The Root Causes of Biodiversity Loss in the Terai Arc Landscape:

An exploration of factors affecting biodiversity loss and the relationship to livelihoods

Edited by Dawn Montanye

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ACRONYMS

AGDP	Agriculture Domestic Product
ANSAB	
APP	Agriculture Perspective Plan
CBO	Community Based Organization
CFUG	Community Forest User's Group
DDC	District Development Committee
DFID	UK Department for International Development
DFO	District Forest Office
DNPWC	Department of National Park and Wildlife Conservation
DoF	Department of Forest
FAO	UN Food and Agriculture Organisations
GDP	Gross Domestic Product
Ha	Hectare
HH	
HMG	His Majesty's Government
ICIMOD	International Centre for Integrated Mountain Development
LSGA	Local Self Governance Act
MAC	Ministry of Agriculture and Co-operatives
MFSC	Ministry of Forests and Soil Conservation
MPFS	
NGO	Non-Government Organization
NLSS	
NPC	National Planning Commission
NRs	Nepalese Rupees (1US$ is approx 70NRs)
NTFP	Non-Timber Forest Product
OFM	Operational Forest Management Plan (for each district, by DFO)
PCRW	
PDS	
PRSP	Poverty Reduction Strategy Paper
RCA	Root Causes Analysis
SAP	Structural Adjustment Programme
SAPROPS	
SFDP	
TAL	Terai Arc Landscape
UNDP	United Nations Development Project
VDC	Village Development Committee
WB	World Bank
WTO	World Trade Organization
WWF	World Wildlife Fund
WWF NP	WWF Nepal Program

I BACKGROUND

Maintaining the biodiversity of the TAL is critical to the ecological integrity of the area and the livelihoods of the people who live in and around the Terai. In Nepal, the TAL includes over 75% of the remaining forests of the Terai, which satisfy national and local demand for timber and non-timber resources and provide habitat for key wildlife species including tigers, rhinos and elephants. It also includes the Churia hills, which constitute important watersheds. Through community mobilization and the cooperation of different stakeholders for effective land-use and forest management, the TAL program aims to restore critical forest corridors in the Terai Arc Landscape. The objective is to link existing protected areas with forests under sustainable and participatory management practices and other 'conservation-friendly' land-uses that will provide sufficient cover for wildlife. This approach will help provide economic benefits to local people while simultaneously connecting core protected areas, maintaining high biological diversity, ensuring the long-term agricultural productivity of the Terai, and facilitating wildlife movement and genetic dispersal between wildlife populations.

In order to realize this vision for the Terai Arc landscape, WWF and partners are in the process of developing a strategy in order to address the threats and capitalize on opportunities at work in this region. One level of threat occurs at the site level where various livelihood strategies are more often than not having a negative impact on the natural resource base, in turn further exacerbating poverty. These strategies range from forest conversion for agriculture, to grazing, poaching and fuel wood collection. Behind these livelihood activities are a variety of factors, often removed from the site level that are driving and influencing this behavior. These root cause factors can be described broadly as demographic, inequality and poverty, public policies, markets and politics, macro economic policies and structures and social change and development biases. These root causes are important to understand and address if we are to have meaningful and sustained conservation impact. Analysis that looks at the root causes helps to identify those factors that are having the greatest impact on conservation and on sustainable livelihoods.

Degradation of the Terai's environment began when it was opened to settlers in the 1950s. The rapid ensuing population expansion resulted in widespread clearance of forests, and started a trend of pollution and overextraction. So far, the more the population increases, the greater has been the pressure on the Terai's environment. Forest clearance and degradation is the major impact environmental trend that is taking place in the TAL.

The clearance of the Terai's forests has been well documented by the MFSC through land resources mapping using satellite imagery and aerial photos reinforced by ground-truthing. An MFSC study found that almost 100,000ha of forest had been lost from the Terai between 1978 and 1991, equating to an annual rate of 1.3%. The biggest absolute loss of forest has taken place in the Far West in Kanchanpur and Kailali, with a decrease in forest area of 12,400 and 16,100 ha, respectively (MFSC, 1994).

Presently, the centrally controlled approach of protecting and managing forest resources and species is inadequate, inefficient and unsustainable. This exclusionary

approach is also socially unjustifiable from the people's livelihood perspectives where their social and economic conditions have traditionally been closely connected with forest resources. An increasing important objective to address conservation and livelihood concerns is to engage in existing and widely used participatory approaches such as community forestry and buffer zone initiatives.

However, even these initiatives may not be sufficient if we fail to address major root causes arising from other economic realities and policies in place at the local, district, national and international levels. These factors have an important bearing on forest resource use, decision making and livelihood conditions. This study is the result of a Root Causes analysis in TAL analyzing the underlying economic and policy issues, which have an important bearing on the pressures to forest resources, species, and livelihoods in 14 districts of the TAL.

II ROOT CAUSES APPROACH AND METHODOLOGY

Objective of the Root Cause Analysis

The objective of looking at the root causes of biodiversity loss is to form a clear and complete picture of the social, economic, institutional, and political drivers that result in the loss of biodiversity. The Root Causes Analysis (MPO, 1998) seeks to answer the questions:

1) What are the underlying policies, institutional dynamics, market forces and human actions driving biodiversity loss?
2) How are these root causes interlinked?
3) Which factors are key at local levels, which at regional levels, and which at national or international levels?

The results of the analysis allow for the identification and development of strategic actions for achieving conservation and livelihood objectives.

Methodology

The RCA, has two parts: a) a training workshop to familiarize participants with the Root Causes methodology, and b) a detailed analysis carried out by a research team to validate and expand the output of the workshop.

a) Training Workshop

Training workshops usually include researchers as well as partners and other stakeholders from various government agencies, conservation and development groups. Workshop Objectives are to:

- Understand the rationale of looking at the root causes
- Develop skills and tools for assessing the root causes
- Understand the key types of questions to ask to identify the root causes
- Practice identifying root causes and designing a conceptual model in a case study
- Design an initial conceptual model which identifies the root causes

b) Analysis

Following the workshop, in depth analysis by researchers allows for the validation and broadening of initial root cause issues identified in the

workshop. Analysis is primarily conducted through literature review, using a mix of qualitative and quantitative data and interviews.

The output of the workshop and analysis are:

- Identification of the socio-economic root causes at the local, regional, national and international levels using causal analysis.
- Establishing the "chains of explanation" that describe the relationship between the direct threats and root causes.
- Organization of the results of the analysis in a conceptual diagram that allows for the elaboration of a conservation strategy.
- Identification of priority root causes issues to address in order to achieve conservation and livelihoods objectives.

For the Terai Arc, research following the workshop included a livelihoods study. Two other key pieces of analysis that form the basis of this report include the study *Terai Arc: Institutions, Incentives and Forest Management* (Kanel et al, 2002) and an initial desktop study on root causes conducted by WWF.

Integration of Livelihoods Issues

A key component to a Root Causes analysis is a thorough understanding of livelihood issues. An important distinction to make in discussing livelihoods issues is that it is not just the identification of behavior that is having an impact on biodiversity and natural resources that is important to understand, but it is also the perspective on that behavior that is critical. The livelihood component of the analysis brings the particular perspective of the local communities as key stakeholders. An understanding of peoples' livelihood strategies, and decision-making from their perspective will inform better interventions for conservation and sustainable development.

