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काठमाडौं  
वन तथा भू-संरक्षण मन्त्रालय  
श्री ५ को सरकार

वर्तमान पृष्ठमा रहेको

०१०८-०३०८  
संरक्षण योजना

संरक्षण - भू-संरक्षण योजना



TERAI ARC LANDSCAPE - NEPAL

# STRATEGIC PLAN

2004 - 2014

BROAD STRATEGY DOCUMENT

His Majesty's Government of Nepal  
Ministry of Forests and Soil Conservation

Kathmandu  
2004



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2004



His Majesty's Government  
**MINISTRY OF FORESTS AND SOIL CONSERVATION**

220067  
224892  
262428  
268381  
221936  
224864  
223862  
223868

P.O. Box: 3987

Singh Durbar, Kathmandu



## Foreword



One of our development challenges today is to reduce the persistent poverty in the country. Nature conservation in its broadest sense should be looked at as a means toward the sustainable development providing opportunities for the improved livelihood. Landscape level biodiversity conservation efforts initiated in Nepal is expected to offer twin opportunities to ensure secured development contributing toward sustainable development and poverty reduction.

As a broad development strategy Nepal Biodiversity Strategy (NBS) has identified landscape level planning and conservation as a major strategic direction for biodiversity conservation in Nepal. His Majesty's Government of Nepal following the wider consultation has developed Terai Arc Landscape Strategic Plan (TALSP) to contribute toward realizing the goals of NBS.

This Strategic Plan is an umbrella framework for the implementation of coordinated actions for the conservation of biodiversity and improvement of the livelihoods of the people of the Terai Arc Landscape. The Terai Arc is the first landscape level conservation initiative undertaken by His Majesty's Government of Nepal. We very much feel that the Landscape level conservation is a must for all round development and sustained conservation endeavors. The TALSP has addressed threats not merely confined to the

Flagship Species such as Royal Bengal Tiger, Greater One-horned Rhinoceros and the Asian Elephant but also to all species including improvement of the livelihoods of local communities.

The challenge now in the conservation sector is to translate judiciously the conservation efforts towards the benefits of the local people. I am hopeful that we, including development partners, will succeed in translating the strategies into meaningful and achievable actions on the ground promoting benefits to the poorer segment of the society.

Active participation of all relevant stakeholders including UNDP, SNV, USAID, DFID and WWF was instrumental in designing the TALSP.

I would like to thank all organizations and individuals, including the field level stakeholders, the core team and review team of the document, who were involved in the preparation of this document. Similarly, I would like to appreciate the WWF Nepal program office, which has been extremely helpful in supporting the government to bring up the strategies for the management of the natural resources at landscape level of Terai. I hope this will open up area of mutual cooperation amongst the development partners in attaining the goals set in the forestry sectoral and periodic plans in the days to come.

**CHANDHI PRASAD SHRESTHA**  
Secretary





His Majesty's Government  
**MINISTRY OF FORESTS AND SOIL CONSERVATION**

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## *Preface*

The Terai Arc Landscape (TAL) program is a priority program of His Majesty's Government of Nepal and has been included in the Tenth (10<sup>th</sup>) Plan (2002 - 2007). With this initiative, Nepal is broadening the conservation strategies to cover beyond the protected areas, moving towards managing large landscapes through participatory land use planning based upon ecological, social and economic needs.

The TAL-Nepal is important from the national, regional and global perspective for its spectacular biological diversity. The remaining forests of the TAL-Nepal represent an opportunity to conserve the rich legacy of the Charkose Jhadi, as it was called in the past, known for its abundant, lush forests and grasslands and its rich assemblage of biodiversity. However, this legacy is shrinking at an alarming rate owing to encroachment and unsustainable management practices. For Nepal, the conservation of the TAL is important for both economic and ecological reasons. There are 6.7 million people living in this landscape, a fertile region, called the "rice bowl" of the country. At the same time, the TAL-Nepal forests remain an important source of income for local communities and revenue generation for the government. The TAL-Nepal also includes the Churia forests, which serve as watersheds for Terai region. It is, therefore, imperative that the Churia forests are also conserved as part of TAL so as to prevent soil erosion and flash floods and provide ecological services such as recharging the water table of the Terai.

Historically, Nepal has taken notable steps in the conservation of its rich biological resources by enacting legislation and committing to international conventions. With the endorsement of the Nepal Biodiversity

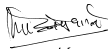
Strategy (NBS), there has been much significant progress in the recent years. The TAL-Nepal Strategic Plan is a major step forward in achieving the government's commitment to conservation at the landscape level. For the landscape conservation to be effective, actions need to be co-ordinated at all levels, and partnerships among all stakeholders, institutions and individuals are vital. In the process of developing this Broad Strategic Framework, which has included reviewing existing conditions, threats, legislations and ongoing projects, coordination amongst partners both within the government departments and non-government organizations has been enhanced and will be continued. This 'Broad Strategy Document' is the outcome of the first phase of the development of the TAL-Nepal Strategic Plan. The second phase will comprise the development of the Partnership and Business Plan, which will lay out the implementation and co-ordination mechanisms more clearly and extensively.

In preparing this document many institutions and individuals have made tremendous contributions. The Ministry of Forests and Soil Conservation would like to thank them, especially the members of the TAL Strategic Plan Core Team formed under the leadership of Dr. Mohan P. Wagley, representing different organizations, viz. UNDP, SNV USAID, DFID, WWF-NP, DoF, DNPWC and MFSC for their involvement. They include Ms. Kristiina Mikkola/Mr. Vijaya Singh, Mr. Huub Peters, Ms. Shanta Baan, Dr. Bijan Acharya, Ms. Fiona Hindley/Mr. James Bampton, Ms. Tshering T. Lama, Mr. Santosh Nepal, Mr. Shiv R. Bhatta and Mr. Kumud Shrestha respectively.

We are very much grateful to the experts who have assisted in the development of this Broad Strategy

Document, particularly Mr. Mingma Sherpa, Dr. Eric Wikramanayake, Dr. Sejal Worah, Ms. Cate Turton, Ms. Dawn Montanye, Ms. Dekila Chungyalpa and Dr. Sarala Khaling. Our Sincere thanks also goes to Mr. Larry Linden and Mr. Ivan Barkhorn for their valuable inputs. We would like to thank the representatives of various governmental and non-governmental agencies for kindly agreeing to

be part of the Review Committee and reviewing this 'Broad Strategy Document'. We would like to acknowledge with thanks, the contribution by Mr. Anil Manandhar, Mr. Bharat Pokharel and Mr. Shubash Lohani of WWF Nepal Program. Finally, we would like to extend our sincere thanks to Dr. Chandra P. Gurung and the WWF for the assistance in preparing this document.



Dr. Mohan P. Wagle

Team Leader

TAL Strategic Plan Development Core Team

And

Chief, Planning and HRD Division

# TERAI ARC LANDSCAPE - NEPAL

## *Strategic Plan Development Team*

### *Strategic Plan Core Team*

Dr. Mohan P. Wagley, Chief, Planning and Human Resources Development Division, MFSC	Team Leader
Mr. Kumud Shrestha, Planning Officer, Planning and Human Resources Development Division, MFSC	Member
Mr. Santosh Nepal, Planning Officer, DoF	Member
Mr. Shiva Raj Bhatta, Ecologist, DNPWC	Member
Mrs. Tshering Tenpa Lama, Strategic Plan Co-ordinator, WWF NP	Member
Ms. Fiona Hindley, Associate Professional Officer, WWF NP/DFID (until Dec. 2003)	Member
Mr. James Bampton, Terai Forestry Adviser, LFP/DFID (from Jan. 2004)	Member
Ms. Kristiina Mikkola, Environmental Governance Adviser, UNDP (until Oct. 2003)	Member
Mr. Vijaya Singh, Biodiversity Adviser, UNDP (from Nov. 2003)	Member
Dr. Bijnan Acharya, Environment and Forestry Program Specialist, USAID	Member
Mr. Huub Peters, NRM Sector Manager, SNV	Member
Ms. Shanta Baan, Sector Program Officer, SNV	Member

### *Technical Advisers*

Mr. Mingma Sherpa, Director, Asia and Endangered Species Program, WWF US
Dr. Eric Wikramanayake, Senior Scientist, WWF US
Dr. Sejal Worah, Capacity Building Co-ordinator, WWF UK
Ms. Cate Turton, Livelihoods Consultant, IDL Group, UK
Ms. Dawn Montanye, Senior Program Officer, WWF Macroeconomics Program Office
Ms. Dekila Chungyalpa, Program Officer, WWF US
Dr. Sarala Khaling, Co-ordinator- Development, Research and Monitoring, WWF NP

### *Review Committee Members*

Dr. Damodar P. Parajuli, Chief, Foreign Aid Co-ordination Division, Ministry of Forests and Soil Conservation
Dr. K.C. Poudel, Chief, Environment Division, Ministry of Forests and Soil Conservation
Mr. Jamuna Krishna Tamrakar, Director General, Department of Forests
Dr. Tirtha M. Maskey, Director General, Department of National Parks and Wildlife Conservation
Dr. Uday Raj Sharma, Director General, Department of Plant Resources
Mr. Baburam Acharya, Director General, Department of Survey
Mr. Narayan P. Poudel, Deputy Director General, Department of National Parks and Wildlife Conservation
Dr. Dalaram Pradhan, Deputy Director General, Department of Livestock
Mr. Narendra Bahadur Amatya, Joint Secretary, National Planning Commission
Dr. Birendra Bir Basnet, Programme Co-ordinator APP Implementation Programme, MoAC
Dr. Mahesh Banskota, Country Representative, IUCN
Ms. Bharati Silwal, Deputy Resident Representative, UNDP
Ms. Helen Wedgwood, Rural Livelihoods Adviser, DFID
Dr. Maksha Ram Maharjan, Forestry Sector Co-ordinator, CARE Nepal



# Executive Summary

## *The Purpose*

The Strategic Plan for Terai Arc Landscape (TAL) - Nepal, is a guiding document that lays out strategies to ensure biodiversity conservation and sustainable livelihoods in order to achieve the TAL vision endorsed by His Majesty's Government of Nepal (HMG/N) in April 2001. The TAL vision is "a globally unique landscape where biodiversity is conserved, ecological integrity is safeguarded and sustainable livelihoods of its people are secured". Ministry of Forest and Soil Conservation (MFSC) Initiated the development of the TAL-Nepal Strategic Plan to address threats and capitalize opportunities for conservation and sustainable livelihood with the consultation of stakeholders in order to realize this vision. The Strategic Plan analyses the critical threats and underlying causes behind biodiversity loss and environmental degradation, biological and socio economic conditions of the landscape and reviews existing legislation, structures and institutions so as to develop appropriate and far-reaching strategies. The strategies were developed through a participatory process, involving stakeholders from the local, regional and national levels. Strategies were proposed to address identified threats and ensure sustainable livelihoods of the people. The TAL Strategic Plan aims at achieving a common goal with strong partnerships among stakeholders, governmental and non-governmental agencies working in the region, donors, the private sector and local communities.

In the past, there had been many initiatives taken by HMG/MFSC in the area of natural resource management and biodiversity conservation. Some of the main initiatives include Master Plan for the Forestry Sector 1989, Forest Act 1993 with community forestry provisions, amendment in National Parks and Wildlife Conservation Act (NPWCA) 1973 in 1993 with provision of benefit sharing between the park and local communities and endorsement of Nepal Biodiversity Strategy. These innovative initiatives have made Nepal an exemplary country in successful management of community forestry and conservation of large mammals. This Strategic Plan is an addition to these initiatives.

There are more than 11 bilateral and multilateral agencies working in TAL districts. These agencies spend more than 38 million US dollars over a period of 5 years for the programs related with sustainable development, natural resource management and biodiversity conservation. This strategic Plan attempts to co-ordinate the implementation of some of these programs under the MFSC umbrella in order to avoid repetitions and enhance effectiveness without disturbing existing implementation modality of the respective programs and projects.

## *Background*

The Terai Arc Landscape is a vast conservation landscape that extends from Nepal's Bagmati River in the East to India's Yamuna River in the

west. This landscape covers an area of 49,500 square kilometers comprising 11 protected areas and forest corridors stretching along the Indo-Nepal border from Parsa Wildlife Reserve of Central Nepal to India's Rajaji National Park. Checking environmental degradation and conserving the biodiversity is crucial for the ecological integrity of the area and livelihoods of the people living in the landscape.

The TAL - Nepal encompasses an area of 23,199 sq km and covers 14 Terai districts, viz. Kanchanpur, Kailali, Banke, Bardia, Dang, Kapilvastu, Rupandehi, Palpa, Nawalparasi, Chitwan, Makwanpur, Parsa, Bara and Rautahat. The landscape is vital to the country for economic reasons as well as ecological services and its globally important biodiversity. It also includes the Churia foothills, which are important watersheds for maintaining the high agro-productivity of the Terai region. TAL-Nepal consist of over 75% of the remaining forests of the Terai and foothills of Churia. These forests fulfil the national and local demands for forest products. In the TAL-Nepal there are 6.7 million people and majority of them are the rural poor, with 57% of households owning less than 1 hectare (1.5 *bigha*) of land. The average annual income for a person in the TAL-Nepal area is estimated at NRs 7,200. These rural households depend on natural resources in many ways. Sixty percent of them rely on agriculture for their main source of income, while 69% own livestock, and most of them get their fodder from forests. Moreover, 61% of the households rely on wood as their main fuel for cooking. Today, there are 4.5 million livestock in the TAL, compared to 3 million twenty years ago.

The landscape is important from the national and global perspectives for its rich biological diversity. It is home to some of the world's most spectacular species such as the Royal Bengal Tigers, the Greater One-horned Rhinoceros and the Asian Elephants. TAL comprises two of WWF's Global 200 ecoregions viz. the Terai-Duar Savannas and Grasslands ecoregion and the Himalayan Subtropical Broadleaf Forests ecoregion. It is also identified as a "Biodiversity Hotspot".

### ***Biodiversity and Socio-Economic Analysis***

An in-depth biological assessment of TAL Nepal was carried out in 2001, confirming that it supports over 85 species of mammals, 550 species of birds, 47 species of known reptiles and amphibians, and over 125 species of fishes. The highly productive alluvial grasslands and subtropical

forests support some of the highest densities of the Royal Bengal Tigers (*Panthera tigris*) in the world, the second largest population of the Greater One-horned Rhinoceros (*Rhinoceros unicornis*), and other endangered and protected species like Asian Elephant (*Elephas maximus*), Gangetic Dolphin (*Platanista gangetica*), Gharial Crocodiles (*Gavialis gangeticus*), Great Hornbills (*Buceros bicornis*), Sarus Cranes (*Grus antigone*) and Bengal Floricans (*Houbaropsis bengalensis*).

Over the past three decades, the natural wildlife habitat of the Terai has become highly fragmented owing to human population pressures and their impacts. The human population in the TAL area increased by 81% in the past 20 years and the deforestation rate in the Terai between 1979 and 1991 has been estimated at 1.3 per cent (about 8,300 hectares) per annum. This degradation has forced the wildlife to remain in small, insular refuges, which are too small to support many species and their ecological interactions. Deprived of the large spaces necessary for their survival, many of these species now face an uncertain future. Poaching of wildlife and illegal timber extraction has increased in recent years as a result of the political instability.

The Root Cause Analysis (RCA) methodology was used to identify the socio economic forces and circumstances responsible for environmental degradation and biodiversity loss in the TAL - Nepal. The RCA identified the underlying policies, institutional dynamics, socio-economic forces including market forces and human actions leading to the loss of biodiversity. Participatory process involved stakeholders who examined the causes at the local, regional and national levels including policies and cross border issues. The RCA methodology identified seven direct causes of environmental degradation and biodiversity loss. They are:

- (1) Forest conversion
- (2) Uncontrolled grazing in forests
- (3) Unsustainable timber harvesting
- (4) Unsustainable fuelwood extraction
- (5) Forest fires
- (6) Churia watershed Degradation
- (7) Wildlife poaching and human-wildlife conflict.

