in non-protected areas).
- A more in-depth analysis of land-use policy, covering, for example (i) how sectoral policies were translated into land use policy (ii) what happens in the implementation stage (for example existence of conflicting land use designations by different line agencies).
- A more in-depth analysis of the process of decentralization and federalism, notably where there may be conflicting mandates between national and national authorities. These may concern the forestry sector, but may also concern other sectors that influence land-use decisions.

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ANNEXES

Annex 1: Forest Sector Policy Documents Reviewed During the Analysis

1. Forest Act 1993, Forest Regulations 1995 and Community Forestry Guidelines 2009
2. National Park and Conservation Act 1973 and Buffer Zone Regulations 1994
3. Churia Area Program Strategy 2008, Rastrapati Churia Conservation Programme document
4. Forest Fire Management Strategy 2010
5. Forest Encroachment Control Strategy 2008
6. Leasehold Forest Policy 2002
7. Nepal Land-use Policy 2012
8. National Biodiversity Strategy 2002
9. Revised Forest Sector Policy 2000
10. Rangeland Policy 2012

Annex 2: Questionnaire used for Prioritizing Drivers of Deforestation and Degradation

SN	Drivers (not in order)	Coverage Area and distribution (1-5)	Volume of biomass removed (1-5)	Economic cost of reversal (1-5)	Socio-political cost of reversal (1-5)	Future strength (1-5)
1	Illegal logging					
2	Encroachment for -agricultural purpose					
3	Road					
4	Hydropower					
5	Forest fire					
6	Fuelwood collection					
7	Fodder collection lopping					
8	Invasive alien species					
9	Infrastructure -Buildings					
10	Unsustainable harvesting of NTFP					
11	Over Grazing					
12	Other driver					

Annex 3: Forestland Distributed to Sukumbasis and Encroached by Squatters

Responsible agency	Duration	Area	Remarks	Source of information
High level commissions for forestry sector reinforcement	1971-1991	116748 ha	19 commissions and 28 chairpersons even within a period of 1987-1991	MP Drona P Acharya report (1991)
Sukumbasi Commission	2048/8/1 -2051/8/29	2,296 Bigha (Morang, Bardiya, kailali)	Sailaja Acharya Commission	Report 1994
Sukumbasi Commission	2051/8/29 -2052/2/22	22,522 Bigha (59 districts)	Rishi Raj Lumsali Commission	Progress report 1994
	82,795 hectors (26 districts) (data obtained from 2002 is taken as reference)			The legislature parliament, natural resource management committee (study report on forest conservation issues 2067)
Landless settlers	93,132 hectors (data told to be ….till 3067)			High level investigation report 2067 on deforestation, forest encroachment and community forest

Annex 4[1]: Nepal Ranking amongst Worldwide Governance Indicators

Governance Indicator	Year	Percentile Rank	Governance Score	Standard Error
		(0-100)	(-2.5 to +2.5)	
Voice and Accountability	2011	31.5	-0.53	0.12
	2006	24	-0.91	0.12
	2002	23.1	-0.85	0.2
Political Stability Absence of Violence	2011	6.1	-1.55	0.26
	2006	3.8	-1.93	0.33
	2002	4.3	-1.81	0.45
Government Effectiveness	2011	22.7	-0.79	0.2
	2006	25.9	-0.77	0.19
	2002	35.6	-0.49	0.21
Regulatory Quality	2011	25.6	-0.72	0.17
	2006	33.3	-0.5	0.21
	2002	30.4	-0.58	0.26
Rule of Law	2011	17.4	-0.99	0.14
	2006	31.6	-0.63	0.19
	2002	36.4	-0.53	0.22
Control of Corruption	2011	23.2	-0.77	0.18
	2006	30.2	-0.63	0.21
	2002	44.9	-0.32	0.27
Voice and Accountability	2011	31.5	-0.53	0.12
	2006	24	-0.91	0.12
	2002	23.1	-0.85	0.2
Political Stability Absence of Violence	2011	6.1	-1.55	0.26
	2006	3.8	-1.93	0.33
	2002	4.3	-1.81	0.45
Government Effectiveness	2011	22.7	-0.79	0.2
	2006	25.9	-0.77	0.19
	2002	35.6	-0.49	0.21
Regulatory Quality	2011	25.6	-0.72	0.17
	2006	33.3	-0.5	0.21
	2002	30.4	-0.58	0.26
Rule of Law	2011	17.4	-0.99	0.14
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	2002	36.4	-0.53	0.22
Control of Corruption	2011	23.2	-0.77	0.18
	2006	30.2	-0.63	0.21
	2002	44.9	-0.32	0.27