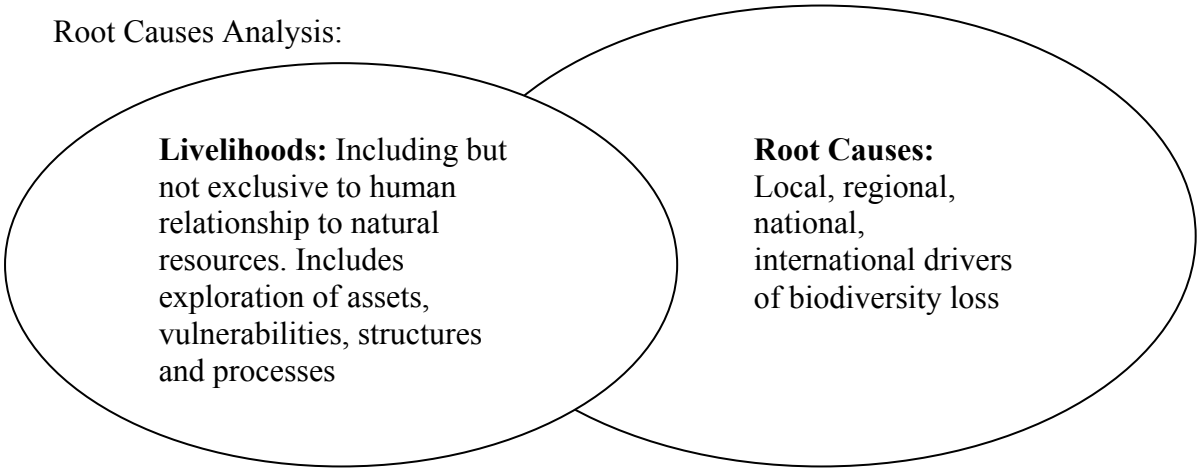
Considering livelihoods in a Root Causes analysis helps to:

- *Clarify the wider context of the poor people living in the Terai Arc*-How do forests figure into their lives-what is the percentage of importance and how feasible is it to get people engaged based upon this?
- *Strengthen the poverty perspective* -Breaking up the analysis beyond homogenized groups.
- *Gain peoples own perspective on forest-based livelihoods*-Would the poor put together same cause effect relationships as policy decision makers and others?
- *To fill in information gaps*-To make the links between issues such as declining productivity and encroachment, insurgency, and how policies are interpreted at district government level.
- *Strategies can be more targeted at local level*-Further defining issues, validating or questioning assumptions. When would technological improvement and access to credit be identified as issues and strategies to the poor?
- *Additional information to inform / further define strategies*- Providing a larger context.

Consideration of livelihood factors brings to the analysis the broader perspective on livelihoods beyond those activities and motivations that have directly to do with the

natural resource base to describe the context within which people are making decision. Issues such as gender differences, literacy, and vulnerabilities to environmental, social and economic conditions are key factors. This diagram illustrates how the Root Causes analysis focuses on the set of issues having an impact on biodiversity loss, and the consideration of livelihoods looks at those issues, but the wider livelihoods context as well.

Root Causes Analysis:



III FORESTS, SPECIES AND LIVELIHOODS OF THE TERAI ARC LANDSCAPE

Forests and Species

Nepal has unique global significance in the world's profile of biodiversity and hosts 2% and 4% of the floral plants and mammals respectively while it occupies only 0.1 percent of the world's landmass. The country is also endowed with 8% of world's bird species, and 1.5% and 1% of the reptiles and amphibians respectively (MOPE, 2000).

An important precondition for biodiversity conservation is to ensure that a land cover type called "forests" exists. Forests under different management modes create different opportunities for biodiversity. The result will be forests at different succession stages from pioneer to climax stages. Conservation efforts towards protecting flagship species require useful habitats for other, less charismatic, species to thrive too (Schoubroek quoted in Mikkola, 2002). Thus, the conservation and sustainable use of forest biodiversity and ecosystems is of immense importance. Nepal has allocated 18.3 % of its land covering about 27 thousand square kilometres, for protection and conservation purposes in 16 protected areas.

Five protected areas cover the Terai region of Nepal. However, there is growing scepticism and concern that the protected areas, particularly in the Terai, are surrounded by incompatible land use due to the surging human population and infrastructure. The consequences are mounting pressure on the resources even in the core of the protected areas. As a result, the conservation interests of the park authorities and the livelihood interest of the local inhabitants are often at the loggerhead. The delineation of protected areas threatens access to the basic needs of the local inhabitants often resulting into growing antagonism and conflicts.

Livelihoods

The majority of the TAL's rural population use natural resources. The poor have few other assets, and therefore depend on these resources – especially forests. Forests are used for fuel, animal fodder, food, building materials, medicine, and income generation. 61% of rural households still rely on fuel wood for cooking and still use traditional inefficient stoves. Forests are also heavily used for animal fodder, either through direct grazing, or collection for stall feeding. These resources are becoming less available, due to the massive decline in forest area since the 1950s. Only 12,100km^2 of forest remain in the TAL.

The TAL is very diverse, both geographically, and in terms of development pressures and potential. Population pressure continues to grow, and there have been no significant improvements in poverty. In addition, the gap between rich and poor is very wide, and the inequity of asset distribution more severe than in the rest of Nepal. The poor rely on very few and declining assets with little access to safety nets. Service delivery is poor and many rural households have barely entered the monetised economy.

A high proportion households do not own enough land to support themselves, and so are dependent on common property forest resources. In addition, forest resources are becoming less available, affecting the poor the most. Encroachment and settlement is still a serious threat to forests, as are overgrazing and overharvesting of fuel wood and timber, especially in government forests. Pressure is likely to remain high or even increase.

The objective of this study is to provide information on the direct threats and root causes to forest and species loss in the Terai, and through stakeholder dialogue develop a strategy. The strategy should be appropriate for conservation and improving the livelihoods of those who depend on those natural resources for survival. The strategy will need to work at all levels, including the policy environment, and be executed through partnerships that include both the conservation and development communities.

IV RESULTS OF THE ANALYSIS: DIRECT AND ROOT CAUSES OF FOREST AND SPECIES LOSS

The TAL vision depends on the maintenance of existing forest cover and the restoration of natural forest corridors. The Terai is experiencing an estimated annual forest depletion rate of 1.3%, up from 0.5% in1978-1993, according to the 2000 Forest Policy revisions. The loss of forests has serious implications for decreased biodiversity and loss of flagship species such as the rhino and tiger.

The direct threats to forest and species loss are:

- agricultural expansion
- forest fires
- unproductive cattle, overgrazing
- illegal timber trade
- collection of non-timber forest products
- fuel wood use

Each of these direct threats and their related root causes are covered in the following section.

1. Agriculture Expansion

As is explored in this section there are a number of root causes driving the expansion of agricultural land into forested areas. Together these root causes compound the dynamic by which a growing population has too little agricultural land under production given the technologies at hand. These root causes are:

- limited use of technical inputs and stagnant productivity
- inequitable land tenure
- limited access to credit
- weak extension
- migration and resettlement
- lack of economic alternatives
- limited agricultural inputs and infrastructure

- limited road networks
- land degradation
- poor links to market
- cross border issues
- livelihood conditions that limit diversification away from agriculture

1.1 LIMITED USE OF TECHNICAL INPUTS AND STAGNANT PRODUCTIVITY

The main cause of decrease in forest cover is reported to be conversion of forestland into agriculture land (FSD/HMG/FINNIDA 1993). One of the main drivers of encroachment is often poor agriculture practices and the poor use of existing agricultural land, but also poor access to the tools for improvement.

1.2 INEQUITABLE LAND TENURE

Another factor driving agriculture expansion and poor use of land is the lack of land tenure and the fact that most of the population in the Terai don't own enough land to ensure food security.

Ownership of land is of powerful cultural and economic significance to the people of Nepal, and provides the context within which community and family relations are expressed (NEPAN, 1999). All of the participatory studies reviewed highlighted the importance of land ownership to food security and livelihoods (WFP, 2001). Lack of land and property, is identified by communities as the major cause of poverty (NEPAN, 1999; New Era 1997).

Land ownership remains highly inequitable in the Terai, despite several government attempts to address the problem. Many people have no land, or only a house plot. Many of those who do own land do not have official land certificates, which makes them vulnerable to exploitation. Some people report that government officials and police chase them off land not registered to them and destroy their crops (New Era, 1997).

With, on average, more than four land parcels per holding (Quoted in HDR 1998 from CBS 1993), the bottom 40 percent of the agricultural households operates only 9 percent of the total agricultural land area while top 6 percent occupy more than 33 percent (HDR 1998).

Even though dual ownership is abolished in law, in practice, it still exists. This dual ownership discourages both owner and tenant to invest in land. The rural credit survey (NRB 1994) reports that investment in land improvements is less than 3 percent of household income (HDR 1998).

The wide gap between cultivable land in the Terai versus the rest of the country brings more people to the Terai. This coupled with inequity of land holdings has aggravated the pressure on forest resources.