The analysis identified several major underlying causes behind the direct causes. They are: population growth resulting from migration and natural causes; low agricultural productivity; struggle for land; lack of off-farm livelihood opportunities; inadequate access to and management of forest resources; and cross border issues. It was also rec-

ognized that inequality and discrimination based on gender, ethnicity and caste coupled with the impact of the insurgency and governance issues greatly affect the causes mentioned above.

## Strategies

Ministry of Forests and Soil Conservation (MFSC) initiated the development of the TAL-Nepal Strategic Plan to address threats and capitalize opportunities for conservation and sustainable livelihood through a wide consultative process involving stakeholders and partners at all levels through various workshops, meetings and participatory studies. To undertake this task a core team under the leadership of Chief Planning and Human Resource Development Division of MFSC was formed. The Strategic Plan Core Team compiled, reconciled and refined the broad strategies developed by stakeholders and partners. The strategies were developed to address the root causes of environment degradation and biodiversity loss identified by the RCA. A multi-sectoral review committee as well as various experts reviewed the broad strategies developed by this process. These broad strategies were then grouped and 7 program areas were identified for achieving the purposes of partnership building and implementation. These strategies were further refined to address the direct and underlying causes and the policy and enforcement gaps therein. The Program Areas identified are:

1. Policy and Advocacy
2. Institutions and Co-ordination
3. Sustainable Forest Management
4. Sustainable Development
5. Species and Ecosystem Conservation
6. Churia Watershed Conservation
7. Awareness and Education

Under these 7 Program areas 51 strategies have been formulated to address identified threats and ensure biodiversity conservation, maintain ecological integrity and secure sustainable livelihoods of the local people in TAL- Nepal.

## Implementation

The TAL- Nepal Strategic Plan has the following three components:

- (1) The Broad Strategy Document,
- (2) The Partnership Plan and
- (3) The Business Plan.

The Broad Strategy Document, which is the present document, has been completed in the first phase. The Partnership Plan and the Business Plan will be completed in the second phase. The Partnership Plan will develop and set up the implementation mechanism. The process will comprise the identification of short term and long-term targets and implementing agencies through a participatory and consultative process. The Business Plan will consist of financial costs and detail targets and a sustainable funding plan for the entire landscape.

The strategies will be implemented either directly by the institutions under the MFSC or by partner organizations. Several strategies emerging from the RCA analysis are beyond the scope of the MFSC alone and this needs multi-sectoral approach. However, these strategies are crucial for achieving the TAL vision, and have been presented in this document with the intention of reinforcing coordination amongst other government departments and non-governmental agencies. The implementation mechanism will follow existing implementation framework for biodiversity conservation in the country rather than duplicating the efforts. As such, it will operate under the National Biodiversity Co-ordination Committee (NBCC) formed to implement the Nepal Biodiversity Strategy. Implementation co-ordination will be multi-sectoral and involve various partners at the central, regional and local levels in the landscape. A TAL Co-ordination Committee will be formed under the NBCC with members from relevant ministries and departments, donors, implementing organizations, NGOs and the private sector. At the execution level, a TAL Working Group comprising of key implementing agencies will be formed under the TAL Co-ordination Committee. The implementation mechanism will be part of the institutional framework developed to co-ordinate programs and projects, raise funds, manage finances and monitor performance at landscape level.

In view of the dynamic nature of the strategies, this document will be revised on a periodic basis. An inception review will be done after 2 years of the implementation of the plan which will be followed by a Mid term review carried out after 5 years of its implementation. A final review will be carried out after the completion of the Strategic Plan period.

# Abbreviations & Acronyms

ADB	Agriculture Development Bank
APP	Agriculture Perspective Plan
BISEP-ST	Biodiversity Sector Program for Siwaliks and Terai
BZUG	Buffer Zone User Group
CARP	Critical Areas Restoration Project
CBD	Convention on Biodiversity
CBO	Community Based Organization
CBS	Central Bureau of Statistics
CF	Community Forest
CFUG	Community Forest User Group
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
DDC	District Development Committee
DFCC	District Forest Co-ordination Committee
DFID	UK Department for International Development
DFO	District Forest Office
DLS	District Livestock Services
DNPWC	Department of National Parks and Wildlife Conservation
DoF	Department of Forest
DSO	District Soil Conservation Office
DSCWM	Department of Soil Conservation and Watershed Management
FAO	UN Food and Agriculture Organizations
Ha	Hectare
HMG/N	His Majesty's Government of Nepal
ICIMOD	International Center for Integrated Mountain Development
IUCN	World Conservation Union
LFP	Livelihoods and Forestry Program
LRMP	Land Resource Mapping Project
LSGA	Local Self Governance Act
MoAC	Ministry of Agriculture and Co-operatives
MDGs	Millennium Development Goals
MFSC	Ministry of Forests and Soil Conservation
MLD	Ministry of Local Development
MOPE	Ministry of Population and Environment
NBS	Nepal Biodiversity Strategy
NGO	Non-Government Organization
NPC	National Planning Commission
NPWCA	National Parks and Wildlife Conservation Act
NRs	Nepalese Rupees (1US\$ is approximately 75NRs)
NTFP	Non Timber Forest Product
OFMP	Operational Forest Management Plan
PA	Protected Area
PDDP	Participatory District Development Program
PRA	Participatory Rural Appraisal
PWR	Parsa Wildlife Reserve
RBNP	Royal Bardia National Park
RCA	Root Causes Analysis
RCNP	Royal Chitwan National Park
RSWR	Royal Suklaphanta Wildlife Reserve
SDAN	Sustainable Development Agenda for Nepal
SNV	Netherlands Development Organization
STF	Save the Tiger Fund
TAL	Terai Arc Landscape
UNDP	United Nations Development Program
USAID	United States Agency for International Development
VDC	Village Development Committee
WTO	World Trade Organization
WWF NP	World Wildlife Fund Nepal Program

# Contents

Foreword	iii
Preface	v
Strategic Plan Development Team	vii
Executive Summary	ix
Abbreviations & Acronyms	xii
Contents	xiii
 <i>Section 1: Introduction</i>	 <i>1</i>
1.1 Background	2
1.2 Conservation Approach of TAL	5
1.3 TAL Vision and Goal	6
1.4 Strategic Plan Development Process	7
1.5 Periodic Review	8
 <i>Section 2: Threats Analysis for Biodiversity Loss and Environmental Degradation and Socio-economic Analysis</i>	 <i>9</i>
2.1 Threat Analysis	10
2.2 Direct and Root Causes of Biodiversity Loss and Environmental Degradation	12
2.2.1 Forest Conversion	12
2.2.2 Uncontrolled Grazing in Forests	12
2.2.3 Unsustainable Timber Harvesting	12
2.2.4 Unsustainable Fuelwood Extraction	14
2.2.5 Forest Fires	15
2.2.6 Churia Watershed Degradation	15
2.2.7 Wildlife Poaching and Human Wildlife Conflict	16
2.3 Major Crosscutting Issues	17
 <i>Section 3: Strategies</i>	 <i>21</i>
3.1 Strategy Development Process	22
3.2 Strategies Within Program Areas	26
3.2.1 Policy and Advocacy	26
3.2.2 Institutions and Co-ordination	27
3.2.3 Sustainable Forest Management	29
3.2.4 Sustainable Development	31
3.2.5 Species and Ecosystem Conservation	33
3.2.6 Churia Watershed Conservation	34
3.2.7 Awareness and Education	36
 <i>Section 4: Implementation, Monitoring and Research</i>	 <i>37</i>
4.1 Implementation Mechanism	38
4.2 Monitoring and Research	39
4.3 Risks and Assumptions	40
4.4 Next Steps	41
 References	 42

### *List of Maps*

Map 1: Teral Arc Landscape	2
Map 2: Teral Arc Landscape – Nepal	3

### *List of Figures*

Figure 1: The Strategic Plan Development Process	7
Figure 2: Source of Cooking Fuel in TAL-Nepal by Development Region	14
Figure 3: Source of Fuelwood in Seven TAL-Nepal Districts	14
Figure 4: Population Trend in TAL-Nepal	17
Figure 5: Identification of Program Areas	23
Figure 6: Implementation Mechanism	38

### *List of Tables*

Table 1: Protected Areas in TAL	2
Table 2: Food Security in Seven TAL Districts	17
Table 3: Land Ownership and Landlessness by Region	18
Table 4: Root Causes and Underlying Causes and their Relation to Program Areas	25



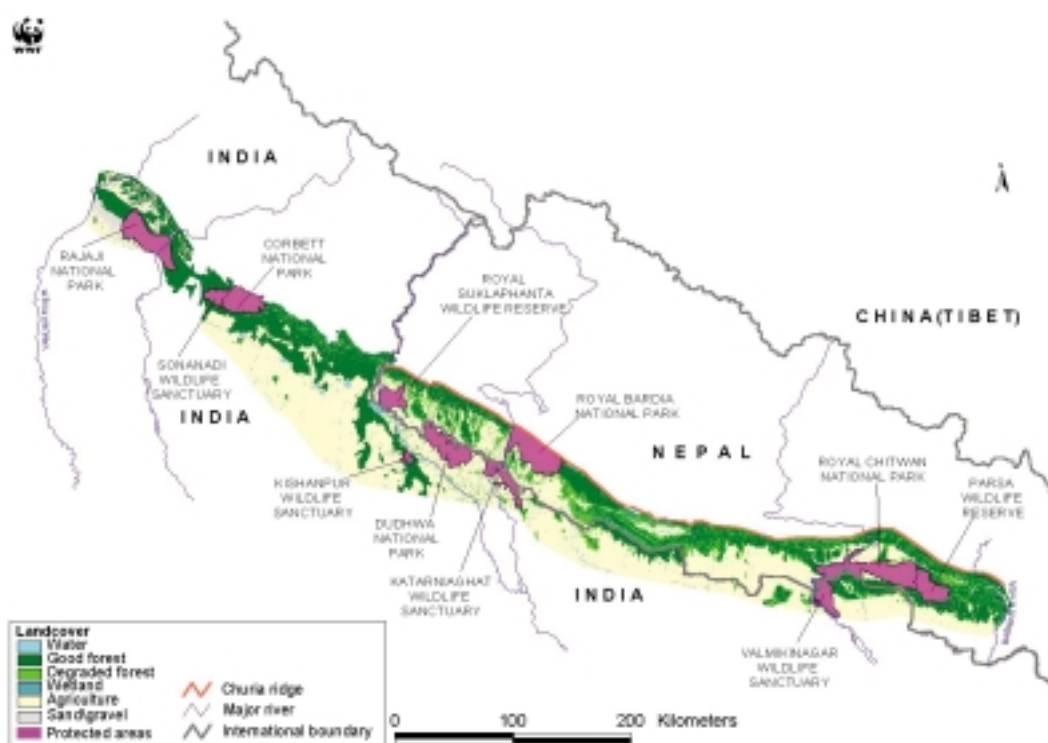
# INTRODUCTION

## 1.1 Background

This Strategic Plan is prepared for the Terai Arc Landscape (TAL) - Nepal which covers part or whole of 14 Terai districts viz. Kanchanpur, Kailali, Bardia, Banke, Dang, Kapilvastu, Rupandehi, Palpa, Nawalparasi, Chitwan, Makwanpur, Bara, Parsa and Rautahat. The plan is prepared in consultation with different stakeholders for a period of ten years from 2004 to 2014. This section provides a background to the landscape, its people and biodiversity, and the conservation and livelihood approach.

The TAL is a vast conservation landscape of approximately 49,500 sq km, stretching from Nepal's Bagmati River in the east to India's Yamuna River in the west (Map 1). It links 11 trans boundary protected areas (Table 1), from Parsa Wildlife Reserve in Nepal to Rajaji National Park in India.

**Map 1: Terai Arc Landscape**



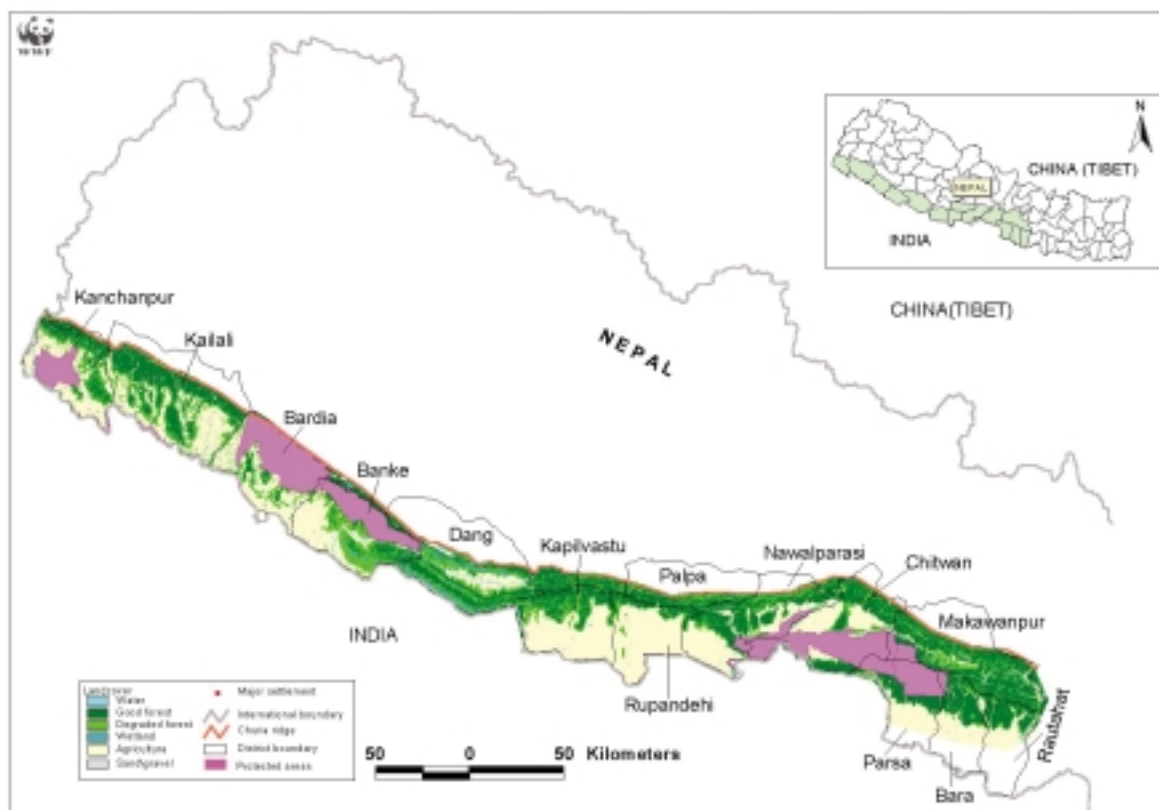
**Table 1: Protected Areas in TAL**

Protected Areas	Area (km <sup>2</sup> )
<b>NEPAL</b>	
Parsa Wildlife Reserve	499
Royal Chitwan National Park	932
Royal Bardia National Park	968
Royal Suklaphanta Wildlife Reserve	305
<b>INDIA</b>	
Valmikinagar Wildlife Sanctuary	336
Katarniaghat Wildlife Sanctuary	551
Dudhwa National Park	490
Kishanpur Wildlife Sanctuary	227
Corbett National Park	520
Sonanadi Wildlife Sanctuary	798
Rajaji National Park	831

Fed by the watershed of the Churia (Siwalik) Hills that runs east to west, the TAL area in Nepal (TAL - Nepal) is so fertile that it is called the “rice bowl” of the country. Less than 50 years ago, it was a contiguous expanse of dense forests and tall grasses. These forests now vary from dense, intact forests to those in various stages of degradation. This landscape is home to some of Asia’s largest mammals – Royal Bengal Tiger (*Panthera tigris*), Asian Elephant (*Elephas maximus*), Greater One-horned Rhinoceros (*Rhinoceros unicornis*), Gaur (*Bos gaurus*), and Swamp Deer (*Cervus duvauceli*). TAL - Nepal spreads over Mahakali River in the West, Bagmati River in the East, Churia ridge in the North and India in the south. (Map 2).