1 **Source:** http://info.worldbank.org/governance/wgi/sc_chart.asp# (2002-2011)

Annex 5: Types of Misconduct at Various Levels in the Value Chain of Forest Management and Timber Trade

Misconduct at political level

1. Non-transparent staff transfer
2. Political leaders are interested seek to influence in staff transfer even at junior level
3. Trade union influence in staff transfer and other decisions
4. Political leaders protect forest criminals and influence in their trial and level cases.

Misconduct during the measurement

1. Manipulate growing stock during forest inventory
2. Manipulation of calculation of annual allowable harvest from growing stock
3. Measure only the good quality stem and do not count the branches, low quality wood
4. Categorise short pieces of timber as fuelwood though it can use for timber
5. Arrange permission in the name of fire line and construct a motorable road
6. Under figure of timber volume than actually harvested and sold
7. To put A grade timber into B grade so that the contractor pay less

Misconduct during sale of timber

1. Weak inspection and under table deal while cheeking VAT bill and income tax documents
2. Do not tally between the volume and quality of timber purchased and timber sold
3. Do not consider the market price, instead take the minimum price set by the government.
4. No limit or ceiling of market price –one can get any level of profit
5. Government company TCN also pays illegal money at various stages

Misconduct during transport

1. Transport new lot of timber on the old permit
2. Transport more than one lot based on only one permit
3. Mix illegal timber along with legal timber in the vehicle
4. Certify timber from government and community forests as originating from private forest
5. Do not monitor the gap between permitted volume and actual volume, and let go

6. Illegal timber is transported under the permission for family resettlement

7. Do not check the timber vehicle and let go

Unlawful benefit by different agents

1. Political leaders get bribe for their parties for individual benefits

2. Bureaucrats appeasing seniors and benefiting themselves

3. Local leaders involved in non-transparent, and unaccounted transactions for their institutional benefits- to fund development activities as well as personal benefits

4. Political parties and their sister organisations demand money for their organisational operation often through non-transparent way

5. Chulthe-Mundre generate money for their lavish lifestyle

6. Security personnel demand money for their own benefit

Contracting logging is at the heart of illegal, unsustainable logging

1. Contractors finance harvesting, collecting timber both government and CF

2. Contractors help CF handover, inventory, preparation of operational plan, calculate AAH, develop other documents, harvesting and transport to assigned depots. They ultimately secure the contract afterwards.

3. They are much smart in getting permits from DFO, dealing with Chulthe-mundre, help forge viable and mutually agreed deals among the officials,

4. Working through contractors is much effective, for both DFO and local forestry groups.

Ways of illegal, unsustainable and over harvesting of timber

1. Felling of unmarked straight and good quality tree instead of actually marked one

2. Felling of standing green trees instead of dead, decaying and …trees

3. Felling from more accessible plots/areas instead of less accessible areas though the total volume is estimated considering the whole forest area

4. Felling of new trees in the name of already existing decayed timber

5. Constructing motorable road from the permission of fire line and fell those trees

6. Over felling of trees in the excuse of infrastructure (electric line, construction sites…)

7. Smuggling of timber by professional smugglers

8. Felling tree disturbs other trees and they are also felled

9. Felling of more trees other and above then marked ones

Annex 6: Changes in Leadership of Ministry of Forests and Soil Conservation since 2006