The government in august 2001 announced a land reform program aimed at more equitable distribution of land with the particular objective of re-distribution of lands to the landless and marginal groups. The potential was the reduction of structural problems in agricultural land especially in Terai and a re-distributive effect in TAL

regions in favor of landless and marginal farmers. The effectiveness of this program however needs to be assessed.

1.3 LIMITED ACCESS TO CREDIT

Credit is important not only for investment in agriculture and agriculture related activities but also to start non-agricultural entrepreneurial and business activities which generates alternative employment. Lack of credit hampers both greater agricultural productivity and the ability to diversify into alternative activities for income generation, which would take some of the pressure off of the need for forest encroachment and alleviate livelihood vulnerability.

However, in 1990, only 9 percent of the landless households had access to such credit compared to 38 percent of the large farm households. Most of these loans were used for household consumption, with only 29 percent going to business investment. The lower income groups tended to have higher borrowing rates, using 62 percent of the loan for consumption (HDR 1998).

80 percent of the formal sector loan is collateral based. Collateral based lending practices have deprived the small, marginal and landless households of institutional borrowing. NLSS 1986 shows 86 percent of the formal credit is issued against collateral in the form of land and property.

Micro credit programs are an option, but their sustainability has been questioned due to the high service delivery cost. The service delivery cost is 12 percent of the loan for SFDP, 42 percent for PCRW and 10-20 percent for rural development banks. The operating cost ranges between 16-20 percent (HDR 1998). The government has started giving rural development banks direct small loans on group guarantees to the poorest women, mostly in the Terai, however, only one bank operating in the western region is in a healthy state, the rest are operating at a loss.

Limited availability, high operating costs and mostly collateral based lending has limited the use of credit by marginal farmers and landless for investing in better agriculture practices and starting alternative employment activities. Many households in Kailali and Kanchapur living near the forest do not hold land certificates, therefore they are unable to get credit from the banks (Upadhaya and Yonzon 2001). Where there is availability of credit, the absence of strong institutional support measures to make proper use of credit has put poor people in a debt trap. All of these factors are limitations to the ability to invest in better agriculture practices, often driving encroachment into forests to satisfy food security needs.

1.4 WEAK EXTENSION

Poor agricultural practices tend to reduce the efficient use of existing agricultural land, consequently driving encroachment into forests for access to better soils. Front line extension workers from the district offices are generally weak in their technical knowledge and do not move around the area sufficiently. One World Bank study found that 80% of farmers had never met an extension worker (Mathema, 1999).

1.5 MIGRATION AND RESETTLEMENT

In recent years, due to government policies to stop further clearing of forestlands, many latecomers and those indigenous people who lost their land to migrants are reduced to landless and near landless situations. These people's pre-occupation with

survival will certainly dwarf long term benefits of forest resource conservation despite an increasing sense of awareness about the need for sustainable use of forest resources for their own benefits.

Further, the government resettlement and rehabilitation/relocation program is putting further pressure on forest as people are resettled in the vicinity or edge of the forest and then gradually and continuously encroach and expand the agricultural land by clearing the forest. Similarly, the squatters and landless people (a case of Shivapur VDC, Hallanagar, Kapilbastu district and Rajana VDC, Bankhet, Banke district) have settled illegally by clearing the forest and expanding the farm land. Most of these people are the landless migrants coming from the different mid-hill districts of Jajarkot, Surkhet, Jumla, Rolpa, Gulmi, Arghakhanchi, and Kaski due to different push factors like increasing poverty and food insecurity. These people were removed by extreme measures such as setting fire to the settlements and bulldozing them, but they have still returned to settle in the same areas.

1.6 LACK OF ECONOMIC ALTERNATIVES

For the poor, the return on agriculture land is the lowest, due to the smaller size of holdings, lower share of good quality and irrigated land, limited access to technology and insufficient access to rural roads. Despite the fact that the Terai region produce 16 percent more food than it requires, in 1997(Sharma and Poudel 2001) the NLSS showed 44.86 percent of the Terai households do not produce enough food needed for household consumption.

In addition, alternative economic opportunities are limited for an overwhelming majority of the households in TAL districts. Households having small-scale non-agricultural activities such as manufacturing, trade/business, transport and others ranges from 35 percent in Banke and 25 percent in Parsa to 15 percent in Palpa (CBS census 2001). The access to vocational education for the poor is very limited. Though government policies have recognized this, in-terms of budget flow, it has received inadequate attention. The lack of access to vocational education reduces opportunities to create alternative employment opportunities away from agriculture.

Although most of the manufacturing industries are located in Terai, trade liberalization measures and discouragement of import substitution have reduced the competitive advantage of Nepalese industries vis-vis other countries and industries in the Terai have not flourished in this liberalized environment. This has limited the creation of alternative income opportunities in Terai including the TAL region.

The government has a policy to increase expenditure in the rural areas. However, due to security reasons and slower revenue growth rate, increased current expenditures and reduced foreign assistance in real terms and development expenditure has stagnated. The implication is that low land productivity and lack of alternative employment opportunities can increase the pressure on forests both through clearing for farmland and unsustainable use for alternative livelihood strategies.

1.7 LIMITED AGRICULTURAL INPUTS AND INFRASTRUCTURE

Poor yields and low agricultural productivity which serves as a driver of forest loss in Nepal has been attributed in part to the low application rate of fertilizers, the lowest in South Asia (WB 2000). This low rate of application is due in part to the elimination of

the fertilizer subsidy as part of the 1999 agricultural sectoral reform program. The elimination of the subsidy raised the cost of fertilizer for farmers. In addition, the abolishment of the fertilizer subsidy was not offset by compensating policies to improve infrastructure, better access to credit, more public funds for the development and dissemination of improved seeds, and additional transitional support to cushion farmers from higher fertilizer prices. The poorest families do not have enough capital to invest in chemical fertilizers, and compost remains the only source to sustain and improve crop productivity and secure food sufficiency.

Some farmers are however increasingly shifting from traditional to modern varieties of crops with the adoption of chemical fertilizer and pesticides. This shift not coupled with agricultural extension on appropriate practices related to fertilizer application can result in overuse and misuse of such inputs potentially detrimental to human health and the environment.

In terms of irrigation, the Agricultural Census of 1991/2 reported that an average of 52% of TAL households have irrigated land. About 50% of these (both large and small landowners) relied only on seasonal sources, i.e. rain fed irrigation.

Consistent with the APP strategy, there have been moves to shift away from heavy emphasis on big surface irrigation in the Terai region, including Terai districts of TAL, to shallow tube-wells, small and medium scale surface schemes, and flood control and emergency repairs which are more accessible to small scale farmers. Accessible irrigation schemes such as this improve agricultural efficiency and yield, potentially reducing the pressure on forest conversion for agriculture.

For a while the government was subsidizing farmers for private and community development of shallow and deep tube-wells at varying rates, 40 percent for individual shallow tube-wells and 80 percent for community shallow tube-wells. However, in 1999, the subsidy for individual shallow tube-wells was eliminated, while those for community tube-wells and deep tube-wells were reduced to 60 percent to 84 percent respectively. Since 2000, all subsidies have been eliminated (WB 2000).

The elimination of subsidies has drastically reduced the adoption of shallow tube-wells, which has most likely contributed in the continuing low growth of agricultural output in the Terai.

Even with the APP strategy, a substantial part of the budget still goes to surface irrigation. This highly subsidized surface irrigation has suffered from ill management and therefore low utilization. The WB/SAPPROS/NPC 1999 study done in the Terai shows subsidies in the past heavily skewed in favor of more wealthy communities. This support for large scale irrigation has the effect of biasing community choice in favor of large scale technically complex systems that are operationally and financially less sustainable and are not currently targeted to benefit the poor and small scale farmer, consequen aving impact of efficiency of agricultural production.

1.8 LIMITED ROAD NETWORKS

The existence of rural roads is crucial for input delivery and effective extension services for agriculture development. In turn this infrastructure is necessary for more efficient agricultural production as well as access to markets for the sale of those

goods. Both of these aspects are seen as important for alleviating the pressure on forests due to poor agricultural practices and lack of economic alternatives.