**The Nepalese portion of TAL extends over 23,199 sq. kms and covers over 75% of the remaining forests of the Terai and foothills of Churia.**

**Map 2: Terai Arc Landscape-Nepal**



## People and Poverty

For centuries, the Tharu people, naturally resistant to malaria, were the only inhabitants of the Terai. After the eradication of the malaria in the 1960s, thousands of immigrants from the hill regions of the country migrated to Terai. The population continues to grow rapidly: Today, 6.7 million people live in the Nepalese part of the TAL, the majority of whom are poor, and rely on subsistence agriculture as their main source of living. Migration continues to be a leading cause of population growth, with the majority of migrants coming from the adjoining hill districts. Besides, present insurgency and political instability have accelerated the flow of in-migration, especially in the Mid and Far Western Development Regions.

The population distribution in the Terai is quite different than that of Nepal’s hills and mountains: a mix of indigenous people, old migrants and recent migrants. The new and mixed communities in TAL means that social cohesion and community organization is often weaker than those in the hills, and discrimination based on gender, caste and ethnicity is high. Mostly hill migrants have settled the Terai’s northern regions, while the indigenous Tharus mostly populate the southern regions.

Despite its wealth of natural resources, poverty is widespread in the TAL-Nepal. Economic reforms focusing on liberalization have been designed to bring development benefits to the people. The benefits have

**The TAL-Nepal’s population has doubled since 1981, and is now 6.7 million.**

**Average household income in TAL-Nepal is only NRs7,200 per year (about \$100)**

however, concentrated largely in urban centres. Although, there have been advances in development, levels of poverty have not significantly improved over the last 20 years. The average household income in the TAL-Nepal is only NRs. 7,200 per annum but even this figure conceals the considerable inequality both within and between districts in the Terai. Multidimensional indicators show that the majority of the population lives in poverty: sixty percent of TAL-Nepal households own less than one hectare (1.5 *bigha*) of land, and a study of seven TAL-Nepal districts shows that 71% of the population do not grow sufficient food to last through the year (NPC, 2001-3). Poverty has been seen high more particularly amongst the indigenous Tharus, the Dalits (socially disadvantaged groups) and the ex-Kamaiyas (the bonded labourers emancipated in 2001), and geographically skewed towards the Mid and Far Western Development Regions.

**55% of TAL households regularly borrow from moneylenders**

With limited off-farm livelihood opportunities, the majority of households rely on farming in very small landholdings. Without access to alternative assets and formal source of credit, many of these households are segregated from supporting institutions and services and are obliged to borrow from local moneylenders – usually at high interest rates. Thus, despite the wealth in the region, human development indicators for TAL-Nepal are below the national average. Vulnerability is a constant fear for the poor, with their insufficient asset base and lack of safety nets, and their fortune rise and crash to prices hikes and sudden shocks such as job loss or illness. Political instability, environmental degradation and natural disasters further worsen the situation.

**The poor have very few resources, and hence rely on forests for subsistence**

### Livelihoods Significance

Livelihoods and forests are inextricably linked in the TAL-Nepal and the level of interlink varies between socio-economic groups. Better off households tend to use forests for production and profit whereas the poor have few assets, and are heavily dependent on the forests for their subsistence livelihoods like fuelwood, fodder and Non-Timber Forest Products (NTFPs). Forests also fulfil their timber needs, meant for housing, farm buildings, fences, irrigation canals, and agriculture implements. The majority of people in TAL-Nepal still rely on traditional agriculture and livestock raising methods, both of which are intricately linked with forests (e.g. fodder for animals, leaf litter for fertilizer).

Sustainable forest management in TAL-Nepal is thus an important aspect of poverty reduction. Community forestry and leasehold forestry, when well governed and managed, can provide significant benefits for livelihoods needs and income for community development. Similarly, communities in buffer zones receive funds from tourism in Protected Areas. Potentials of running cottage industries and sale of forest products offer other opportunities that could yield significant benefits to the community if the enabling conditions are improved, and the resources managed in a sustainable way.

**The Terai forests have highly valued timber tree species**

### Economic Significance

The Terai forests have high value timber tree species such as Sal (*Shorea robusta*), Saj (*Terminalia tomentosa*), Sissoo (*Dalbergia sissoo*) and Khair (*Acacia catechu*). These trees are an important source of revenue for the government. The MFSC reported an income of Rs. 243 million (USD 3.2 million) from the sale of timber and fuelwood from the 14 TAL-Nepal districts in 2002/03.

**The Churia watershed protects agriculture in the Terai**

The forests of the Churia watershed also carry significant indirect benefits, because they maintain the water supply to the Terai's flat and fertile lands. Agriculture in the Terai already has major national economic importance, and the government has recognized it as the country's one of the main sources for national economic growth. The forests also prevent erosion of the fragile Churia soils, thus reducing the impact of flooding and erosion on land and infrastructures in the Terai.

**TAL-Nepal supports over 85 species of mammals, 550 species of birds, 47 species of reptiles and amphibians, and over 125 species of fishes**

### Biodiversity Significance

The TAL-Nepal is an important area for biodiversity conservation both from the national and global perspectives. The highly productive alluvial grasslands and subtropical forests of the TAL-Nepal support some of the highest Royal Bengal Tiger densities in the world, the second largest population of the Greater One-horned Rhinoceros and the largest herd of Swamp Deer. The TAL-Nepal is also home to other endangered and protected species like Asian Elephant (*Elephas maximus*) Gangetic Dolphin (*Platanista gangetica*), Gharial Crocodile (*Gavialis gangeticus*), Hispid Hare (*Caprolagus hispidus*), Greater Hornbill (*Buceros bicornis*), Sarus Crane (*Grus antigone*) and Bengal Florican

(*Houbaropsis bengalensis*). Thus, management of the landscape can conserve the rich biological diversity of the Terai, and provide the opportunities for long-term survival to large species. Notable among these are the Royal Bengal Tiger, Greater One-horned Rhinoceros and Asian Elephant, all of which require considerable spatial areas. In addition, the TAL-Nepal also supports over 85 species of mammals, 550 species of birds, 47 species of reptiles and amphibians, and over 125 species of fishes (BPP 1995, Inskipp and Inskipp 1983, Fleming et al 1975, Maskey 1992, Shah, 1995).

Over the past three decades, the forests of the Terai have become highly fragmented due to human population pressures and their impacts. The human population in TAL-Nepal has grown by 81% in the past 20 years. Deforestation rate in the Terai (1979 – 1991) was estimated to be 1.3% per year (about 8,300 hectares). This degradation is forcing the wildlife to remain in insular refuges, which are too small to support many species and their ecological interactions. Deprived of the large spaces necessary for survival, many of these species are now threatened. The threats have been worsened by the political instability of recent years, which has resulted in increased poaching of wildlife and illegal timber extraction.

The Churia Hills are still covered with forests and conservation actions can help to maintain connectivity among the protected areas of Terai, using the forest along the foothills of Churia. The conservation of these forest corridors<sup>1</sup> will help in increasing the probability of long-term survival of tigers by allowing dispersal, thus maintaining genetic variability, population viability, and ecological integrity. This linkage is also important to allow the movement of large herbivores, especially the Greater One-horned Rhinoceros and the Asian Elephant to disperse in protected refuges.

Royal Bardia National Park has been chosen as a Learning Site for Protected Area Learning Network (PALnet) by IUCN. Similarly, Royal Suklaphanta Wildlife Reserve is a CITES (Convention on International Trade in Endangered Species of Wild Fauna & Flora) MIKE (Monitoring of Illegally Killed Elephants) Site for gathering information on wild elephants. There are 3 Ramsar Sites (*Ghodaghodi Tal, Bishazari Tal and Jagdishpur Reservoir*) in the TAL-Nepal.

The TAL-Nepal comprises two of the WWF's Global 200 ecoregions<sup>2</sup> namely, the Terai-Duar Savannas and Grasslands ecoregion and the Himalayan Subtropical Broadleaf Forests ecoregion. It also represents two Level 1 Tiger Conservation Unit<sup>3</sup>, an Important Bird Area<sup>4</sup> and a Biodiversity Hotspot<sup>5</sup>. The TAL-Nepal also includes two World Heritage sites - Royal Chitwan National Park and Lumbini, the birthplace of Lord Buddha.

## 1. 2 Conservation Approach of TAL

The TAL represents a new paradigm in conservation planning and implementation, based on widely accepted scientific principles, where the shift from site-based conservation to landscape-level conservation allows representation of all facets of biodiversity in the region. Similarly, this will conserve ecological processes, which are otherwise not taken care of. An ecoregion is the unit for **conservation planning** to ensure representation of biodiversity, whereas conservation landscapes are the units for **conservation action**. Within these landscapes, forest corridors are the areas of natural habitat that contain the ecological conditions necessary for potential wildlife movement and are often linked with protected areas that provide refuge to wildlife populations.

**Habitat degradation is forcing the wildlife into small, insular refuges. Deprived of the large spaces necessary for their survival, many of these species now face an uncertain future.**

### Conservation importance of the TAL

- A priority landscape for conservation priority in HMG/N's Tenth (10<sup>th</sup>) Plan
- 2 Global ecoregions of WWF's Global 200 ecoregions
- A Biodiversity Hotspot
- An Important Bird Area
- Two Level 1 Tiger Conservation Units (TCUs)
- An Important Asian Elephant and Rhinoceros landscape
- 3 Ramsar Sites
- 2 UNESCO World Heritage Sites

### Ecoregions of the TAL

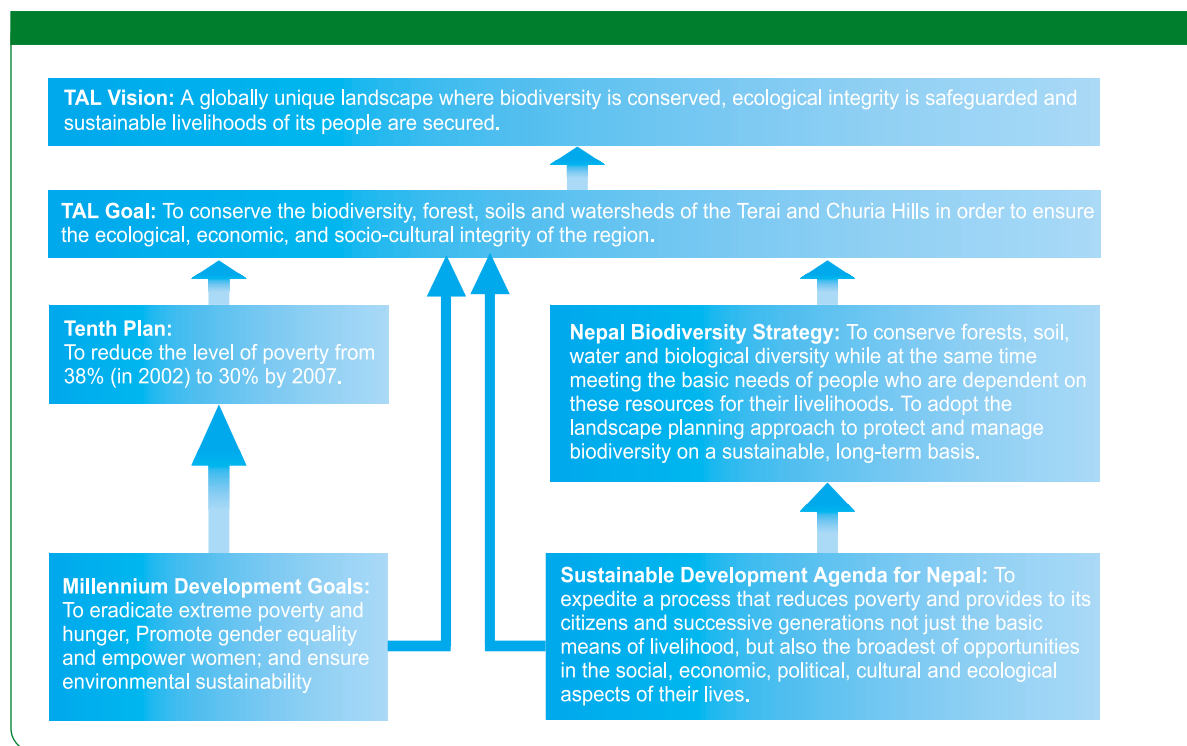
**The Terai-Duar Savannas and Grasslands ecoregion** represents the world's tallest grasslands. It is a highly productive mosaic of alluvial grasslands and riverine forests, stretching as a narrow band along the foothills of the Churia or Siwalik. The ecoregion supports Asia's largest herbivores and carnivores: here tigers live at densities considered the highest density in the world, supported and fed by even more dense populations of ungulate prey species, such as gaur (*Bos gaurus*), sambar (*Cervus unicolor*), Swamp deer (*Cervus duvauceli*) and spotted deer (*Axis axis*).

**The Himalayan Subtropical Broadleaf Forests ecoregion** consists of the east-west directed subtropical forests along the Churia Hills of the outer Himalayas and along the foothills of the Himalaya.

The Tenth Plan<sup>6</sup> mentions that the landscape and its forest corridors will be conserved to enhance forest resources and conserve biodiversity including endangered species. While traditional conservation practices focus on protected areas, this approach considers conservation beyond the boundaries of National Parks and Wildlife Sanctuaries and is extended to encompass a larger landscape. Restoring the Terai Arc Landscape and its forest corridors will facilitate the dispersal and genetic exchange of wildlife populations and ensure the long-term survival of endangered species.

### 1.3 TAL Vision and Goal

The Terai Arc Landscape-Nepal's vision and goal are based on conservation science described above, and are aligned with important guiding documents of the nation like the Tenth Plan, Nepal Biodiversity Strategy (NBS), Millennium Development Goals (MDGs) and Sustainable Development Agenda for Nepal (SDAN). His Majesty's Government of Nepal, MFSC, has formally endorsed the TAL vision in April 2001.



Initially, the TAL concept was developed on the basis of scientific research that delineates “biological corridors”, as defined by a tiger dispersal model using the tiger as the umbrella species. In addition, the minimum necessary habitat required to conserve biodiversity across all species is accounted during the designing of TAL. Other inputs include practical considerations and biodiversity indicators such as concentration of the existing rhino and elephant population centers. It is also aligned with the Nepal Biodiversity Strategy (NBS), which integrates the conservation and sustainable use of the diversity of biological resources with national development. NBS has adopted the landscape level planning approach to protect and manage biodiversity on a sustainable and long-term basis.