Name	Tenure	Remarks
Ministers		
Gopal Rai	2005	
Dilendra Badu	2006	
MatrikaYadav	2007	
Kiran Gurung	2008	
Dipak Bohora	2009	
Bhanu Bhakta Joshi	2010	
Mo Wokil Musalman	2011	
Yadu Bansh Jha	2012	
Tek Bahadur Thapa Gharti	2013-	Incumbent
Secretaries		
Dr.Soymbhu Man Amatya	2005-2006	
Dr DamodarParajuli	2006-2006	
Tirtha Raj Sharma	2006-2008	
Dr Uday Raj Sharma	2008-2009	
YubrajBhual	2009-2011	
Chabiraj Pant	2011-2011	
KehavPrashadBhattarai	2011-2011	
NabinGhimire	2011-2012	
Dr. KC Paudel	2012-2013	
Ganesh Raj Joshi	2013-	Incumbent
Director General		
Dr Uday Raj Sharma	2005-2006	
SaradRai	2006-2006	
Dr Kehav Raj Kadel	2006-2008	
Dr. K C Paudel	2008-2009	
MadhavAcharya	2009-2010	
Gopal Kumar Shrestha	2010-2011	
Dr Annapurna Nanda Das	2011-2011	
BajraKisorYadav	2011-2012	
BN Oli	2013-	Incumbent

Annex 7: Periodic Plans and Measures to Address Deforestation and Forest Degradation

Plan/period	Key focus	Remarks
First plan (1956-51)	Forest conservation through afforestation	Predomination of command and control under powerful forest administration
Fifth plan (1975-1980)	Emphasis on forests' contribution the economic	
Sixth plan (1980-1985)	Emphasis on people's participation in forest conservation	Hill community forestry development project (29 hill districts) and Terai community forestry projects (14 Terai districts)
Seventh plan (1985-1990)	Meet daily forest product needs life, participation in afforestation	Reforestation target of 175,000ha, Research priorities for planting fast growing saplings, watersheds conservation, agroforestry
Eighth plan (1992-1997)	Stabilize the supply of timber, other forest products for daily need Supply of raw materials to forest based industries Increase income and employment opportunities for disadvantaged groups	CF, LHF, private forestry to enhance public participation Deprived sections to be prioritized for LHF Industrial forestry will be emphasized in appropriate areas
Ninth five year plan (1997-2002)	Poverty alleviation by providing economic opportunities for poor people in forest related opportunities	Emphasis on supplying daily needs for timber, fuelwood, fodder and other forest products Participatory forest management for poverty alleviation Management, processing and marketing of herbs Promoting private sector in government managed forests

Tenth five year plan (2002-2007)	Emphasizes greater role of forest resources in reducing poverty through various forest development activities	Forest encroachment control policy to attain balance between the natural environment and development Establishment of enterprises based on agroforestry for generating revenue Integrated watershed management and agroforestry Programmes to protect land and water in the Chure, Inner Terai and Terai regions Scientific management of national forests and supply of raw materials to forest-based industries. Collaborative forest in Terai with the active participation of all stakeholders. v) Promote private forestry and forest-based enterprises
11th Three Year Plan (2007-2009)	Emphasized role of forestry sector in Nepal.	Legal and institutional reform ii) Forestry development activities for revenue to address poverty iii) Equitable distribution of forest products to disadvantaged groups iv) 35% of CF income to Dalits, ethnic groups, women and poor
12th Three year plan (2010-2013)	Enhancement of ecosystem services, adaptation to climate change and livelihood improvement of local communities through participatory, decentralised forest management	Maintain proportion of forest area at 40% of the total national area Integrated watershed management through basin approach Rehabilitation of deforested land during the conflict period Develop mechanism to address encroachment, illegal felling and implement them
Thirteenth Plan (2013/14-2015/16)	Economic development through conservation and sustainable management of forest resources	Maintain proportion of forest at least 40% of the total national area Aforestation proportional to the area lost by development activities Conservation, sustainable management and optimal use of forest resources including flora and fauna

Annex 8: NVC Documents Following ways of Misconduct in Forestry

1. Allowing encroachers to capture forestlands and levy them periodically as a rent
2. Allowing more volume to contractors than actually seen in the documents
3. Allowing harvesting and transport of timber, under the category of 'fuelwood'
4. Using the same permit several times
5. Costing and claiming from plantation fencing without doing it in the field
6. Self involvement in timber smuggling
7. Let smugglers go unchecked
8. Allow over harvest, transport to those requesting for house construction
9. Intimidating and taking rent form collectors of NTFP, fodder, and fuelwood
10. Letting poachers to unchecked
11. Allow good quality wood under poor quality permit
12. Blackmail junior staff by keeping the files of their criminal investigation for long