Until the 1960s, Nepal had virtually no road system. It expanded from 2000km in the 1960s to 11867 km in 1997, with black topped roads consisting of only 3660 km (WB 2000). The reach to the poor has been limited as the total constructed road is only 93 km per thousand sq. km resulting in 17 out of 75 districts of Nepal still without road connectivity.

Over four fifths of the district level budget goes to infrastructure development. At the central level budget, roads constitute a major portion of the infrastructure budget followed by irrigation and river training particularly to the Terai. However, in 1999/2000, the share of spending directly related to the poor stood at less than one third of the total budget. Looking at the local budget alone, about 80 percent of the spending targets poor. In 1999/2000, only 18 percent of total budget was allocated to the local level (HDR 2001).

Although the APP has emphasized rural agricultural roads as one of the major inputs for agricultural growth, in the first three years of the ninth five-year plan, only 11 percent of the planned budget was invested and 7.3 percent of physical achievements were made (Sharma and Poudel 2001). While road infrastructure in the Terai including TAL districts is much better compared to the hills and mountains, the shortage of bridges and limited network of graveled and blacktop roads has limited the use of roads during the rainy season. A WB/SAPROPS/NPC (1999) study found that public investment allocated to rural infrastructure in the Terai is also grossly inadequate to cover the investment needs as assessed by communities.

1.9 LAND DEGRADATION, FLOODING AND LANDSLIDES IN THE CHURIA HILLS

The10th plan emphasizes reduced soil erosion through use of perennial crops and sloping land agriculture technology. These practices are meant to be done in cooperation with communities, utilizing local bodies and NGOs. In reality, growing population pressure and limited scope for expansion of cultivable land has led to increased land use intensity from 120 percent in 1985 to 140 percent in 1999/2000.

Slower growth in the use of plant nutrients coupled with increased land use intensity has led to the depletion of soil nutrients. Unbalanced fertilizer use has resulted in soil degradation, which in turn has reduced water retention capacity of soils. Inappropriate agricultural techniques in the Churia hills has left those forests, with their easily erodable soils particularly vulnerable. The cumulative effect has been continuing degradation of fragile watersheds (Sharma and Poudel 2002). Consequently increasing cases of land erosion and landslides in the hills and mountain region has led to flooding in TAL areas. In turn, flash floods have led to further degradation of forest resources and are commonly seen in several disaster prone areas of Churia, inner Terai/foot hills, and low land Terai of the TAL.

Other causes of flooding and land degradation include narrow bridge construction along the highways which magnify the flow of water leading to gully erosion and forest degradation. Extraction of soil from the forest for infrastructure development (roads, dams, culverts) and household consumption for pottery making and house

construction also contributes to gully erosion loss of forestland. Landslides are exacerbated by over grazing, slash and burn agriculture and forest fire.

1.10 POOR LINKS TO MARKET

Access to markets has a significant impact on earning potential in the Terai and on potential for development of livelihood activities away from reliance on forest resources. The main markets are located along roads, and many sprang up along the east-west highway after its completion. While the road network is better in the Terai than in the hills and mountains, there are still many communities hours away from their nearest market. The PDDP study, for example, found that an average of 24% of people live more than six hours walk from the nearest market (NPC 2001/2).

Private sector development was an important part of the government's Ninth Five Year Plan, meant to provide one avenue for links to markets. The Plan was initially quite successful, but private investment declined noticeably towards the end of the Plan's period, due partly to the insurgency, but also to the poor implementation of policies governing the private sector. The lack of clarity in laws and regulations, the unpredictability of their enforcement, and the excessive bureaucracy continue to place a heavy burden on the private sector (NPC, 2003).

The private sector plays a dominant role in the agricultural produce trade, mostly food products. The trading system is not well organised, except for dairy milk, poultry, cereal grains, oil seeds, pulses and tea (Vaidya, 1997). For industrial commodities such as sugarcane, tobacco, jute and tea, farmers tend to have direct access to the industries for the sale of their commodities, and industries in turn use their own marketing network for further trading. Otherwise, many middlemen and traders are involved, and farmers are often cheated (Mathema, 1999).

1.11 CROSS BORDER ISSUES

Agriculture trade and production in the Terai are significantly affected by its proximity to India and having India as a trading partner. Despite growth in exports in last few years, there exists a huge trade deficit with India. Due to the 1700 km of open border with India, especially along the Terai districts, the cross border differential in prices and government support measures becomes important in determining direction and volume of trade between the two countries. Its effect on livelihoods in Nepal is significant, especially because of the small size of the Nepalese economy.

The support structure in India vis-à-sus Nepal plays a key role in the trade dynamic. In Nepal, the structural adjustment reform agenda for the agriculture sector focused on price correcting measures such as withdrawal of fertilizer subsidies, and capital and investment subsidies on inputs like irrigation and other support services. These strategies resulted in increased costs of production and subsequent increases in food prices. This has hurt marginal farmers the most (Khatiwada 2001), leading to ever more increased dependence on agricultural production for food security.

The Indian government in contrast has given high importance to the agriculture sector. Agricultural production has been supported and protected through a wide range of measures including subsidies and incentives. Some of these support features are minimum support to agro product prices, public distribution systems including targeted PDS and national agricultural insurance schemes. This direct support is

supplemented by a strong system of agriculture marketing, cooperative marketing, provisioning of agriculture inputs such as fertilizer, irrigation and credit. A minimum support price is provided for 24 major agricultural products and is guarantee by the government. There is a heavy subsidy in tube wells, hand pipes and other irrigation facilities. Similarly, a subsidy is provided to purchase hybrid seeds, fertilizers, pesticides and other accessories.

In India, there is also a credit support mechanism to purchase short term and long term inputs needed by farmers. For loan seeking farmers, insurance is mandatory. Through mandi samitis, the marketing needs of the farmers are addressed. Similarly a subsidy is provided for mechanical equipment related to agriculture, livestock and horticulture for production, processing, and preservations activities (AEC/FNCCI, 2000).

As a result of the two different tactics between support structures, the average retail price for almost all commodities is lower in Indian than in Nepal (AEC/FNCCI 2002). This makes the agriculture market and indeed other commodities less competitive and therefore less viable for providing strong livelihood options.

Currently, Nepal is in the final stage of the process of accession to the World Trade Organisation. The expected impact on agriculture is positive in terms of expanded trade opportunities, access to trade dispute resolution mechanisms, and better access to technology and markets. However, the impact is expected to be modest in the medium term. Several conditions related to improvement of productivity, infrastructure, financial systems and agroenterprise development will be needed before a greater impact will be felt (ANZDEC, 2002).

1.12 LIVELIHOOD CONDITIONS THAT LIMIT DIVERSIFICATION AWAY FROM AGRICULTURE

Farming is the major livelihood strategy in the Terai. The majority of farmers grow staple crops for cash. Vegetables are commonly grown for household consumption. Agricultural land expansion, as revealed by a majority of the communities interviewed for the livelihood study, is for food security. Also driving land expansion is limited or un-available agriculture land, declining productivity, as well as limited off-farm employment opportunities.

The livelihoods study revealed that associated and underlying causes driving expansion activities included population increase through in-migration, high birth rates, declining soil quality, a poor economy limiting the ability to invest in agricultural inputs, inadequate skills for off-farm opportunities, and limited access to credit.

This is in contrast to middle and better-off households, where coping strategies are diverse. In the case of crop failure, for example, these households can switch to off-farm activities such as business and trade. Intensification and diversification by modernizing farming system such as use of hybrid seeds, chemical fertilizer, and improved irrigation facilities are other strategies to cope with stress and shock.

Medium and better-off households are also perceived to expand their registered land holdings by taking advantage of weak control mechanism and corrupt practices of

government officials who register the land. It was reported in Chaumala VDC, and Rajivpur, Kailali district that expansion of land and selling of land was increasingly becoming a profession, encouraged by the weak execution of rules and regulation.

The PRSP/10th plan indicates low and yearly fluctuating agricultural growth rates, inadequate social service delivery, and limited coverage of successful targeted programs, as some of the reasons for the continued high incidence of poverty. Political uncertainty, weak institutional capacity and weak public resource management have fuelled the perpetuation of poverty.