The TAL-Nepal vision supports the Tenth Plan, the Millennium Development Goals and Sustainable Development Agenda for Nepal. The Tenth Plan's goal of poverty reduction is based on four strategies, viz. broad-based economic growth, social sector development, targeted program, and good governance. TAL-Nepal Strategic Plan is a step forward to support the initiatives taken by the Tenth Plan. The government has also signed the Millennium Development Goals (MDGs), agreed by the international development communities. The following issues mentioned in MDGs are of direct relevance to the TAL-Nepal and this Strategic Plan aims to address them:

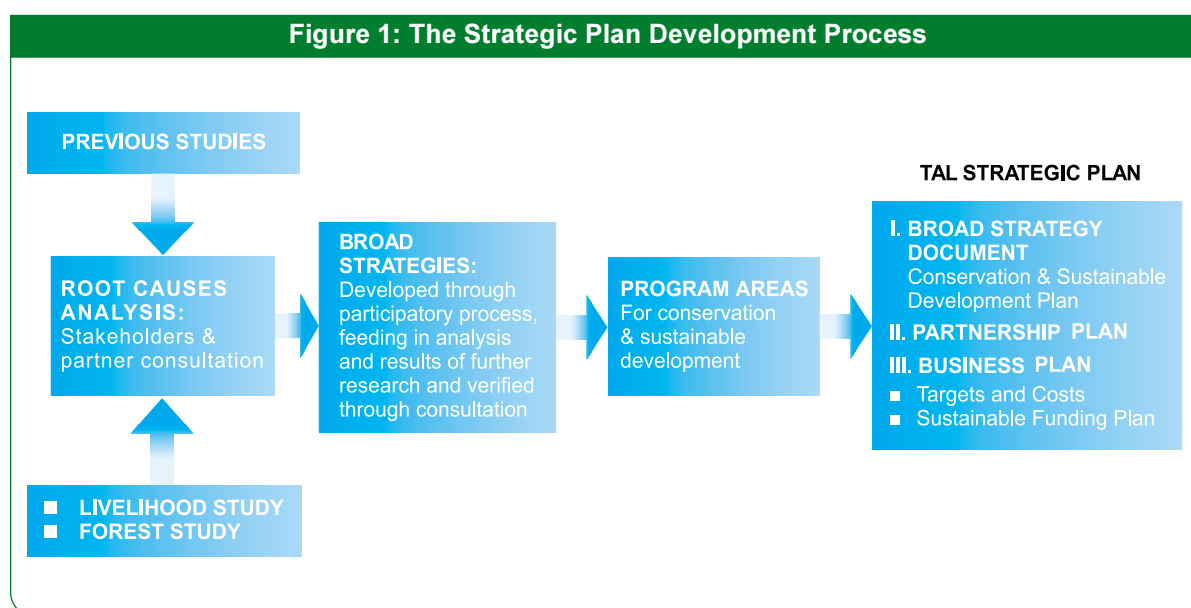
- Eradicate extreme poverty and hunger
- Promote gender equality and empower women
- Ensure environmental sustainability

Sustainable Development Agenda for Nepal (SDAN) aims at conserving the biodiversity at landscape level by recognizing threats from habitat fragmentation and loss of forest cover. It also focuses on the maintenance and further development of Protected Areas (PAs) to safeguard the nation's rich biodiversity and involvement of local communities near the PAs in both the management and economic benefit sharing of the area.

The conservation at the landscape level will only be possible through strong partnerships among stakeholders, governmental and non-governmental agencies working in the region, donors, private sector and local communities. The TAL-Nepal Strategic Plan aims to create and build upon effective partnerships with local communities as resource managers, beneficiaries and stewards. The TAL -Nepal Strategic Plan is about making partnerships happen and creating a synergy to achieve the TAL vision.

### 1. 4 Strategic Plan Development Process

Given the size and population of the landscape and the complexity of issues involved, the Ministry of Forests and Soil Conservation has recognised the need for formulating a landscape level broad strategy document through a multi-stakeholder partnership approach. Therefore, the Strategic Plan development process was so designed as to make it participatory and consultative in nature, involving local, regional and national stakeholders. The consultation was carried out through various workshops, meetings and participatory studies. The process took more than one year and is summarized in Figure 1.



The process had two major steps:

1. **Threats Analysis:** Identifying the biological and socioeconomic causes of biodiversity loss and environmental degradation in the TAL-Nepal; and
2. **Strategy Development:** Developing strategies that address the identified root causes at the local, regional and central levels.

The methodology and results for each of these steps are set out in Section II

A TAL-Nepal Strategic Plan Development Core Team was formed to take forward the Strategic Planning process. The team is lead by Dr. Mohan P. Wagley, Chief of Planning and Human Resources Development Division of the MFSC. It also comprises the representatives from Department of Forests (DoF), Department of National Parks and Wildlife Conservation (DNPWC), United Nations Development Program (UNDP), Netherlands Development Organization (SNV), United States

Agency for International Development (USAID), Department for International Development (DFID) and World Wildlife Fund Nepal Program (WWF NP).

The Strategic Plan has the following three main components:

- (i) The Broad Strategy Document
- (ii) The Partnership Plan
- (iii) The Business Plan

The Broad Strategy Document, which is the present document, has been completed in the first phase. The Partnership Plan and the Business Plan will be completed in the second phase (Section 4.4).

## *1.5 Periodic Review*

Biodiversity conservation is a dynamic process, which needs to adopt the best practices and lessons learnt. Therefore, these long terms broad strategies presented in this document are dynamic and subject to change on periodic basis. The revision of the strategy will be done as follows:

Inception Review – After 2 years of the implementation of the Plan

Mid-Term Review – After 5 Years of the implementation of the Plan

Final Review – After completion of Strategic Plan period

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<sup>1</sup> Forest corridors are areas of natural habitat (may include forests, grasslands or other natural terrestrial habitats) that contain the ecological conditions necessary for potential wildlife movement. Usually, forest corridors will link protected areas providing refuge for wildlife populations.

<sup>2</sup> Following the identification of 867 ecoregions across the world, the World Wildlife Fund prioritized ecoregions that harbored globally important biodiversity, called the Global 200 ecoregions of which, two are contained within the Terai Arc Landscape. An Ecoregion is a relatively large unit of land or water that contains a distinct assemblage of natural communities sharing a large majority of species, dynamics, and environmental conditions.

<sup>3</sup> Level 1 Tiger Conservation Unit is the highest priority area for tiger dispersal.

<sup>4</sup> Important Bird Areas (IBAs) have been identified by Birdlife International. They either have significant numbers of one or more globally threatened species, or are one of a set of sites that together hold a suite of restricted-range species or biome-restricted species, or they have exceptionally large numbers of migratory or congregatory species. These are areas that contain bird species with restricted ranges.

<sup>5</sup> Hotspots are regions that harbor a great diversity of endemic species and, at the same time, have been significantly impacted and altered by human activities. Plant diversity is the biological basis for hotspot designation; to qualify as a hotspot, a region must support 1,500 endemic plant species, 0.5 percent of the global total. Existing primary vegetation is the basis for assessing human impact in a region; to qualify as a hotspot, a region must have lost more than 70 percent of its original habitat.

<sup>6</sup> HMG/N's 10th Five Year National Plan, for the period 2002-2007.



Section  
2

THREATS ANALYSIS FOR BIODIVERSITY  
LOSS AND ENVIRONMENTAL DEGRADATION  
AND SOCIO-ECONOMIC ANALYSIS

## 2. 1 Threat Analysis

The first step of threats analysis used two approaches in order to ensure a holistic and thorough investigation: a **Biological Analysis** that focused on biodiversity loss and a **Root Causes Analysis** investigating the local and macro-level socio-economic causes of biodiversity loss and environmental degradation.

### Biological Analysis

An in-depth biological assessment was carried out in the TAL-Nepal in early 2001, with two teams of experts assessing its field conditions and conservation issues. One of the teams focused on the western part of the landscape between the Mahakali River in the west and the east of Karnali River. Another team worked in the eastern part of the landscape covering areas from the Karnali River in the west to the Royal Chitwan National Park (RCNP) in the east. Both the teams used field observations, interviews with local people, and consultation meetings with community forest user groups, local forest and national park authorities. A team of wildlife biologists and a protected area management specialist analyzed the existing gaps in the protected areas network and management systems. A series of consultative meetings were conducted with organizations involved in the conservation and development projects in the TAL-Nepal such as DoF, DNPWC, CARE-Nepal, DFID, SNV, UNDP, USAID and WWF Nepal to solicit their inputs on landscape level conservation. The biological analysis also prioritized the representative ecosystem and focal species for conservation in the TAL-Nepal area.

### Root Causes Analysis (RCA)

Root Causes Analysis<sup>7</sup> is a systematic and practical methodology for *organizing, analyzing and understanding* the complex causal factors driving biodiversity loss and environmental degradation at different scales. Its objectives are to identify the socio economic forces and circumstances driving biodiversity loss and environmental degradation to determine how these root causes are interlinked and to decide on the key factors to be addressed at different levels. The RCA process in TAL-Nepal involved the following steps:

#### *Step 1: Information Gathering*

The consultation process that fed into the RCA and strategy building process actually began in 2001. It started with the first participatory study carried out to collect scientific and socio economic information, as well as the participatory planning for TAL-Nepal conducted while designing the Critical Areas Restoration Project (CARP).

#### *Step 2: Develop Initial Conceptual Model*

A multi-stakeholder workshop was organized in December 2002 to conduct an initial analysis of the root causes of biodiversity loss and environmental degradation, particularly forest degradation, in TAL-Nepal. The results were used to develop the first draft of the Root Causes Matrices.

#### *Step 3: Further Data Collection and Verification*

Several information gaps were identified during multi-stakeholder workshop in december 2002 and further studies on livelihoods and forests were commissioned. These studies include a desktop review of livelihoods in TAL-Nepal (WWF, 2003), a participatory study investigating the perceptions of local communities on livelihoods and environmental issues (Mountain Spirit, 2003), and an assessment of forest management systems (Kanel et al, 2003). Besides, the Strategic Plan Core Team reviewed studies and literature from various governmental and non-governmental sources as well as the existing legislation and policies. Key persons were interviewed to fill in the gaps where documented assessments were lacking. The Root Causes Matrices were again revised to consider this new information.

#### *Step 4: Revise Model*

The revised RCA Matrices were presented for review and revision at four separate workshops in May 2003: a national level multi-stakeholder workshop, a national level biodiversity workshop, a field level multi-stakeholder workshop in Nepalgunj, and an advisers' workshop in Kathmandu. The results of these workshops were used to complete the final version of the Root Causes Matrices.

## Results

The RCA identified the following 7 direct causes of biodiversity loss and environmental degradation in TAL-Nepal:

- Cause 1:** Forest conversion
- Cause 2:** Uncontrolled grazing in forests
- Cause 3:** Unsustainable timber harvesting
- Cause 4:** Unsustainable fuelwood extraction
- Cause 5:** Forest fires
- Cause 6:** Churia watershed degradation
- Cause 7:** Wildlife poaching and human-wildlife conflict

The RCA and the livelihood studies identified not only the direct causes but also the crosscutting and predominant underlying causes.

- Crosscutting Issue 1 & 2:** Migration and Population growth
- Crosscutting Issue 3:** Low agricultural productivity
- Crosscutting Issue 4:** The struggle for land
- Crosscutting Issue 5:** Lack of off-farm livelihood opportunities
- Crosscutting Issue 6:** Inadequate access to and management of forest resources
- Crosscutting Issue 7:** Cross border issues

The biological analysis identified the following additional threats of environmental degradation and biodiversity loss in TAL-Nepal.

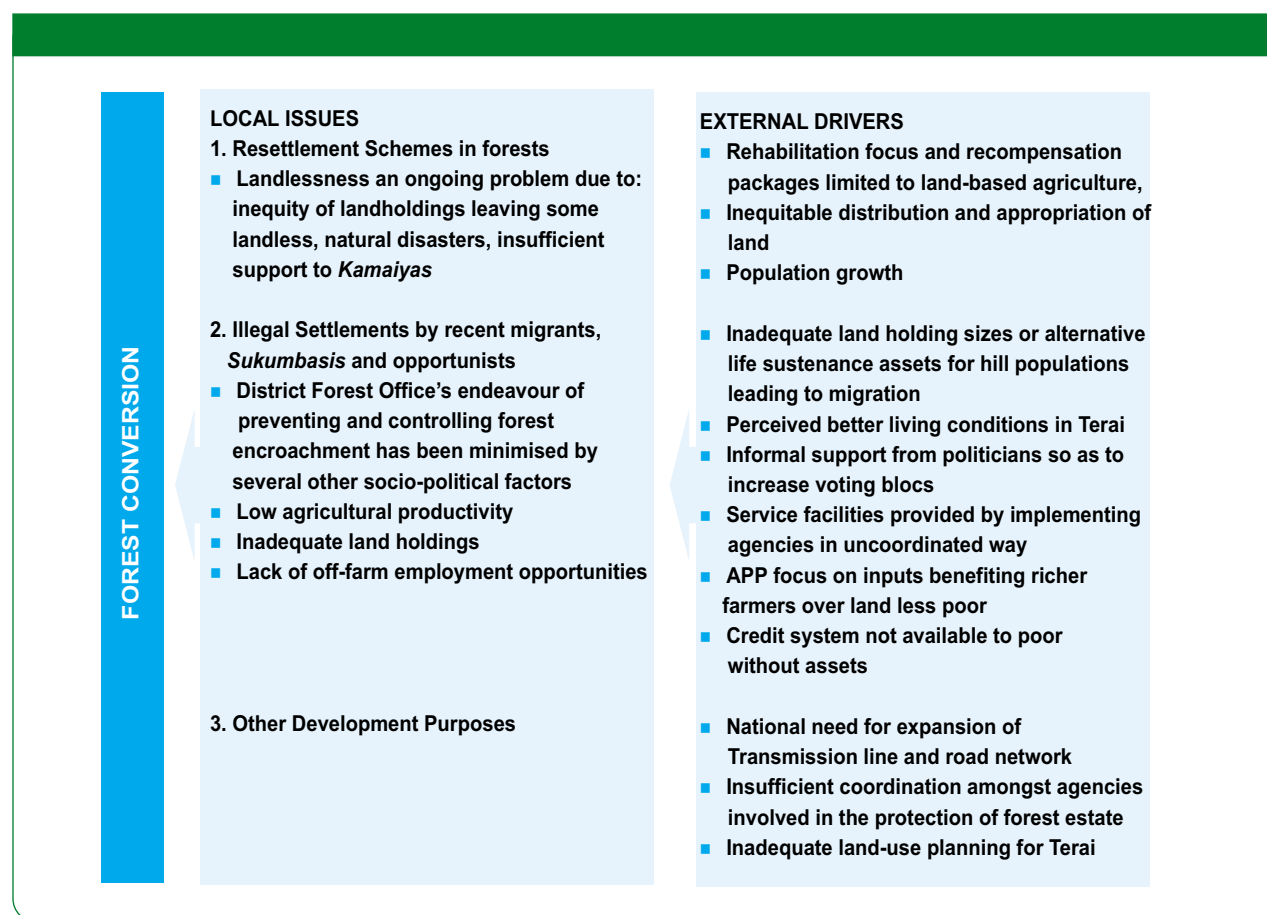
- Invasive alien species and natural succession in grasslands and wetlands
- Increasing intensity of flash floods and soil erosion
- Decrease in wildlife population due to loss of habitat, poaching and disease
- Imbalances between prey and predator populations
- Use of agro chemicals
- Lack of awareness on biodiversity and wildlife conservation

The following Section presents a brief description of each of the seven direct causes and a flowchart showing the root causes divided into local issues and external drivers. The analysis was drawn from discussions during workshops, results of the livelihood studies and macroeconomic analysis. The process generated a wealth of information. However, owing to space constraints it has been presented here in a concise form. The statistics cited in the document are mainly from HMG's national surveys, and from the district level databases of the Participatory District Development Program (co-funded by the National Planning Commission, Ministry of Local Development and UNDP; NPC 2001-3), which covered seven of the fourteen TAL-Nepal districts. The remaining significant data gaps have been identified as priorities for research in the early phase of the Strategic Plan implementation (Section 4.2).