Annex 9: Actions taken by the CIAA in the Forest Sector During 2010-2012

Decision of CIAA	Cases
2010	
Departmental action – 1	Wildlife trafficking
Order for correction -1	Corruption in plantation
Amount realize order – 1	Corruption in plantation
Recommendations – 6	1. Establishment of industry in outside of forest 2. Land compensation for displaced people 3. Maintain consistency in the price of timber 4. Formulation of policy to control encroachment 5. Preparation of timber trading guideline for CF
2011	
Departmental action – 2	1. Involvement of staffs in illegal logging of Khair 2. Registration of national forest in the name of individual
Order for correction -2	Misuse of government property for private interest
Amount realize order – 2	1. Misuse of royalty generated from national forest 2. Illegal logging in CF
Recommendations – 5	1. Control forest encroachment 2. Enforcement of timber trade rules 3. implementation of recommendations of study report on forest encroachment 4. Not utilization of CF money in infrastructures 5. develop a national policy for auctioning of Resin
2012	
Registered charge sheet -2	1. registered charge sheet in Special Court against 196 people including higher level forest officials in the case of corruption in CF of Dadeldhura district 2. registered charge sheet in Special Court against 15 people including higher level forest officials in the case of corruption in CF of Bardiya district
Investigating for legal action	1. Investigating against 113 forest officials for legal action in the corruption cases.

Annex 10: Recommendations (REDD+ Agriculture)

Policy measures	Cost of implementation	Socio-economic impacts	Potential support from REDD+ funds
Land use plan (identification of priority areas for forests, agriculture, settlements, that maximizes the production potentials of each land category)	Requires high political commitment, results in high initial cost of compliance	Some level of social unrest,	Can be used for further detail planning and support in its implementation
Increase/ensure peasant's access to land	Political feasibility moderate, no measure cost	Encourages investment, reduce dependency on forests	
Intensification (Increasing productivity through climate smart' agriculture)	High political feasibility, cost of technology and other support system	Benefits small scale and subsistence farmers (SSS)	REDD+ funds can support intensification through technology, extension
Agroforestry	Political feasibility moderate, cost of technology and other support system	Careful integration can benefit	REDD+ funds can support agroforestry promotion
Supportive policies (agricultural tariffs, subsidies, targeted support, PES, ecotourism)			

Annex 11: Recommendation (REDD+ energy)

Policy measures	Cost of implementation	Socio-economic impacts	Potential support from REDD+ funds
Sustainable management of natural wood fuel resources(based on OP/MP that is ecologically within the regeneration capacity)	No additional costs in CBFM, in Govt managed forest, need to introduce some workable regime	Communities relying on govt forest may suffer from restriction	
Active forest management including plantation	Some incentive to communities under CBFM, government must increase its investment for forest management	Government and communities both will benefit	REDD+ revenue can be spent for active forest management
Increase availability of renewable energy sources (electricity, biogas, biobriquette, LP gas)	Electricity is scarce in the short run, other sources are also not adequate	Poor people cannot afford to pay due to high price and scarcity	REDD funds can subsidize these sources
Improved cooking stove	High political support, Moderate cost to replace the existing cooking stoves, socio-cultural resistance in some case	+ve impacts for women and children	REDD+ funds can support such schemes

Annex 12: Past, Current and Future Trends of the Four Major Drivers

Key proximate drivers	Past	Current	Future	Trend
Illegal logging	There were cases of illegal logging but largely for household use	increased market mainly in Terai and road heads,	Demand exceeds mainly inTerai, continued short supply from sustainable management	Increasing
Encroachment of forestland	Encroachment increased along with hill-Terai migration since 1950s	hill-Terai migration Landlessness, food scarcity, weak tenure and political transition have induced encroachment	Landless HH increasing, growing food crisis and migration abroad	Increasing
Unsustainable harvesting of fuelwood	Historical problem since 1980s	Demand exceeds supply in Terai, only accessible forest are harvested	Increased supply in the hills, decreased demand, remains a persistent problem in Terai	Stable or Decreasing
Rural road construction	Was not an issue	Began since 1995 when funds to local governments increased substantially	Persistent demand to extend road, DDC/ VDCs will continue to prioritise it	Increasing

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http://www.tinyurl.com/nepal-drivers-redd

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