Economic reform programs focusing on liberalization were meant to bring development benefits, alleviating some of the poverty conditions. Benefits however remain largely confined to urban centers. The growth rate in rural areas where 60 percent of the people live and depend on agriculture is still slow. This has widened the economic gap between rural and urban Nepal. The share of agriculture on GDP in the last ten years has decreased from 49 percent in 1991 to 39 percent in 2000. However, in the same period the percentage of population based in agriculture has not declined.

2. Forest Fires

Forest fire was identified by all communities in the livelihood study as one of the key threats to TAL forests. Every year, forest fire destroys ground vegetation including newly emerged seedlings, and some time large standing green trees. The seriousness of the threat and its causes varies across agro-ecological zones. In low land Terai and inner valley/foothills of Churia, forests are more susceptible to forest fire during the dry season (April to June) and according to communities, it often occurs through carelessness of herders and visitors as they throw burning cigarettes and set fire to roast wild food. In the Churia hills (Benimanipur village of Deurali VDC in Nawalparasi District), forest fires also occur due to slash and burn cultivation.

In some low land Terai areas, communities have also reported fires set in both community and government forests as revenge. Lack of ownership, high competition for resource use, conflict in resource distribution and disagreement among community forest user groups (CFUGs) in demarcation of areas are some of the root causes of revenge forest fires. People argue that lack of awareness, poor forest management by CFUGs, and inadequate facilitation, monitoring, and enforcement of control mechanisms from government sector also drives the occurrence of forest fires.

Communities have also reported that the traditional system of setting fire for better grass regeneration is another reason for forest fires. Communities of Parsa Wildlife Reserve Buffer Zone area report that the reserve staff themselves burned fire every year for better grass regeneration, sometimes spreading into nearby government and community forests.

Overall, the frequency of forest fire has been retarded over the last few years. The control of the forest fire is more in community forests than in the government forests. The high frequency and intensity of forest fire, however, is in the northern VDCs where shifting cultivation is predominantly practiced.

3. Unproductive Cattle /Overgrazing

Livestock is the dominant sub-sector of the agriculture sector. It contributes for 29 percent of AGDP. Nepal is known for having the highest density in livestock. The species growth is 2.6 percent despite high density (Sharma and Poudel 2002). In 10 TAL districts, the head count of different livestock populations is reported to be 1.47 million cattle, followed by goats/sheep 960 thousand, buffalo 700 thousand, and pigs at 163 thousand. The head count of poultry birds and ducks was reported to be 4.67 million and 121,000 respectively (Khatri-Chetri 2002). The large cattle population reflects the Hindu tradition of protection of cows, as well as a government ban on cow slaughter.

Livestock farming is becoming increasingly popular, both in rich and poor households. The availability of forest resources as fodder means that livestock-raising is a livelihood option open to the very poor who have little or no land. With few other forms of saving or insurance available, livestock are valued by the poor as an important means of saving for bad times.

Due to limited landholdings and open access to forest, fodder and forage are usually not grown in the communities' private land. In the three bottleneck areas of Banke Dang and Rupendhi, free grazing in the national forests is the most common method of feeding livestock (cattle and goats) for a majority of the households. Banning of grazing in some of the community forests and a limited availability of fodder trees in the private lands has led to increased grazing in national forests. This has also contributed to clearing of forest resources (Chhetri 2001). The government forests, seen as an open-access resource, which without the States effective law enforcement, are vulnerable to unlimited exploitation.

While the number of livestock is high, the productivity rate is however the lowest in the world. Low productivity is associated with a poor genetic base of animals and a declining feed resource base. Limitations to market production include the high cost of ruminant animal production, weak extension support services, limited access to credit and to a fluid milk market. Improved animals in Nepal constitute only 12.3 percent in cattle, 36 percent in buffalo and only 5 percent in goats. The feed availability from declining feed base is only 67 percent of what is required (Sharma and Poudel 2002).

4. Illegal Timber Trade

Another reason for forest degradation is heavy pressure on the forests from extraction for fuel wood and timber (Khatri-Chetri 2001). Although there is little accurate information, a major cause of depletion of forest resources is associated with organized illegal felling for timber. Much of this felling is carried out by traders and through contractors and is often related to the proximity of TAL areas to road networks, an open border with India and demand inside the country.

Illegal extraction of timber is reported to occur in all the eco-zones, including Lowland Terai, Churia and the Inner Terai/Foot hills. However, cases of illegal timber extraction are found to be greatest in the far western regions of lowland Terai, as forests of this area are along good road networks and are linked to India.

Interaction with community reveals that illegal and organized felling of trees by traders and contractors is also posing threat to forest degradation. The contractors, who are actually the authorized and licensed person by the DoF, cut the trees more than the allowance. In most of the cases such contractors will not be caught and arrested by the forest office as they have already built good linkages with them by paying certain amount of money. So, it is also the corrupted mentality and corruption leading to forest resource degradation. Most of the community members said that the forest officers and leaders of CFUGs, in some cases, will also be a part of the smuggling network. These issues are thus leading to poor forest management and weak control mechanism and monitoring from the concerned authority.

Due to open boarder and forest linked with India, the proposed TAL's biological corridor has become the illegal trade corridor of timber. Besides, the local people themselves are also involved in such illegal trading activities due to economic incentives as well as livelihood pressure. Also the gap between the official price of the timber products and the price of timber in sawmill and black market is encouraging the harvesting and trade of timber.

Villagers often report that violators are usually the village leaders, other political leaders, illegal loggers, corrupt forest officers and the rich and elite who have high political ties. It is further reported that illegal loggers usually come with legal documents to harvest timber from government forests and in a mutual understanding with government officers and CFUG leaders, harvest timber beyond what is legally allowed.

In addition, well-organized smuggling networks take advantage of weak local institutions unable to manage high-value, accessible national forests. A lack of local authority over the forests provides an incentive for rent seeking at that level. The gap between the official price of the timber products and the black market price also encourages illegal trade. (Mahat, 2002; Parajuli 2001)

Also driving illegal timber extraction is increasing demand (at household, urban and industrial levels) from rapid urbanization, infrastructure expansion and house construction. Rapid population growth due to increased in-migration from the hills, high birth rates and family separation has encouraged felling of trees for construction purpose at the community level. Local people will choose timber over alternative materials, as it is either free or at very cheap.

The insecurity associated with Maoist activities has been a boon for some commercial illegal traders of forest resources. In the atmosphere of uncertainty, it is reported that the contractors are bribing forest guards to smuggle forest products (Upadhaya and Yonzon 2001).

5. Collection of Non Timber Forest Products (NTFPs)

NTFP trading generates substantial revenue to the national economy. The revenue generated from NTFP sales was 0.22 and 0.17 US$(millions) in 19998/99 and 1999/2000 respectively. ANSAB (1997) estimates that more than NRs 1.5 billion (US $ 26,785,700) in NTFPs contributes to the Nepalese economy. Many high valued and low valued medicinal NTFPs are traded from the districts of TAL.

For ethnic communities in TAL like Tharus, Chepang, Mushhar, Razi, Majhi, Chamar, Ahir, NTFP form an integral part of their subsistence livelihoods. They use NTFPs for medicinal and religious purposes, dietary supplements, fodder, household construction, household items and other subsistence purposes.

Generally the actors in the marketing chain are collectors, middlemen, road head traders, Terai traders and Indian traders. Apart from this, a number of stakeholders are also involved in the marketing chain identified as internal and external stakeholders. Collectors form the basic tier in the marketing chain are generally the marginalised poor and disadvantaged groups who get only a nominal share of income despite their hard efforts. It is usually the external stakeholders who are powerful beneficiaries in the marketing chain.

There are several constraints in the marketing of NTFPs. One constraint is that Nepal is land locked and is bound to rely on India for trade routes to other countries. In addition to this long and complex marketing chains, lack of market and price information to collectors compounded by lack of value added to the traded products hinder collectors from getting a fair market price.

Moreover, there are substantial risks associated with this business such as susceptibility of the product to various kinds of damage during storage and transportation and uncertainty and unpredictability of demand and supply.

Although policies related to NTFP focus on participation and economic development of rural people, rules and regulation in practice are more restrictive in nature. Furthermore lack of proper implementation of the rules and regulations has led to over harvesting of the commercially important TAL species. The permit system seems to be a tool for rent extraction and a way to increase revenues rather than a means of controlling harvest to enhance sustainability. Because of sometimes unclear property rights, there is little incentive to collectors to conserve and sustainably harvest NTFPs.