## 2. 2 Direct and Root Causes of Biodiversity Loss and Environmental Degradation

### 2.2.1 Forest conversion

Demand for land is particularly high in the Terai, because of its' flat terrain, fertility and accessibility to India. To meet this demand, people encroach and settle in the forests. Owing to such demand, some Terai districts like Rupandehi and Nawalparasi have already lost significant amount of their low land forest while other districts such as Kailali and Kanchanpur are losing the forest by encroachment at a rapid rate. Local causes and external drivers that stimulate forest conversion are depicted in the following flow chart.



### 2.2.2 Uncontrolled grazing in forests

There are 4.5 million livestock (viz. cattle, buffalos, goats and sheep) in the 14 districts of TAL-Nepal, and their numbers continue to grow. Livestock is identified as a source of economic growth, expected to contribute 45% of overall agricultural GDP growth by 2014 (Carrol, 2001). Forests are used extensively for livestock grazing and fodder collection. Restrictions on grazing in CFs often result in greater pressure on nearby government-managed forests. Unmanaged grazing degrades forest understorey either directly by the livestock eating the seedlings and young plants or indirectly through excessive trampling of the soil degrading the forest floor. Local causes and external drivers contributing to free grazing in the forest are depicted in the following flow chart (Page 13).

### 2.2.3 Unsustainable timber harvesting

The Terai forests are extremely valuable compared to the hill forests. They comprise highly valuable species such as Sal (*Shorea robusta*), Saj (*Terminalia tomentosa*), Sissoo (*Dalbergia sissoo*) and Khair (*Acacia catechu*). Major part of the timber demand of the country is met from the Terai forests. Currently raw timber can not be exported outside the country. Forest harvesting is confined to the collection of dead, dying and fallen tree in the government managed forests. This restriction means

## UNCONTROLLED GRAZING IN FORESTS

### LOCAL ISSUES

1. Large populations of free grazing livestock
  - Weak disincentives against grazing in forests (many benefits, little costs)
  - Slow change from unproductive to improved livestock
  - Livestock are an integral part of the traditional farming system
2. Poor grazing management systems in Community Forests, Government managed Forests, and Farmlands:
  - Inequitable grazing access in some CF sites
  - Perception that growing fodder reduces productivity of farmlands
  - Intensified (cash crop) farming systems on irrigated land have decreased fallow periods when traditionally fodder was

### EXTERNAL DRIVERS

- Lack of Management Plans for government managed forests
- Lack of investment in agricultural and veterinary extension services
- Lack of research on improved breeds adaptation to local conditions
- Forest management strategies ignore livestock issues and pasture and fodder management
- Traditionally cows can be grazed in the government forests freely. Even the Forest Act has no austerity measures against free grazing of the cows in the forest.

that a lot of the forests are currently under-harvested and not actively managed for timber production and regeneration. The collection from forests is far less than the demand for timber in the country. It is believed that the deficit is met through illegal harvesting of the timber from the forests. At places, due to the open border with India, timber is smuggled across the country into India also. During such theft, smugglers target the best trees, thus reducing the value of the remaining forest. Degraded forests are also more vulnerable to encroachers who are more likely to settle in a thinned out forest. This unsustainable timber harvesting has a range of impacts on the forest, including loss of under-story, reduced regeneration, loss of tree species, change in forest composition and structure, and change or loss of wildlife habitat. Local causes and external drivers that facilitate unsustainable timber harvesting are depicted in the following flow chart.

## UNSUSTAINABLE TIMBER HARVESTING

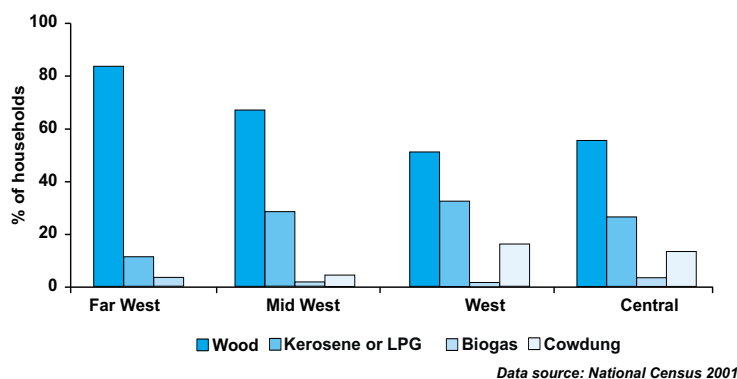
### LOCAL ISSUES

1. By local people to support their timber needs
  - Increasing local demand
  - No incentive not to extract timber
  - Perceived lack of ownership and protection of government managed forests
  - Inequitable sharing of benefits from CFs
2. By traders, middlemen for profit
  - Increasing urban and industrial demand
  - Problems for the strict enforcement of forest laws

### EXTERNAL DRIVERS

- Source of income for local people with few other opportunities to earn income
- The government has a wider vision of managing the Terai and Inner Terai forest for the benefit of the people of the entire country. Therefore, there is no sufficient ownership feeling among the nearby dwellers towards the forests.
- Increasing urban demand due to urban growth
- Increasing industrial demand (sawmills, furniture factories, etc)
- Weak institutional mechanisms for monitoring
- National ban on logging increases illegal logging
- Gap between official price of timber and black market prices encourages illegal trade

**Figure 2: Source of Cooking Fuel in TAL-Nepal by Development Region**

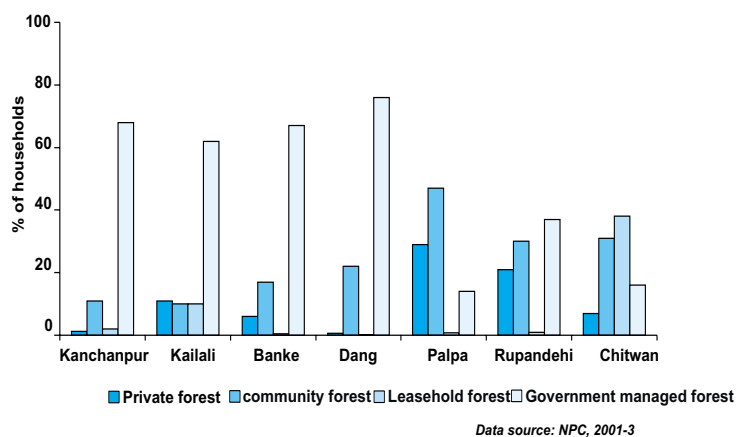


## 2.2.4 Unsustainable fuelwood extraction

Unsustainable fuelwood extraction affects both community and government-managed forests, but the pressure on government-managed forests is particularly high. The impact on forests is similar to that of unsustainable timber harvesting, described above. Fuelwood is the basic source of energy for cooking in most of rural Nepal. Sixty one percent of all TAL-Nepal households rely on fuelwood for cooking (Figure 2). The figure shows that reliance on fuelwood is much higher in the Far Western and Mid Western than in the Western and Central Development Regions.

Dung is generally used when fuelwood is expensive or not available. Kerosene and liquid petroleum gas are common amongst better-off families, particularly in urban areas. The majority of rural households still rely on traditional stoves, which require significantly more fuel than improved stoves. The Participatory District Development Program (PDDP) study found that 85% of households use traditional stoves and only 14% use non-wood fuel stoves (NPC, 2001-3). The majority of this wood comes from nearby government-managed forests. The same study found that 49% of households obtain their fuelwood from government-managed forests in seven districts (Figure 3). Fuelwood is also used by certain industries, including bakeries and brick kilns. The size, nature and impact of the fuelwood trade is identified as an information gap, but it is likely that these industries exert the most pressure on fuelwood resources near urban areas. Local causes and external drivers to facilitate unsustainable fuelwood extraction are depicted in the following flow chart.

**Figure 3: Source of Fuelwood in Seven Districts of TAL- Nepal**



### UNSUSTAINABLE FUELWOOD EXTRACTION

#### LOCAL ISSUES

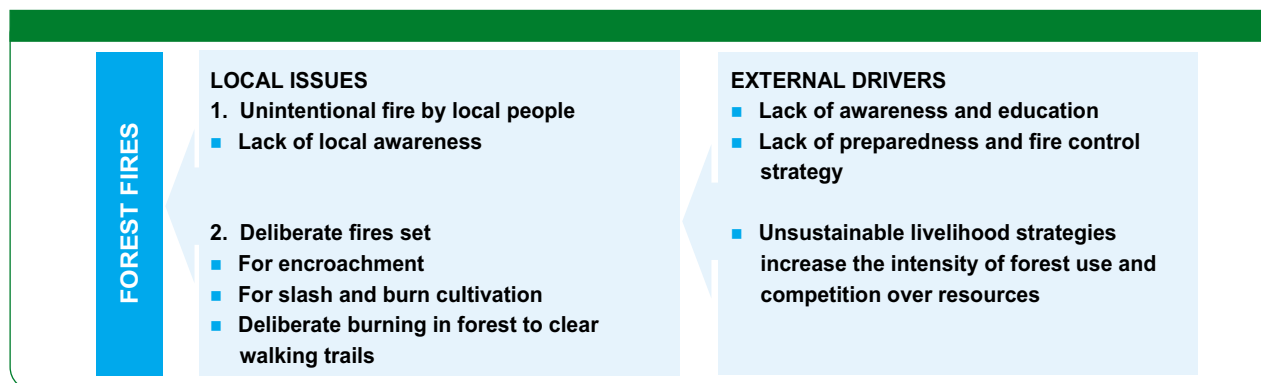
1. Collection by local people for household use
2. Fuelwood sold to commercial customers by local people and middlemen
3. Inefficient supply and delivery mechanism of the fuelwood
  - Unregulated and easy access to forests
  - Few affordable alternative energy sources
  - Increase in demand, decrease in source
  - Limited income opportunities to afford alternatives

#### EXTERNAL DRIVERS

- Forests not actively managed for fuelwood
- Inadequate resources for forest management and enforcement
- Alternative energy schemes generally benefit better off households
- Growing population
- Inadequate energy policies for alternative

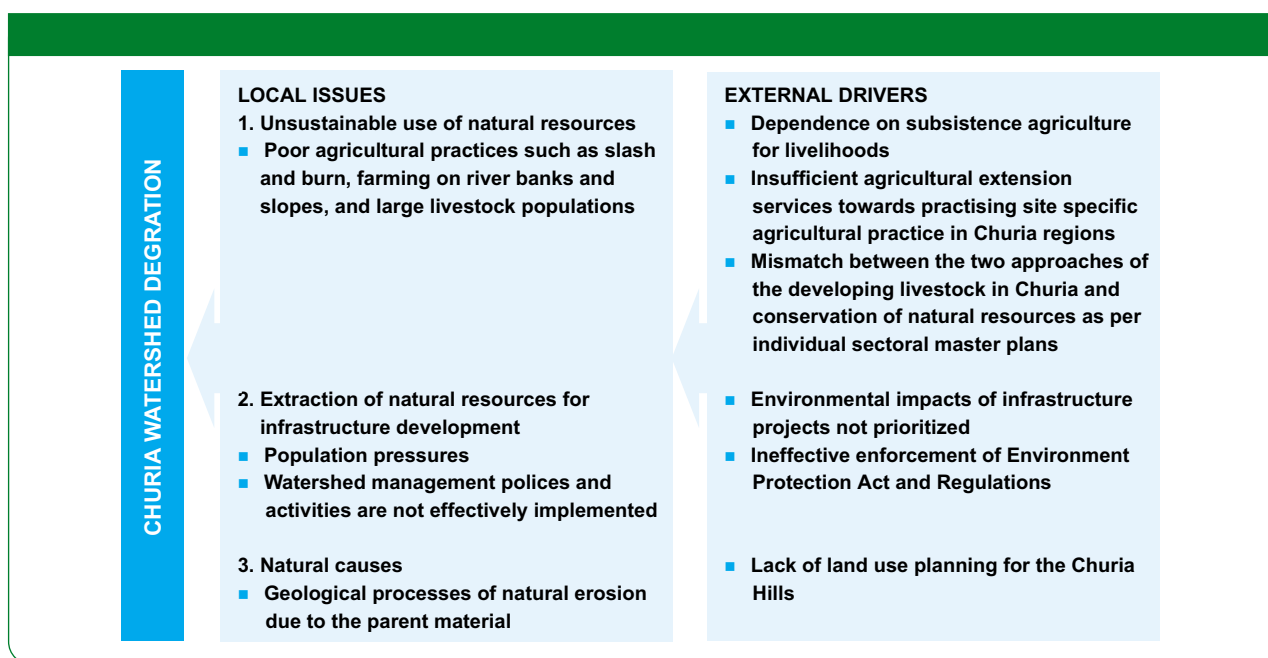
### 2.2.5 Forest fires

Fire is successfully used by forests and park authorities and local communities for the management of both forests and grasslands in the Terai. Uncontrolled forest fires, however, are a major threat to forests and biodiversity. While there is little information on the extent and impact of forest fires, communities regard fires as one of the high threats to forests. Forest fires may start due to natural causes, but evidence and experience indicates that the majority of uncontrolled fires in the Terai are induced by people. Studies also show that some CFUGs try to control fire in their forests; otherwise it is usually not controlled. Local causes and external drivers to facilitate forest fires are depicted in the following flow chart.



### 2.2.6 Churia watershed degradation

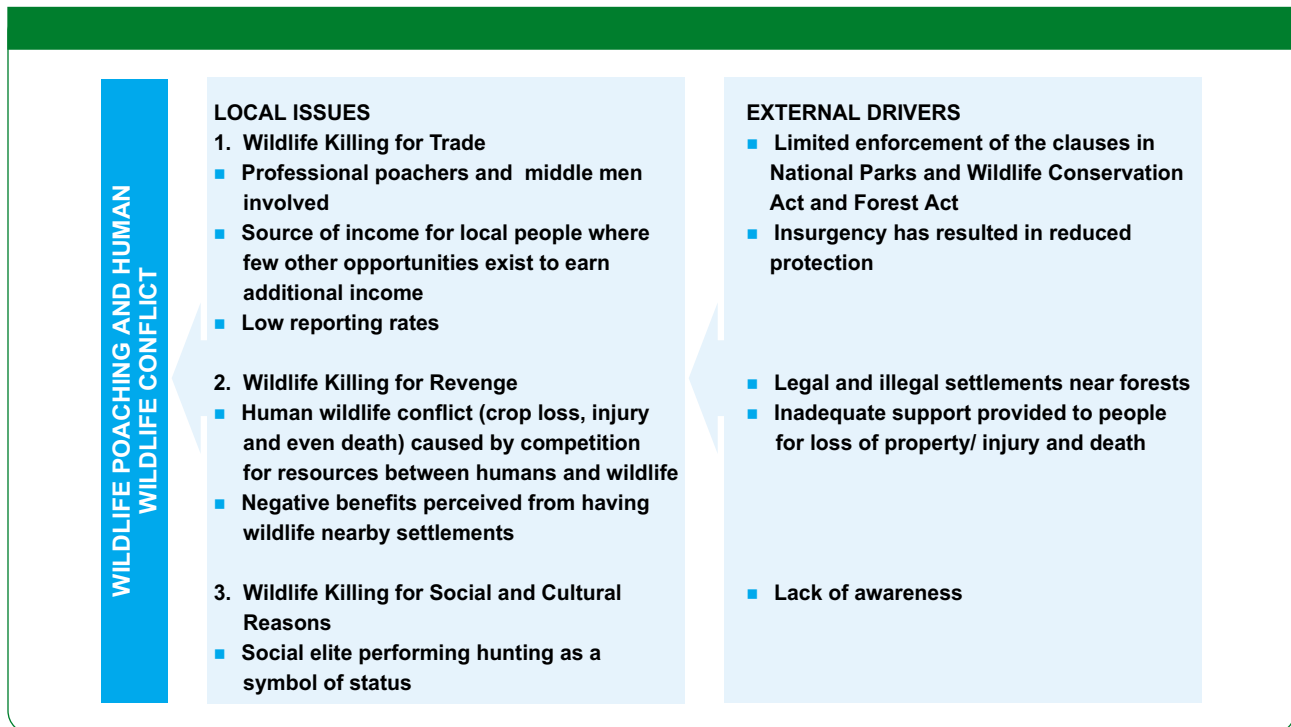
The Churia Hills are the southern-most range of hills in Nepal lying between the plains of the Terai and the mountain ranges of the Himalayas. They form a highly fragile ecosystem of dry forests and thin soils. The Churia forests perform a vital economic and ecological function: they are the watersheds for the Terai, source of recharging the ground water, supporting its agricultural production, and protecting the land from flooding. Given their fragility, their carrying capacity is low, but in many places they are quite heavily populated by communities who rely on their natural resources for survival. Many of these communities are recent migrants from the Mid Hills. Soil erosion and over harvesting of natural resources have seriously degraded the Churia watershed. During participatory threat analysis, seven out of the eleven villages visited reported that they were losing land each year due to river bank erosion and flooding (Mountain Spirit, 2003). Many of the poor households affected by floods and landslides in the Churia move to other parts of the TAL-Nepal and encroach forest areas. The gravel from the foothills of the Churia is supplied to the urban areas as the essential construction material. This is seriously affecting the environmental condition of Churia regions. Local causes and external drivers to facilitate degradation of Churia watershed are given in the following flow chart.