Irrational royalty fixation and bans on certain species have contributed to illegal extraction of these resources since they are not based on the evaluation of the state of the resource base. Furthermore, lack of control over the resources by the concerned authority, bribe seeking, lengthy process for permits and trade, and costly export formalities are some major threats for sustainability of NTFPs. Most forest user groups have yet to incorporate NTFP provisions into the forest management operational plans and hence, have practically no control of commercial products.

6. Fuel Wood Use

Rural Nepal's dependence on fuel wood is substantial and fuel wood still represents 78 percent of energy needs of the country. The majority of rural households still rely on traditional stoves, which require significantly more fuel than improved stoves.

Unsustainable fuel wood harvesting is considered to be a major threat to TAL forests, particularly to government forests. Due to stringent enforcement of rules, unsustainable harvesting of fuel wood has almost stopped in community forests, but has resulted in the displacement of pressure onto government forests. Communities perceive that increased fuel wood demand in households, industries and urban areas

has encouraged unsustainable harvesting practices and is the single most important factor for forest degradation (Livelihoods Study).

At the household level, population increase due to in-migration and high birth rates in the Terai coupled with lack of affordable alternative energy technologies is leading to increased fuel wood demands. As a result of high demand of fuel wood from urban populations and industries in the TAL area, villagers, especially the poor and landless, often get involved in fuel wood harvesting and sale as a livelihood strategy. Harvest is commonly carried out in government forests and sometimes illegally in community forests.

In the Terai, 67.57% of the population uses firewood collected from forests for meeting energy needs. In the Terai only 17.23% percent of the population gets firewood from their own land. The fuel wood in the market also mainly comes from the forests.

Besides demand, other root causes driving unsustainable fuel wood extraction include failure of official marketing supply chains, which drive the illegal market. There is also a lack of active forest management for fuel wood and timber supply.

The government has taken steps to reduce fuel wood demand through improved energy efficiency and the adoption of alternative fuels in the industrial and rural sectors, through the Industrial Energy Management Plan. To promote use of biogas in rural areas, the government started providing subsidies beginning in 1991/92. A flat rate of Rs 7000 in the Terai and 10,000 in the hills was provided. The new subsidy policy of 2000 provided a subsidy for plants below 10cum only. A higher subsidy is given to remote areas and those inaccessible by roads. The implications are that the Terai and inner Terai, where most of the TAL districts lie, will receive the lowest amount of subsidy per plant. Depending on the size of the plant, the subsidy in Terai ranges between 6 to 7 thousand. At present there is no uniform program to provide a subsidy for ICS. The government and NGOs each have their individual support programs.

7. Wildlife Killing

Related to forest loss, but certainly an aspect of biodiversity loss in the Terai, is the killing of wildlife, both for trade and for revenge. Wildlife killing for trade is perpetuated by two forces. One is through local people who often see very limited benefit from wildlife except for to sell it through middle men who in turn are driven by international demand from southeast Asia. The demand is often for traditional medicine and ornaments. The other force is professional poachers who answer to the same international markets.

Poor enforcement of the Wildlife Act allows the practice to continue. Often park staff are not trained or equipped and the Army is recently channeled to address the insurgency. There is also political pressure from the mafia and corruption within customs and the security forces.

Wildlife killing for revenge is driven by communities where lives have been lost, where injuries have occurred or property damaged. Again there is very little perceived benefit by local of wildlife to their community. This is driven by the fact

that there is inadequate mitigation mechanisms to deal with loss of life or property and inadequate compensation. Often human wildlife conflicts occur because there is competition for resources. Settlements near forests and forestland conversion often exacerbates the chance for conflict. Often this is the result of poor land use planning, lack of enforcement and increased population in the Terai.

8. Broad Root Causes

The following root causes have an impact on some or all of the direct threats highlighted above.

These root causes are:

- livelihood conditions
- migration and natural population growth
- common property resources
- overlapping and contradictory legislation
- liberalization policies
- political instability/insecurity

These root causes are covered in more detail below.

8.1 LIVELIHOOD CONDITIONS

As indicated through the description of the direct threats highlighted above, many of these threats to forests and wildlife are also related to key livelihood strategies of people living in TAL. As in many parts of the country except few urban centers the majority of the population in TAL depends on agriculture for their food and income. They also depend on forest products for fuel-wood for energy and construction materials. Wildlife is used for food and income generation. The agricultural system is closely associated with livestock. Homestead livestock are used as draft animals and are the source of meat and milk products. Free grazing in forests is the major mode of feeding cattle and goats.

These livelihood strategies are a function of the assets and vulnerabilities that make up the livelihood context. Assets comprise the range of tangible and non-tangible capital at a human's disposal on which livelihoods are built. These include natural capital, human, financial, physical and social capital. For example, human capital represents the skills, knowledge, ability to labor and good health that allows people to pursue different livelihoods strategies (DFID, 1999).

In Nepal, human capital is lower than in neighboring countries. Access to both health and education services is poor, especially in remoter areas. Women continue to have significantly lower levels of literacy and lower school enrolment. Lack of education and lack of skilled labour resources are identified by communities and organisations as both a major barrier to development and a major cause of poverty (WFP, 2001; New Era, 1997).

Great advances have been made in health and education, but development indicators are still low for the Terai. Inequality, caste and gender discrimination are major problems. Community based organisations have helped to develop leadership and empower women, but social structure has changed little over the past 20 years.

Lack of financial income is a significant constraint for most poor rural households. Off-farm income and remittances are important for supplementing incomes, and are becoming more important. Borrowing is a common coping strategy, but the poor cannot borrow from institutional sources, as they have no collateral.

The vulnerability context is the external environment in which people exist, the external and internal forces, which affect their livelihoods. Vulnerabilities of the poor in the Terai include impacts from natural disasters, food insecurity, and impacts from natural resource degradation.

Forest degradation and water pollution are growing problems in the TAL. The massive forest clearance and degradation of the past 20 years have resulted in biodiversity loss, erosion, siltation and landslides. The livelihood impact has been loss of access to natural resources, and reduced productivity of agricultural land. Again, it is the poor who are most reliant on these resources, and therefore hardest hit.

In addition, infrastructure in the Terai, though better than in the hills and mountains, is still far below what is required – especially for roads, bridges and irrigation. This has major detrimental impacts on agricultural productivity, livelihoods and poverty and natural resource degradation.

Weak governance is recognised by all as being a constraint to livelihoods in the TAL. The decentralisation process has been slower than expected, and local government is still weak, both in terms of funds and capacity. Since July 2002 when the terms of elected officials lapsed, local governance has been through appointed representatives who are mostly concerned with law and order and the maintenance of basic services. Parallel 'People's Local Governments' have been established in Maoist controlled areas, at the village and sometimes district levels.

All of these conditions contribute significantly to exacerbation of poverty in the Terai, and the creation of circumstances that lead to resource exploitation. In turn, natural resource degradation increases the vulnerability of the poor and lessens their chances of improving their livelihood conditions. For more on the livelihood context of the people in TAL, see the Terai Arc Landscape Livelihoods Study.

8.2 MIGRATION AND NATURAL POPULATION GROWTH

The population in the TAL area is growing rapidly mainly through in-migration. This, coupled with the issues of land tenure and credit mentioned above, leave the forests quite vulnerable to clearing for agriculture. Within three decades the population in the three TAL districts of Banke, Dang and Rupandehi has tripled, although growth rates have been in decline in recent years. The Tharu population predominates in numbers.

The report of the population projections for Nepal 1996-2016 shows the average population growth rate in the Terai region is expected to be 2.37 percent per annum during the period 1991-2016, higher than the national average of 2.22. The share of population in Terai region will grow from 46.66 in 1991 to 48.77 in 2016. In the same period, the mountain and hill regions will experience a decline.

Since, most of these migrants do not own land in the Terai and are highly indebted, they will most likely try to settle in public lands and in or near public forest areas. Therefore, the growth rate of the population in the vicinity of forest areas could be even higher putting tremendous pressure on forest resources.