### 2.2.7 Wildlife Poaching and Human Wildlife Conflict

Wherever humans and wildlife coexist, conflict between them always becomes an issue. In the TAL-Nepal, human-wildlife conflict is particularly a problem for communities living near protected areas. Wild animals such as rhinos, elephants, monkeys, deer and wild boars raid crops and damage property. People are injured and even killed by wildlife. The communities practice various methods, including fencing, fire and noise, to keep wildlife away from their crops. The issue, however, is not just the conflict itself, but also the fear of potential danger, which is a significant factor even for communities where human-wildlife interactions are relatively rare.

Wildlife poaching levels have been declining for years owing to improved protection and improved awareness amongst local communities. However, currently poaching has increased with insurgency because the number of guard posts in the protected areas has been curtailed, which has resulted in the increase of illegal activities. Wildlife killing is known to occur for various reasons and the RCA categorized them into three categories – Wildlife killing for trade, for revenge and for socio-cultural reasons. An information gap identified is that locals often hunt small wildlife such as jungle fowl and other birds in some areas for subsistence needs. The RCA did not identify this as a threat, though this condition may exist in forests outside PAs where protection measures are meager. Local causes and external drivers that facilitate Wildlife poaching and increase human wildlife conflict are given in the following flow chart.



## 2.3 MAJOR CROSSCUTTING ISSUES

For the purpose of this document, underlying causes contributing to more than one direct cause have been described as crosscutting issues (Refer Table 4).

### Issues 1 and 2: Migration and Population growth

Population growth in both rural and urban areas, is a key causal factor behind all of the direct causes of environment degradation and biodiversity loss. The data shows a trend of population resulting higher population pressure in the TAL-Nepal (Figure 4) as an indicator of in-migration. The 2001 census recorded that almost 1.5 million TAL-Nepal residents were born outside the TAL, compared to only 0.5 million in 1981 (CBS, 2001).

The primary motivation for migration is aspirations for better living conditions, the comparatively better opportunities for land and employment in the Terai, compared to the hills and mountains. The intactness of the forest in the Mid and Far Western Development Regions is reported to be a major attraction for in-migrants. Political oppression, and recent insurgency are other major cause of in-migration to the TAL from the hills and mountains. A direct result of the insurgency has been a temporarily rapid rise in migration of the persons fleeing from conflict, particularly in the Mid and Far Western Development Regions, which have been most seriously affected by the insurgency.

A number of factors are responsible for high natural population growth: a tradition of large families, particularly in Tharu communities, and the traditional way of life where children play an important role in caring for their younger siblings and the family's livestock. Access to family planning services is also meager: on average, only 32% of TAL-Nepal households use contraceptives (NPC, 2001-3). Identified external drivers were the inadequate capacity and investment in family planning services and supporting sectors such as infrastructure development and women's literacy.

### Issue 3: Low agricultural productivity

Low agricultural productivity is one of the factors behind the continuing need of additional land, and was therefore identified as a major cause for forest conversion. Marginal farming practice are consequence of decreasing agricultural productivity. Slash and burn agriculture practice leads to forest fires and Churia watershed degradation. Low agricultural productivity is also one of the main challenges poor rural communities have been facing.

Figure 4: Population Trend in TAL-Nepal

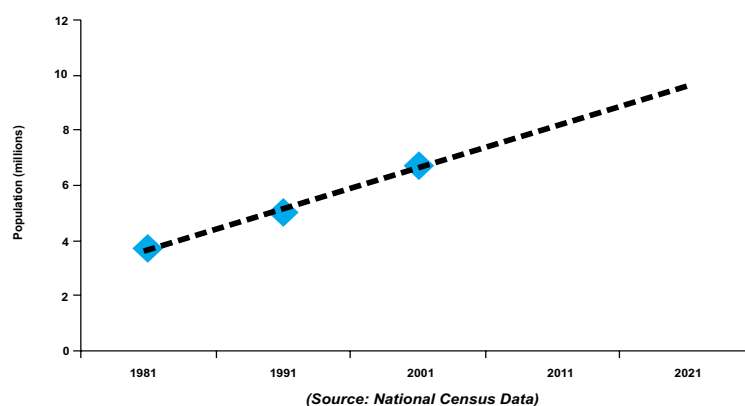


Table 2: Food Security in Seven TAL-Nepal Districts

District	< 3 months food security (%)	< 6 months food security (%)	< 9 months food security (%)
Kanchanpur	9	14	29
Kailali	10	21	38
Banke	13	21	43
Dang	9	16	42
Rupandehi	11	16	37
Palpa	13	30	72
Chitwan	7	13	30
<b>Average</b>	<b>10</b>	<b>19</b>	<b>42</b>

Source: NPC, 2001-3

The Terai has many comparative advantages in agriculture compared to the rest of Nepal, and yet productivity is much lower than that in neighboring Indian states. Low productivity of agriculture land as identified by the communities and agencies is one of the major factors responsible for the lack of food security among the poor communities. Even though the Terai region produces 16% more food than it requires, 71% of TAL-Nepal households on average do not produce enough food for year-round (Table 2; Poudel & Sharma, 2001; CBS, 1997). Limited technical supports, lack of infrastructure, inadequate agricultural and veterinary extension services, lack of financial services, and degradation of soil and watersheds all are contributing factors.

#### *Issue 4: The struggle for land*

The land issue is one of important and complex issues in the TAL-Nepal. The struggle for land has featured prominently in forest conversion and Churia watershed degradation. Lack of access to land is identified as one of the key causes of poverty in the TAL-Nepal by all livelihood studies. Land ownership remains highly inequitable in the Terai, despite several government attempts to address the problem. The latest available statistics show that 57% of the TAL-Nepal households own the land less than one hectare and the other 37%, 1-5 hectares (Table 3).

**Table 3: Land Ownership and Landlessness by Region**

Region (Terai part only)	No. Landless households (2001)	% Households classified in 1991/2 as:		
		Marginal (< 1ha)	Small (1-5ha)	Large (> 5ha)
Far West	15,459	50	47	3
Mid West	20,554	52	45	3
West	41,262	58	39	3
Central	66,107	70	28	2
<b>Average</b>		<b>57</b>	<b>37</b>	<b>3</b>

Source: National Census 2001, Agricultural census of Nepal District level information 1991/2

Many of the landowners have no official land ownership certificates. It makes them vulnerable to exploitation and eviction. It also makes it difficult for them to have access to government services including credit facilities. Uncertainty over land tenure also reduces the incentive to invest in land management. Furthermore, despite government resettlement schemes for landless people, there are still a large number of land-less households (Table 3).

The major identified causes behind this issue are as follows:

- I. **Increasing population pressure:** (Refer Crosscutting Issues 1 & 2).
- II. **Historical reasons:** When the Terai was opened up in the 1950s, the government allotted large plots of land to ex-army personnel, politicians and the elites. The indigenous people (mainly the Tharus), who had no official ownership documents, were driven away from their land or they just ended up as bonded laborers. Furthermore, in the traditional system, people of so-called lower castes were deprived of land.
- III. **Failure of land reform:** The Land Act of 1964 aimed at redistributing land to the poor and landless, but in reality it had little effect, as large landholders had been able to employ various strategies to avert the chance of losing their land (ANZDEC, 2002).
- IV. **Natural disasters:** Many TAL-Nepal families lose their land every year due to flooding, riverbank erosion and landslides (Mountain Spirit, 2003). TAL-Nepal lost about 1,105 ha of its land in the year 2001/02 and 1,167 ha in 2000/01 due to flooding and landslides (DWIDP, 2002 & 2001). While natural disasters cause large damage every year in Nepal, very little has been done to prevent them from happening or to reduce their impact. The degradation of the Churia Hills intensifies the problems in the Terai (Refer Root Cause 6).
- V. **Failure to resettle land-less people:** The government schemes set up to resettle the land-less people were ineffective owing to weak management, insufficient allocation of resources and exploitation of the schemes by the influential. The poor and marginalized were often unable to

access the schemes or voice their concerns. Furthermore, supports given to the newly settled people were insufficient, which meant that they were unable to grow sufficient product on the land allotted to them. Moreover, alternatives involving different forms of settlement or other livelihood opportunities have not been explored.

#### ***Issue 5: Lack of off-farm livelihood opportunities***

Lack of off-farm livelihood opportunities is one of the main drivers behind the continuing need for land and reliance on forest resources, and hence, it has been identified as a key factor behind forest conversion, unsustainable timber harvesting, unsustainable fuelwood extraction and Churia watershed degradation.

With the human population pressures increasing, and the availability of natural resources decreasing, off-farm livelihood activities are becoming more important than ever. Better off households, who have savings or access to credit, are able to take advantage of opportunities to intensify and diversify their livelihood activities. But for poor households, opportunities are still very limited. They are often forced to rely on unskilled wage laboring or activities such as rickshaw pulling or stone crushing (Mountain Spirit, 2003) – activities that are at a subsistence level and thus offer no way out of the poverty trap. An increasing number of people are migrating from their villages to seek livelihoods elsewhere including major cities inside or outside the country. Seasonal migration to India is one of the most important sources of livelihood for poor communities in the TAL-Nepal (Mountain Spirit, 2003).

The decline in industrial operation has led to the closure of many factories and has limited the establishment of new enterprises, significantly reducing the employment opportunities in the industrial sector. The external drivers include trade liberalization measures and discouragement of import substitution, which have reduced the competitive advantage of Nepalese industries and the general economic decline caused by insurgency and ongoing political uncertainty in the country.

#### ***Issue 6: Inadequate access to, and management of forest resources***

The deeper the poverty among rural people, the greater the dependency on natural resources - the poorest have very few or no other resources to use. Lack of access to forest resources, or unequal sharing of benefits from them has been identified as underlying cause behind uncontrolled grazing in forests and unsustainable timber harvesting. CFUG regulations sometimes can lead poorest groups to the reduced access to forest, as they cannot afford to pay the associated fees. In many cases, CFUG fund is mobilized towards community development like construction of roads, health posts and bridges, which do not address the immediate needs of the poor to sustain their livelihoods. In other cases, distant users, who do not live near the forest but use the resources, are restricted from using Community Forests. This has had significant livelihood impacts on poor distant users. Distant users are especially numerous in the central and eastern parts of the TAL-Nepal, where there has been left less forest. A PDDP study found that 33% of households in seven TAL-Nepal districts are located more than an hour's walk from the nearest source of firewood (NPC, 2001-3). The result is that both poor and distant users are forced to rely heavily on government-managed forests, further increasing the pressure on those forests.

Another aspect is the lack of local ownership of forests, which was identified as a root cause behind forest conversion, uncontrolled grazing in forests and unsustainable timber harvesting and unsustainable fuelwood extraction. Most forests in the Terai remain under government ownership, which leaves the government with a management role. Owing to the lack of responsibility local stakeholders, who neither receive any incentive to manage those forests nor any guarantee for future access, use the forest in an uncontrolled way.

### *Issue 7: Crossborder issues*

Crossborder trade has been identified as one of the drivers of unsustainable timber harvesting, and is also likely to have a major impact on the extraction of other forest products. The livelihood studies have identified the open border as being both a major opportunity and constraint to livelihoods. Being a landlocked country, the long open border between Nepal and India is a significant opportunity for Nepal. Moreover, the long open border presents ample opportunities for smuggling. Much of the timber from private land or stolen illegally from the government managed forests in the Terai is transported across the border to meet Indian demand (Mahat, 2002; Parajuli, 2001). Indian traders come across the border to buy forest products at lower prices, smuggling them into India for processing and onward sale (Vaidya, 2003). In some parts of the TAL-Nepal, there is large-scale illegal movement of cattle across the border by Indian traders who use Nepalese land to move cattle between Indian states. This adds to the grazing pressure on the TAL-Nepal forests. India is also a smuggling route for illegal wildlife products such as rhino horn. Smuggling of fuelwood is yet another problem persisting in and near the border areas, but there is currently insufficient information available on this issue. The illegal cross-border trade is aided in part by the limited resources among DFOs, customs, border patrols and police. The illegal trade has also been exacerbated by the insurgency.

Despite growth in exports in the last few years, Nepal still operates in a huge trade deficit with India. One of the main reasons for such a large trade deficit is that the average retail price for almost all commodities is lower in India than in Nepal (AEC, 2002). While cheaper food is available for those who live near the border, it also had a significant detrimental impact on poor farmers, who cannot compete to sell their products. The result, as discussed elsewhere, is increasing dependence on forest resources. The main reason for the price differences is that India continues to offer substantial support to its farmers (in forms of subsidies, guaranteed prices, etc), while Nepal's structural adjustment reform focused on the gradual change in price correcting measures including subsidies on fertilizer, irrigation and other support services.

<sup>7</sup> RCA was developed by the WWF US Macroeconomic Program Office.  
For more information, see [http://www.panda.org/about\\_wwf/what\\_we\\_do/policy/macro\\_economics/root\\_causes.cfm](http://www.panda.org/about_wwf/what_we_do/policy/macro_economics/root_causes.cfm)



Section  
3

STRATEGIES

### 3.1 STRATEGY DEVELOPMENT PROCESS

The strategy development process involved four steps. They are:

#### *Step 1: Development of strategies based on Root Causes Analysis (RCA)*

- Strategies were developed based on the inputs of the four workshops held from December 2000 to May 2003 at national and regional levels.

#### *Step 2: Identification of Program Areas*

- The strategies developed during different workshops were then grouped. Program areas were identified based on the strategies grouped by Strategic Plan Core Team in July 2003.