Aspirations for better living conditions, is the primary motivation for migration. The push factors include shortage of land and lack of employment opportunities in the hills and mountains, forcing people to migrate to the Terai. The pull factors in the Terai are comparatively better opportunities for land and employment (Chhetri 2001). Except for a few urban centers, alternative avenues for employment are limited in the hills and mountains compared to in the Terai. Historically migrants settled the land by clearing the forests and using it for agriculture, after which they were provided with legal ownership. Because of scarce land and laws restricting ownership by clearing, many migrants are now left landless.

The insecurity situation in the country has also had an impact on migration to the Terai. With the deterioration of the security situation, many people are moving to Terai regions especially from the mid west and far west. This is putting extra pressure in TAL districts and in turn on forest resources.

In Lalmatiya VDC, Nayabasti of Dang district, it was reported that there was massive migration from the mid-hills due to insurgency. Out of 165 HHs, a total of 55 HHs migrated from Rukum and Rolpa and settled in and around the forest area, encroaching into the forests and expanding agricultural land. In the far western region of Kailali district, there are number of earlier and later in-migrant communities from Dadeldhura, Baitadi, Darchula, Bajhang, Bajura, Doti, and Aacham, who migrated there both due to insurgency and different push and pull factors. Similarly, in the case of Mahadevpuri, the hill migrants are from Salyan, Rukum, Rolpa, Surkhet, Dang, Baglung, Nawalparasi, Syangja and Dailekh, and started to migrate after 1971.

Another settlement in Chisapani VDC, Kareli gaun, Banke district, are the rehabilitated/translocated settlement by government from Rara area of Mugu district in 1980. They were settled at the edge of Bardiya National Park area, and are now in the Buffer zone area.

Other migrants, particularly the poorer households settle near the roads maintaining subsistence livelihoods by selling forest resources, mostly fuel wood, and engage in forest-based wage labouring. Village and outsider contractors usually hire the poorest to harvest and transport timber both legally and illegally. The landless, those who are highly indebted and members of lower castes appear to migrate seasonally to India. In-migration from India has also been taking place. However, these Indian migrants to Nepal are mostly skilled (HDR 1998), and concentrate in urban centers.

8.3 COMMON PROPERTY RESOURCES

Access to common property resources is vital to the livelihoods of the poor. In general, the deeper the poverty, the greater the dependency on natural resources, as the poorest have few other resources to turn to. These natural resources tend to be those that are open access.

Forests in the Terai are largely owned by the government and therefore legally off limits. However, with the lack of active management, they are essentially open access, and are used extensively by local communities for grazing, fuel wood and NTFPs.

The handover of usufruct rights to Community Forest User Groups (CFUGs) as strengthened access to forest resources for many communities, and increased the income they receive from the forest. However, it has also often lead to reduced access to forest resources for the poor. Some Dalits, for example, reported that community forestry had adversely affected them as they were no longer allowed to make charcoal in the forest for their blacksmith activities (New Era, 1997, Winrock International, 2002).

The handover of forests to CFUGs has also meant that remote users – those that do not live near the forest but use its resources – are also sometimes restricted or banned (Shrestha, 2002). These poor people and remote users are forced to rely more heavily on government forest, thus increasing the pressure on government forests.

8.4 OVERLAPPING AND CONTRADICTORY LEGISLATION

Legislation governing natural resources is often overlapping and contradictory. Co-ordination between different ministries at the central level is recognised to be weak. The Forest Act, LSGA and other acts have many contradictions and gaps with respect to the management, utilisation and ownership of natural resources, and the role of User Groups and NGOs (ICIMOD, 2002).

For example, there is often the mistaken perception amongst local government that forests within a VDC or DDC are the property of that body. The LSGA states that natural heritage is the property of the VDC but the Forest Act claims ownership of forests for the government (Sharma, 2002). ICIMOD's study highlights contradictions in the different legal provisions governing use rights over different forest resources (ICIMOD, 2002).

The government's policy on forestry for the Terai and Churia is not fully developed, which has lead to some confusion over how to manage these forests. Indeed, communities in WWF's TAL critical areas felt that unclear government policy on community forests is one of the causes of forest resource degradation (Sharma, 2002; Chhetri, 2001).

There is a conflict between the policy and practice resulting in uncertainty and confusion among the major stakeholders of Community Forestry. While MPFS is silent in the context of community forestry in the Terai, the Forest Act 1993 does not define any geographical limitations. The 1993 Forest Act and 1995 Forest Regulation (HMG, 1995) remain the key legal instruments, but the Ministry of Forest and Soil Conservation (MFSC) and Department of Forests (DoF) often issues circulars with profound influence on the legal framework of community forestry. Moreover, the Local Self-governance Act (1999) is in obvious conflict with the Forest Act and thus aggravates legal conflicts

The backdrop to all of the structures affecting livelihoods and natural resource management in the Terai is the Local Self Governance Act of 1996, which initiated a process of decentralisation from central to local government. Decentralisation is

through locally elected District Development Committees (DDCs) and Village Development Committees (VDCs). These bodies are supposed to hold all responsibility for planning, resource mobilisation, allocation, monitoring and evaluation. They obtain funds through taxes, and grants from central government.

In reality, however, the central government is still hesitant about transferring power and the implementation of decentralisation programs has been slow. The majority of budget and responsibility therefore still lies with the district offices of the Ministries (NPC et al, 2000). This is partly due to lack of institutional and management capacity at the local level. A recent high-level government commission on decentralisation found strong evidence that planning and co-ordination processes at the centre, district and village level need to be strengthened if decentralisation is to proceed effectively (NPC et al, 2000).

Ultimately though slow implementation and lack of decision making ability leads to weak management of resources, and loss of livelihood opportunities.

8.5 LIMITS TO FOREST POLICY AND IMPACTS ON COMMUNITY FORESTRY

The Private Forests Nationalization Act of 1957 brought all forests under government jurisdiction. Since then, there has been a limited democratization of forest use, with the loosening of restrictions in 1978 that led to fuller engagement with community management through the Forest Act of 1993. Despite this trend to cede some forest use rights back to the local level, however, most forests are still restricted from use.

Retaining intact forests under government jurisdiction instead of making it available for community management leaves the government with a management role that it does not have the capacity to fulfill. The lack of government capacity to manage and protect the national forest areas allows for uncontrolled use by local stakeholders who lack an incentive to play a stewardship role since they have no official responsibility for the forest and no guarantee of future access.

Inequitable sharing of benefits within Community Forest User Groups (CFUGs) drives people to continue using the national forests as well. Lack of post-formation support for CFUGs and inadequate Operational Plans leads to poor forest management and consequent use of national forests to meet needs. Many CFUGs are unable to market timber outside the community due to restrictive by-laws. A refusal by some District Forest Offices (DFOs) to provide valuable forests for Community Forestry and a frequent refusal to approve CF Operational Plans that include timber marketing may encourage even those communities with a right to national forest to engage in illegal logging within the national forests.

The confusions and contradictions among different acts relating to rights of different institutions regarding use of forest resources is also an ongoing issue. Some of the examples are: The section 33(1) of the LSGA empowers VDCs to hear complaints relating, among other things, to pasture, grass and fuel wood, but the Forest Act does not provide such a rights to VDCs. Forestry legislation prevails over local government legislation. Similarly, there is a discretionary power to DFOs. The ICIMOD paper recommends among others, need for attaining consistency among forest Act, Rules, and other laws. VDCs and DDCs should see their role as promoters and facilitators rather than as regulators (ICIMOD 2002).

Some other reasons for sub-optimal forest management are lack of political commitment to decentralization, lack of budgets to implement well-planned forest management, inappropriate forest management models, and poor infrastructure. In addition, forest revenues have tended to be funneled to the national level, hardly benefiting the local institutions that could take responsibility for forest protection and management, such as DFOS, DDCs, and VDCs and communities.

Although there is potential to have community forestry play a role in better forest management and improvement of livelihoods, the government policy on community forestry is inconsistent. The refusal to give valuable forested land for community forestry, per the 2000 forest policy statement, contradicts 1993 Forest Act that stated that any national forests could become community forests. Nepal's 10th Plan (2002-2007) emphasizes community forestry and leasehold forestry for poverty alleviation but appears to remove restrictions placed on community forestry in the 2000 Policy.

There are limitations in the policy which include having as the main objective of community forestry subsistence needs rather than economic development, an underlying philosophy that restricts incentives for sound forest management. The 2000 Forest Policy limits community forestry in the Terai to a mere 50 hectares and introduced a 40% tax on the sale forests product, limiting the usefulness of community forestry as a major natural resource management tool and adding to the *de facto* open access situation.

Community Forest User Groups are only provided 5-year leases, leading to insufficient tenure security for investing in community forestry. In addition it is unclear how forest user groups fit with District Development Committees and Village Development Committees under the new Local Self-Governance Act. Finally, an HMG circular in 1999 banned the felling of green trees from community forests. While this was later watered down, it sent a signal to DFOs that they should discourage forestry operations within community forestry user groups.

8.6 LIBERALIZATION POLICIES

Nepal initiated the process of liberalization under the structural adjustment programme (SAP) in 1986. The deeper level of reforms however started in early 1990s. The major elements of the liberalization process in 1990 included the following: (a) elimination of quantitative restrictions on imports; (b) drastic reduction of the average rate of tariff and the number of tariff slabs; (c) a sharp reduction in discriminatory measures in exports; (d) introduction of partial current account convertibility of the Nepalese rupees (e) a broad range of measures to attract foreign investment etc. These measures were accompanied by other measures such as the reduction of price and distribution control, elimination of control over interest rates, and privatization of public enterprises. The incentive structure favoring import substitution was eliminated.

Although there was initial positive impact on growth, it did not last long. The decline is particularly sharp in industries and services. The abolition of protection vis-à-vis the non–Indian market exacerbated the problem of competitiveness in the absence of offsetting policies for the promotion of infant industries (Khan 2000). The appreciation of NR relative to IR in the post globalization period has also reduced

Nepal's export competitiveness in the international market. One consequence has been the slowing of alternative employment opportunities away from agriculture and other natural resource dependent activities.

The PRSP/10th plan has indicated that the economic liberalization and globalization policy adopted by the government has lead to increase income inequality and affected vulnerable groups despite its intention to reduce poverty. The result of the pro poor growth index for Nepal 1996/97-99/2000 measure shows it is only moderately pro-poor, meaning that despite the poverty reduction objective of the 9th plan, increasing inequality has reduced the impact of growth on poverty by 0.54 percent (HDR 2001).

8.7 POLITICAL INSTABILITY/INSECURITY

The insurgency of recent years has impacted all aspects of life in the Terai. The impact has been especially great in the Far West and Mid West regions. The insurgency has led to a general slow down in the economy. Infrastructure has been destroyed, and many development activities have had to be suspended - including those linked to humanitarian needs, e.g. food distribution. A recent study identified that the insurgency has had the following impacts on livelihoods (Seddon & Hussein, 2002):

- **Reduced livelihood opportunities**: The general economic slow down and the restrictions on movement have reduced off-farm livelihood opportunities. Road building, construction, transport of goods, and tourism have all been severely affected. As these jobs are mostly filled by the lower castes, these people have been hardest hit. The restriction on movement has also affected the collection and marketing of NTFPs, and the sale of agricultural produce.

- **Out-migration**: Young people in Maoist areas are increasingly faced with the choice of joining the Maoists or fleeing to avoid conscription. This is removing some of the most able bodied household members, with direct effects on livelihoods. It also increases the vulnerability of the women left at home. People have sometimes been forced to flee their villages if they cannot meet the Maoists 'tax' demands. The observed impact of this is greatly increased rural-urban migration, increased migration from the hills to the Terai, especially in the Mid West and Far West, and rapid urban growth in recent years.

- **Reduced food security**: Access to food supplies has been affected as security forces in rural areas are preventing people from carrying more than one day's food supply at a time in order to deny Maoists access. This, coupled with the destruction of bridges, has especially affected those living days walk away, and who usually carry a month's supply of food. The out-migration of youth is also likely to result in reduced productivity on farms. There have been reports of Maoists requisitioning food supplies from farms, of security forces confiscating food so that it will not fall into the hands of Maoists, and of food stores being looted, disrupting food-for-work schemes.

- **Reduction of livelihood assets**: Maoists demand taxes and/or contributions from the people, and there is little opportunity to refuse. Anecdotal evidence suggests that these contributions may be quite significant. Some households have had to sell their assets to cope with the effects of the insurgency. Social capital in many

cases has been severely disrupted. People have also had less access to government and NGO services where these have withdrawn.

- **Impacts on forests and biodiversity:** There is no actual data on impacts of the insurgency on forests and biodiversity, but reported impacts include (Mahat, 2002):

    - Increased illegal timber extraction and poaching;
    - Illegal forest encroachment; and
    - Reduced capacity for forest management.

  The impact on poaching has been particularly severe, with 37 rhinos killed for their horns in Chitwan last year alone – as many as were killed during 16 years from 1973 to 1990. Eight rhinos have already been poached in the first three months of this year.

CONCLUSIONS

The results of this study show how the direct threats to forest and species are influenced by a number of root cause factors and how together they make up a complex web of interaction. The study also shows the complexity of the livelihood conditions influencing human interaction with the forests. To better reach the goals of conservation and sustainable development it is important to understand this complexity and to identify critical areas for action and intervention. The following conclusions help to summarize the findings and point to the way forward.

THREATS TO FORESTS

- Encroachment and settlement exacerbated by population growth is still a major threat to forests, especially in the Far West. Although historical data is lacking, forest clearance is likely to be currently mostly due to illegal settlement and illegal timber extraction. Without sound planning and environmental assessment, new infrastructure and increasing commercialisation of agriculture could also be threats.
- Overgrazing is a major threat, especially in government forests. The increase in population, and in popularity of livestock rearing, means that this threat will continue to grow. Livestock improvement programmes must find ways of ensuring that households can meet fodder needs without putting more pressure on the fragile Churia forests.
- Over harvesting of fuel wood and timber is another major cause of forest degradation. While improved and non-fuel wood stoves are becoming more popular, dependence on fuel wood is still far too high. The rapid expansion of urban areas, continued demand from rural areas, and continued illegal trade across to India, means that pressure on timber is also likely to remain high.

LINKS BETWEEN LIVELIHOODS AND FORESTS

The results also show the complex and important interlinkages between forests and livelihoods:

- The majority of the population rely on natural resources for their livelihoods: soil and water for agriculture; and forests for fuel wood, fodder, timber, food and medicine;

- Land ownership is a major determination of household economic status, and the majority of households do not own enough to support themselves;
- The poor do not have sufficient livelihoods assets, and so are dependent on common property forest resources;
- The availability of fodder in forests means that livestock rearing is an opportunity for those who own little land; and
- Forest resources are becoming less available because of degradation, and reduced access. This has most impact on those most dependent on the resources - the poor.

LIVELIHOOD CONTEXT

- The TAL is very diverse, both geographically, and in terms of development pressures and potential;
- The population is continuing to grow across all districts, especially in the Far West and Mid West, and in urban areas;
- The northern TAL is generally poorer and less developed than the southern TAL, with its more favourable topography and proximity to India;
- Poverty is widespread, and manifests particularly in food insecurity. The poverty situation has not improved significantly over the past 20 years;
- The gap between rich and poor is very wide, and the inequity of asset distribution more severe than in the rest of Nepal;
- The majority of poor rural households have subsistence livelihoods, and have barely entered the monetised economy;
- The poor have very few assets, and little access to safety nets such as credit. They are therefore very vulnerable to natural disasters, environmental degradation, economic change, and the insurgency;
- Inequality and gender discrimination are high, social capital is relatively weak; and
- The government plans to massively increase agricultural productivity through roads, fertilisers and irrigation.

LIVELIHOODS IN RURAL AREAS FACE SIGNIFICANT CONSTRAINTS:

- Low performance of, and lack of co-ordination between, supporting sectors including agriculture, credit access, land reform, reproductive health, and education;
- Lack of infrastructure and weak service delivery are major constraints to livelihoods;
- The slow process of decentralisation. Local government lacks funds and capacity; and
- Weak co-ordination between and within government, NGOs and agencies.

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