#### *Step 3 Verification*

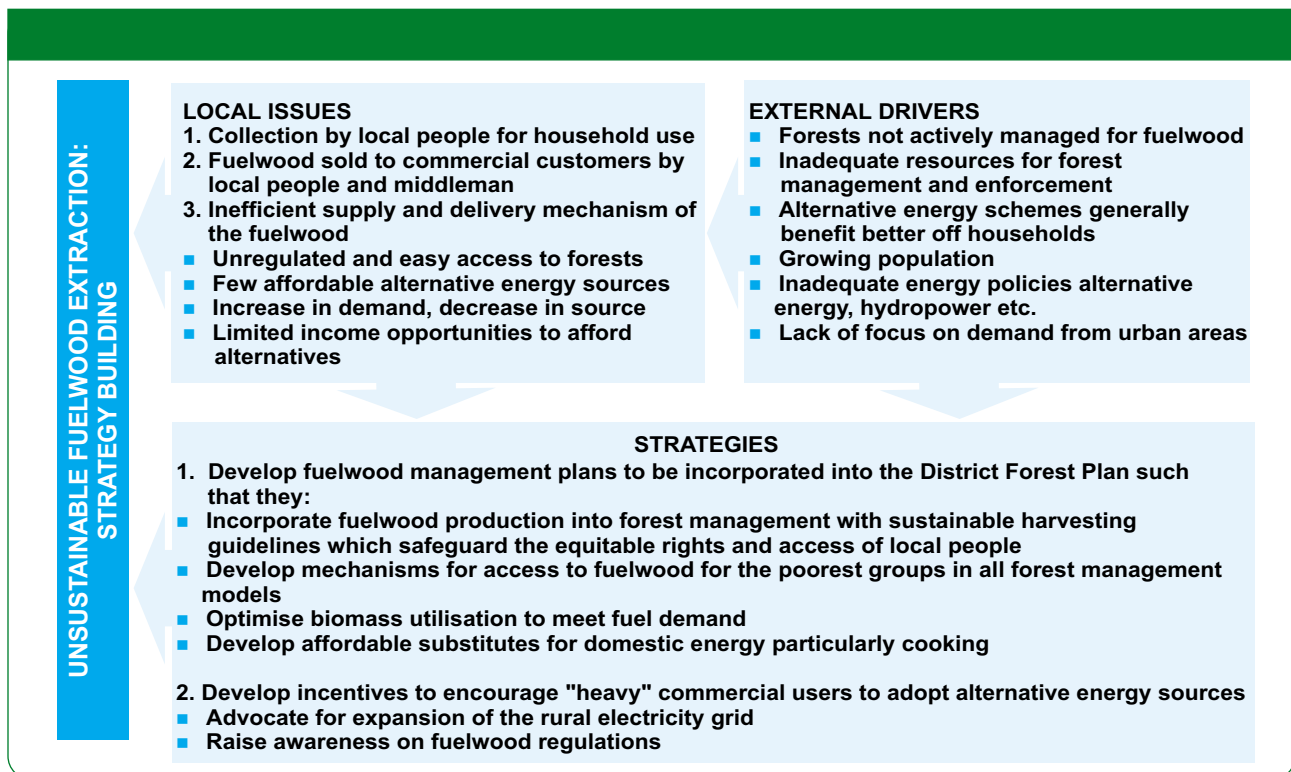
- Verification was carried out to ensure that all root causes of environment degradation and biodiversity loss are addressed through Program Areas by Strategic Plan Core Team in July 2003

#### *Step 4: Validation through consultation and multisectoral review*

- Validation of strategies and program areas was completed through multisectoral consultation and adoption of best practices from August to November 2003.

#### *Step 1: Development of Strategies based on Root Causes Analysis (RCA)*

The first step involved developing strategies to address the identified root causes: both local issues and external drivers. The strategies thus emerging covered both local level and national level interventions, often within a central, institutional and policy context. The strategy development process initiated and completed during the four workshops: a national level multi-stakeholder workshop, a national level biodiversity workshop, a regional level multi-stakeholder workshop in Nepalgunj, and an advisors' workshop in Kathmandu. The Strategic Plan Core Team then refined and reconciled the results of the different workshops and completed the RCA matrix. The findings of the livelihood and forestry studies in TAL-Nepal were referred while developing strategies, specifically in terms of capitalising on livelihoods improvement and biodiversity conservation opportunities that had been identified during the studies. The figure below represents diagrammatically, how strategies were developed based on direct and underlying causes of environment degradation and biodiversity loss, using Direct Cause 4: Unsustainable fuelwood extraction as an example.



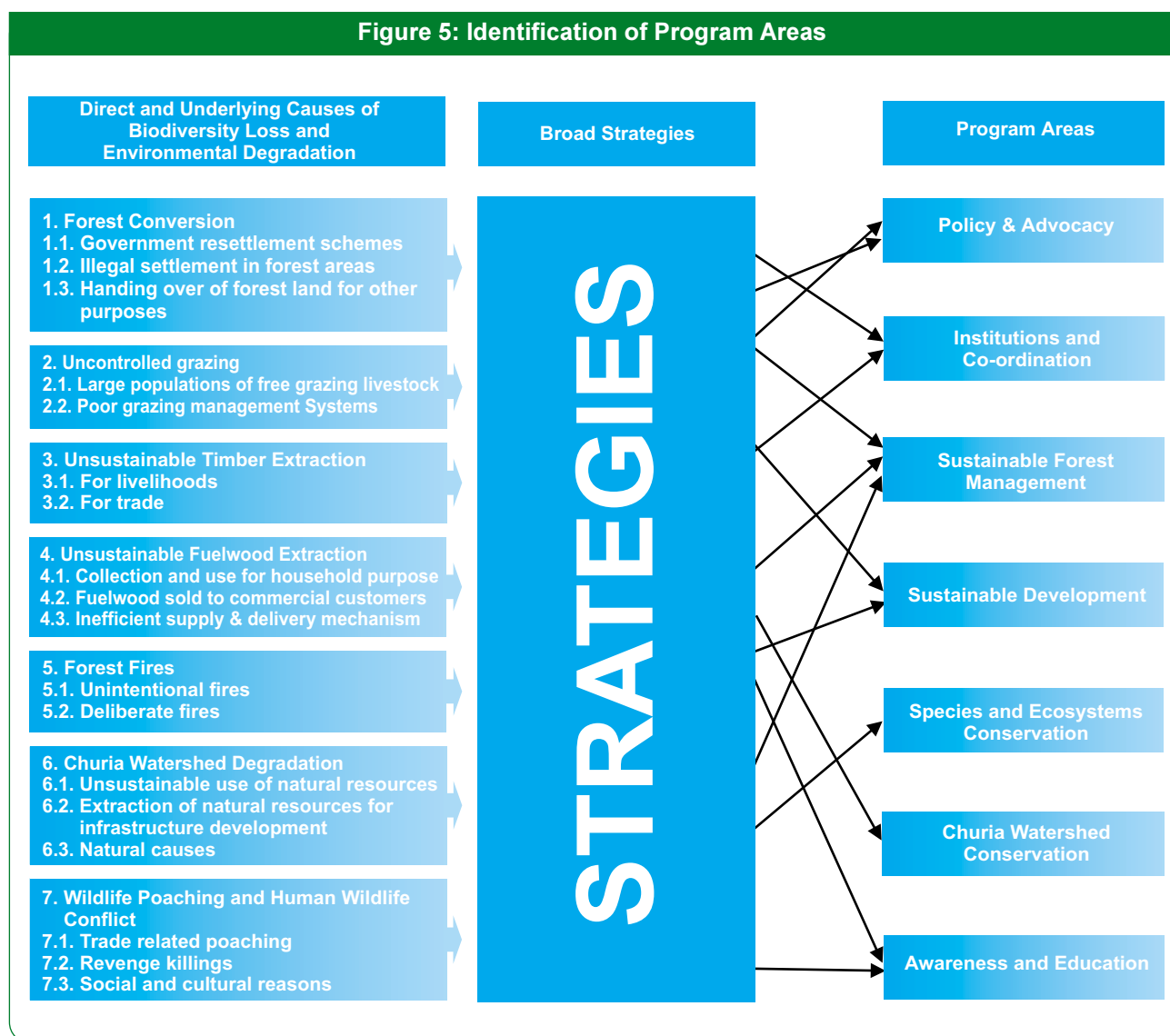
### Step 2: Identification of Program Areas

Due to the complexity and crosscutting nature of many root causes, many strategies were repeated across the seven direct causes. The purpose of this step was, therefore, to rationalize the strategies identified and group them into program that will facilitate implementation and partnership development process in future. After a series of Strategic Plan Core Team working sessions, seven Program Areas were identified which address the direct and underlying causes and the policy and enforcement gaps therein as identified by forest study, livelihood study and root causes analysis.

The Program Areas identified are:

1. Policy and Advocacy
2. Institutions and Co-ordination
3. Sustainable Forest Management
4. Sustainable Development
5. Species and Ecosystem Conservation
6. Churia Watershed Conservation
7. Awareness and Education

The TAL Strategic Plan Core Team then assigned each strategy in the Root Causes Matrix to a program area as shown in the Figure 5.



### *Step 3: Verification*

The third step was adopted in order to verify that the right program areas had been chosen to address all identified root causes of environment degradation and biodiversity loss. For this, the Strategic Plan Core Team worked in the matrix as shown in Table 4. The matrix shows that other than the Species and Ecosystems Conservation and Churia Watershed programs which were designed to address specific threats, the Program Areas contain strategies that address all direct and underlying causes identified through the Root Causes Analysis.

### *Step 4: Validation through consultation and multisectoral review*

The final step involved consultation and review of the draft document by both multi-sectoral Review Committee and regional level consultation in Hetauda and Nepalgunj, to which members from government, non-government and community-based organizations participated. The strategies were then revised according to the feedbacks received.

## **3.1.1 Principles of Strategies Development**

During the development of Strategies, it has become necessary to adhere on few guiding principles. Following set of principles were adopted to steer the strategy development process. It is hoped that these principles may serve as the guiding rule for subsequent action planning for the implementation of these strategies in future.

- **Sustainability:** aiming for economic, social and environmental sustainability;
- **Ensuring equitability:** working to ensure that access to and benefits from forest resources are more equitably distributed;
- **Empowering the women, poor and disadvantaged:** focusing particularly on gender and social inclusion
- **Being adaptive and holistic:** being sensitive to the wider context, adapting to changing circumstances and working in a way which is sensitive to the causes and effects of the insurgency; and
- **Building partnerships:** creating and building partnerships among a wide range of stakeholders and partners including local communities, government agencies, national and international non-governmental organizations and donor agencies.

**Table 4: Root Causes and Underlying Causes and their Relation to Program Areas**

Direct Causes of Biodiversity Loss and Environmental Degradation	Policy and advocacy	Institutions and co-ordination	Sustainable forest management	Sustainable development	Species and ecosystem conservation	Churia watershed conservation	Awareness and education
1. Forest Conversion	√	√	√	√			√
1.1. Government resettlement schemes							
1.2. Illegal settlement in forest areas							
1.3. Handing over of forest land to other purposes							
2. Uncontrolled grazing in forest	√	√	√	√			√
2.1. Large populations of free grazing livestock							
2.2. Poor grazing management							
3. Unsustainable Timber harvesting	√	√	√				√
3.1. For livelihoods							
3.2. For trade							
4. Unsustainable Fuelwood Extraction	√	√	√	√			√
4.1. Collection and use for household purpose							
4.2. Fuelwood sold to commercial customers							
4.3. Inefficient supply & delivery mechanism							
5. Forest Fire			√	√			√
5.1. Unintentional fires							
5.2. Deliberate fires							
6. Churia Watershed degradation	√	√	√	√		√	√
6.1. Unsustainable use of natural resources							
6.2. Extraction of natural resources for infrastructure							
6.3. Natural causes							
7. Wildlife Poaching and Human Wildlife Conflict		√		√	√		√
7.1. Trade related poaching							
7.2. Revenge killings							
7.3. Social and cultural reasons							
<b>Cross Cutting Issues</b>							
1. Migration	√						√
2. Population Growth	√						√
3. Low Agricultural Productivity	√			√			
4. Struggle for land	√	√	√	√			
5. Lack of off-farm Livelihood Opportunities			√	√			
6. Inadequate access to and management of forest resources	√		√				√
7. Cross border		√					

## 3.2 STRATEGIES WITHIN PROGRAM AREAS

### 3.2.1 Policy and Advocacy

A significant number of policies and mechanisms are in place for biodiversity conservation and natural resource management. Nepal is party to several conventions and international agreements that are related to biodiversity conservation viz. CITES, Ramsar (The Ramsar Convention on Wetlands), CBD (Convention on Biodiversity). The country has legislation recognizing that biodiversity conservation is necessary to the economy and well being of its people, and allowing benefits of natural resources management to accrue to local communities, eg. through community forestry and buffer zone. However, the analysis documented a number of gaps and contradictions constraining biodiversity conservation, forest management and the livelihoods of local communities which needs to be addressed.

*Strategic Goal 3.2.1: To improve the enabling environment for conservation and sustainable development through strengthening policies, legislation and regulations, and enforcement.*

#### 3.2.1.1 Strengthening Policy and Advocacy for Conservation of Forests and Biodiversity

1

##### **3.2.1.1.1 Revising policies to promote management of forests for livelihood needs**

The forest policy will be revised to integrate minor forest products eg. fuelwood, fodder and NTFPs production into relevant forest management practices with sustainable harvesting guidelines as well as regulating grazing practices to safeguard the rights and access of local people. Policy and regulations on NTFPs will be reviewed and revised as necessary to enable communities (especially poor households) to easily produce, harvest and market NTFPs.

2

##### **3.2.1.1.2 Implementing Forest Policy 2000**

In order to materialize the objectives of the Forest Policy 2000, the Forest Act and by-laws will be reviewed and revised including the necessary clauses to enable effective implementation of collaborative forest management and benefit sharing mechanism. Appropriate legal framework will be developed for declaring protected forests in the Churia hills under limited use management.

3

##### **3.2.1.1.3 Strengthening protected area policy and legislation**

Protected Area policy and law (National Park and Wildlife Conservation Act 1973, RCNP Rule 1974, RBNP Rule, Buffer Zone Management Rule 1996 and Buffer Zone Management guidelines 1999) will be reviewed to address gaps and weaknesses.

4

##### **3.2.1.1.4 Strengthening national priority and importance of forests**

Environmental accounting will be developed in order to realize the value of forests (timber, ecological services, tourism, NTFPs). The ministry will work towards conducting environmental accounting in national planning processes. The ministry will also promote the inclusion of landscape level conservation priorities in investment allocations. Similarly, the ministry will work towards accounting the actual contribution made by the forestry sector to the GDP in the macro economic context. Advocacy will be initiated in recognizing the forestry as the priority sector so that adequate resource is allocated for overall development of the sector.

5

##### **3.2.1.1.5 Formulating policies through consultative process**

The grass root level people, who are the major stakeholders, will be involved in designing policies that have a long-term impact on the conservation and livelihood of the people. Similarly, impact evaluation of the policy will be performed. As a part of policy formulation and revision, consultative mechanism will be adopted. Forestry sector legislations will be harmonized with various cross sectoral laws and by-laws.

### 3.2.1.2 Strengthening Policy and Advocacy for Sustainable Development

6

#### 3.2.1.2.1 Strengthening policy and legislation for land use planning and management

National land use policy will be developed in co-ordination with other government agencies. The MFSC will work with Ministry of Land Reform and Management and Survey Department towards scientifically delineating the boundary between the forest area and the private properties. Effective taxation of land is critical so that taxation is proportional to the ownership size and value of land, as is the case of other property taxes.

7

#### 3.2.1.2.2 Strengthening policy in supporting sectors

For the TAL vision to come alive, new partnerships will have to be forged, especially those that link economic development to conservation. The ministry will work together with Ministry of Finance and other financial institutions as necessary to review and revise policy on rural credit and banking in order to make these schemes more accessible to the poor. Similarly, the ministry will also work with relevant government departments to revise the subsidy and grant policy to make alternative sources of energy like Improved Cooking Stoves and Biogas accessible to the poor.

### 3.2.2 Institutions and Co-ordination

A wide range of government, non-government and community-based institutions are of relevance to and involved in, biodiversity, forests and sustainable development in the TAL-Nepal. Weaknesses in governmental and non-governmental institutions were identified as key underlying factors responsible for both environmental degradation and biodiversity loss. Lack of co-ordination between these agencies was another recurring theme, resulting in overlapping remits, inefficient spending of resources and confusion among the stakeholders. These weaknesses occur at both central and local levels.

*Strategic Goal 3.2.2: To improve the enabling environment for conservation and sustainable livelihoods, through strengthening institutions relating to the natural resource management and sustainable development and promoting co-ordination among these institutions.*

### 3.2.2.1 Strengthening institutional capacity

8

#### 3.2.2.1.1 Capacity building of DoF and DNPWC

At national and district levels, the capacity of DoF and the DNPWC will be improved through strengthening and expanding resources. This will include strengthening the capacity of DFOs and Wardens to work with local communities and other agencies for program, planning, implementation, extension, enforcement and monitoring (e.g. against illegal encroachment), and developing mechanisms for direct re-channelling of forest revenue at the district level for program implementation, capacity building and monitoring.

9

#### 3.2.2.1.2 Capacity building of local institutions

District level forestry program implementation will be strengthened through the continued establishment and support of multi-sectoral District Forest Co-ordination Committees (DFCCs). At the local level, the emphasis will be placed on strengthening the institutional structure and operation of CFUGs and Buffer Zone Institutions. Special efforts will be made to include women, disadvantaged groups, the poor and distant users as special target groups in program implementation through improving inclusiveness, equitability of access to resources and benefit sharing.

### 3.2.2.2 Strengthening Co-ordination Between Institutions

This program area covers mainly co-ordination at the national level. Co-ordination amongst local level institutions is covered in the relevant program areas.

10

#### 3.2.2.2.1 Building co-ordination on land issues

To tackle the problem of forest encroachment, co-ordination will be initiated with relevant government agencies and the DFCCs for the development of national and district level land use planning, and for land reform and resettlement initiatives. Mechanisms will be developed to make case-specific decisions regarding encroached land eviction or any other appropriate management. At the local level, co-ordination between the DoF, Survey Department and Ministry of Land Reform and Management will be strengthened through DFCC to improve the planning and implementation of resettlement schemes and land allocation.

11

**3.2.2.2.2 Building co-ordination on agriculture and livestock**

Co-ordination will be initiated by establishing multi-stakeholders platform among supporting partners, National Planning Commission (NPC), Ministry of Agriculture and co-operatives (MoAC), Ministry of Local Development (MLD), DoF, DNPWC, Department of Agriculture, Department of Livestock Services. At the local level, co-ordination among corresponding district offices, NGOs and CBOs will be improved for developing and implementing grazing and fodder management plans, improving extension and irrigation services and developing and conserving agro-biodiversity. Co-ordination with MoAC will be initiated through Central Agricultural Development Implementation Committee and the APP technical working groups to include biodiversity conservation in APP and to ensure active participation of the MoAC's district level officials in TAL.

12

**3.2.2.2.3 Building co-ordination on infrastructure development**

To reduce the impact of infrastructure and other development, a mechanism will be established for co-ordinating infrastructure development and allotment of land to other government agencies in the TAL-Nepal at both the national and local levels.

13

**3.2.2.2.4 Establishing co-ordination for the Churia Hills**

A multi-level co-ordination mechanism for policy co-ordination and program implementation in the Churia Hills will be established in order to achieve effective co-ordination among forestry, soil conservation, livestock, agriculture and water resource sectors for holistic approach in Churia conservation.

14

**3.2.2.2.5 Building co-ordination for reducing air and water pollution**

Co-ordination will be initiated with MOPE, Ministry of Industry, Commerce and Supplies and other relevant institutions to reduce pollution of rivers/streams and air, and to strengthen the implementation and enforcement of Environmental Impact Assessment (EIA) legislation.

15

**3.2.2.2.6 Tackling poaching and smuggling**

To reduce illegal smuggling of timber and forest products, co-ordination between DFO, police, customs office and local communities along the border will be strengthened through law enforcement, smuggling control, customs, and border patrols. To check poaching and illegal trade of wildlife products and species (i.e. to implement CITES), co-ordination between DNPWC, DoF and RNA, customs, police, postal service and airport authority will be strengthened.

16

**3.2.2.2.7 Building co-ordination with agencies working in adjoining hill districts**

In-migration was identified as a major cause of population growth in the TAL area. Although there is little that can directly be done to reduce the flow, co-ordination will be initiated with agencies working on development in the hills. Focus will be placed on employment generation activities at the local level especially in adjoining hill districts to develop incentives through economic opportunities and providing better humanitarian services.

**3.2.2.3 Strategies for Trans-border Co-operation**

17

**3.2.2.3.1 Strengthening co-operation at the international level**

Efforts to ensure the co-operation of the Government of India have been initiated, and the co-operation will be further strengthened in future. A MoU between His Majesty's Government of Nepal and the Government of India for landscape level conservation will be developed with the support of Ministry of Foreign Affairs. Efforts will be made to strengthen co-operation in areas such as information sharing and research, wildlife conservation, meta-population management, law enforcement, poaching and illegal trade control.

18

**3.2.2.3.2 Strengthening transborder co-operation for conservation management**

Trans-border co-ordination and co-operation for forest protection along the border will be strengthened. They include law enforcement, poaching and illegal trade control, customs, and border patrols. Regular trans-boundary meetings at field levels between forest and protected areas staff of the two countries will be organized to facilitate effective co-operation.

### 3.2.3 Sustainable Forest Management

Forest management in Nepal falls under the purview of two Departments within the MFSC: DoF and DNPWC. All forests outside of Protected Areas, the majority of which are national forests, are governed by the Forest Act 1993 and the Forest Regulation 1995. National forests are categorized into the following: Government-managed, Community, Leasehold, Religious and Protected forests. The DoF is responsible for the overall guidance and management of these national forests for multiple uses. This section deals with Sustainable Forest Management in lowland forests of TAL-Nepal outside the protected areas.

Major threats for forest degradation in TAL-Nepal are forest conversion to agriculture, uncontrolled grazing and unsustainable extraction of both timber and fuelwood. Common underlying issues include the fact that although government owns the forests, the government-managed forests often fall within *de facto* open access status. Moreover, threats to forests are sometimes caused by unintended consequences of development efforts, often when the importance of forests like biodiversity conservation, ecological services and revenue generation are not recognized. Management of and access to forests have emerged as an underlying root cause for poverty particularly when the poorest groups who are most dependent upon forests have inequitable and inadequate access to forest resources. National forests should be managed to meet local needs; else communities will be compelled just to exploit the government-managed forests for their fuel, fodder, and other resource needs.

Management Recommendations	
FOR LOWLAND FORESTS	FORESTS WITH HIGH CONSERVATION VALUE
<ul style="list-style-type: none"> <li>■ Community Forestry</li> <li>■ Leasehold Forestry</li> <li>■ Collaborative Forestry</li> </ul>	<ul style="list-style-type: none"> <li>■ Promote community and leasehold forestry with emphasis on biodiversity conservation and equity in fringe areas of large forest blocks</li> <li>■ Promote collaborative forestry maintaining biodiversity protocols in core areas of large forest blocks</li> </ul>

**Strategic Goal 3.2.3:** *To restore and conserve the lowland national forests, outside the protected areas, through participatory and sustainable forest management, as well as innovative plantation and restoration activities that will bring equitable returns and provide sustainable livelihoods to the local people.*

#### 3.2.3.1 Ensuring Effective Management of Forests

Strategies for Sustainable Forest Management (SFM) in the national forests include restoration, protection and management. Special forest restoration programs and activities will focus on core areas of large forest blocs as well as bottlenecks<sup>8</sup> and corridors. Innovative activities will be developed and implemented to increase forest cover. Systematic and regular monitoring of the forest state and quality as well as institutional arrangements and livelihood opportunities will be an integral component of forest management. DFCCs will be responsible for co-ordinating SFM at the district level.

##### 3.2.3.1.1 Protecting government managed forests

Priority will be given to strengthening capacity, resources and mechanisms for law enforcement by the DFO, particularly with regards to monitoring illegal timber extraction, free grazing of domestic cattle in national forests, deterring illegal settlers and encroachers. To solve encroachment problem, protective measures or participatory forest management will be strengthened so as to prevent vacated areas from re-encroachment following eviction. Other strengthening priorities include setting up community-based vigilance units to monitor and control trade in forest products through patrolling, enhancing coordination between police, local administration, CFUGs, civil society groups and customs that reduces illegal sale of timber and other forest products across the border.

##### 3.2.3.1.2 Restoring degraded forests

Forest restoration will be achieved through plantation and natural regeneration in degraded forestlands. Generally, natural regeneration will be preferred to plantations. Plantation of indigenous species will be encouraged. Incentive package will be developed for private forest owners. Propagation of fodder species will be done through promoting fodder tree plantation in private and public lands.

## 21 **3.2.3.1.3 Improving timber availability**

Timber availability will be increased through establishment and improvement of the legal distribution system at the local level. Reform of management practices such as liberalizing the timber market, revising export tax and developing incentives for legal export will be explored.

## 22 **3.2.3.1.4 Developing guidelines for production and sustainable harvesting**

In order to ensure production and sustainable harvesting in the Terai lowland forests, guidelines on various management plans will be developed, particularly for fuelwood and grazing management, biodiversity protocols, fire management, and NTFP harvesting. Scientific tree fodder management for national forests and government lands will be promoted.

## 23 **3.2.3.1.5 Supporting national forest certification process**

Forest certification is a tool that promote environmentally sound, socially beneficial and economically viable forest management practices. In order to promote these features, development of national forest certification system will be supported. In this context, national standards and criteria for sustainable forest management (SFM) would be developed.

## 24 **3.2.3.1.6 Developing mechanisms to reduce stray cattle in forests.**

Site-specific mechanisms will be developed to provide proper care and management of old and unclaimed cattle, e.g., *gaushalas* or traditional shelters for cattle. An incentive mechanism will be developed and implemented through respective VDCs for the reduction of stray cattle in TAL. Grazing permit mechanisms will be improved and strengthened through DFOs. The role of VDC will be strengthened through VDCs initiating cattle registration systems.

## 25 **3.2.3.1.7 Managing forest fires**

Participatory mechanisms will be developed to control and manage forest fires with increased capacity and resources. In support, priority will be accorded to a national contingency plan for forest fire control and management.

### **3.2.3.2. Managing Forests for Livelihood**

It is widely recognized that forests provide livelihood opportunities to local communities, in particular, the poor who have limited alternatives. Thus, forests should be managed to meet local needs through participatory mechanisms that build community ownership leading to sustainable management and protection of forests.

## 26 **3.2.3.2.1 Promoting local community ownership of forests**

Local communities should have access to forest products to meet their needs but it is critical that communities have management ownership of forest so that communities practice sustainable management and protection of forests. Local ownership of forests will thus be engendered through participatory management process such as collaborative forestry, community forestry and leasehold forestry, so that communities have access to forests for sustainable use of forest resources including grazing, fodder, fuelwood and NTFPs.

## 27 **3.2.3.2.2 Improving management plan to include community access**

Integrated District Forest Management Plans will be developed for all districts together with management guidelines, which include sustainable management of grazing, fodder, fuelwood and NTFPs safeguarding the rights and access of local people. These guidelines will be implemented by local users involved in forest management. Operational Plans will include components on effective grazing management, fodder production in leasehold forests, community forests and public lands. Furthermore, DFOs will be enabled to allow communities to issue permits for sustainable harvesting, producing and marketing of NTFPs. Mechanisms that provide the poorest groups access to timber and fuelwood will be integrated in all forest management modes.

## 28 **3.2.3.2.3 Increasing productivity**

Programs will be developed and implemented to increase the efficiency and sustainability of harvesting, processing and utilization of forest products such as timber and NTFPs. Environmental guidelines for sustainable harvesting will be followed during this process.

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**3.2.3.2.4 Promoting private forests**

Policy and guidelines for the promotion of private forests will be developed. Incentive packages and market intervention will be undertaken for the effective promotion of Agro-forestry activities.

**3.2.4 Sustainable Development**

This Strategic Plan for TAL-Nepal follows the recommendations of the Tenth Plan and emphasizes effective implementation of the Agriculture Perspective Plan (APP), strengthened co-ordination between different agencies and government departments as well as sustainable management and conservation of natural resources central to people's lives, especially the poor. The majority of the poor have barely entered the monetized economy and rely on their land for food and income and on forests for fuel, fodder, food, building materials and income generation. Strategies for livelihoods based on forest resources are included in Sustainable Forest Management section. The strategies included here are those, which are non-forest based and more broadly concerned with sustainable development.

***Strategic Goal 3.2.4:** To achieve sustainable development in the TAL, in a way that brings livelihoods benefits to local communities, particularly the poor and marginalized, and at the same time, reduces the pressure on forests and biodiversity.*

**3.2.4.1 Enhancing Agricultural Productivity**

In order to support the implementation of the APP in an environmentally and poverty-sensitive manner, the MFSC will work with the Ministry of Agriculture and Co-operatives and other implementing agencies. This collaboration will help to increase investment in and strengthening development of extension services and irrigation, improving the availability of credit and savings facilities for the poor and small farmers, and strengthening community capacity and provision of inputs for sustainable agriculture. Efforts will be made to protect agro-biodiversity of the area while use of organic fertilizers and composting will also be encouraged. Short rotation crops such as vegetables will be promoted in the potential market.

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**3.2.4.1.1 Emphasizing sustainable agriculture practices**

Emphasis will be given to sustainable agriculture practices that increase soil productivity, minimize erosion, and decrease need for land expansion. Practices include crop rotation, composting, use of nitrogen-fixing plants that improve soil quality and provide supplementary crop harvests such as livestock feed, all of which utilize farmers' traditional knowledge instead of simply relying on modern biotechnology. Farm management practices with greater diversity in cropping systems that minimize pesticide use and reduce agricultural runoff will also be promoted.

31

**3.2.4.1.2 Promoting improved livestock farming**

Free grazing will be addressed not only to reduce the impact of livestock upon the forests but also to increase returns from livestock to the farmers. This will involve a two-pronged approach: expanding the introduction of improved varieties of livestock, and expanding the availability of fodder outside the forests. Improved varieties of livestock will be made available through improving technical and market support; encouraging stall feeding and fodder growing in private land-holdings; mobilizing CFUGs to invest in improved breeds; expanding availability of savings and credit facilities for the poor and small farmers. Moreover, site-specific support for alternative draft power such as community-owned tractors will be encouraged so as to reduce the need for livestock for draft power. Communities will be simultaneously encouraged to produce fodder on private and community lands (Note that pasture management in forests is covered in the Sustainable Forest Management Program).

**3.2.4.2 Enhancing Off - Farm Income Generation**

Off-farm livelihood opportunities, e.g, cottage industries, forest based industries such as NTFP collection, processing and marketing will be supported. The potentials of tourism for revenue generation and employment in and around Protected Areas will be expanded. Potentials for Eco-tourism elsewhere in appropriate places will be strengthened for income and local employment generation. Local organizations such as CFUGs, women's groups and BZ groups will be supported not only for basic capacity strengthening through training and workshops but also for forging direct linkages to

Cottage and Small Industries offices and other NGOs engaged in promoting income generating activities. Market linkages will be fostered wherever feasible.

#### ***3.2.4.2.1 Marketing non-timber forest products (NTFP)***

The capacity of communities to cultivate, process and market NTFPs will be strengthened – particularly through support to CBOs such as CFUGs and women's groups in harvesting, cultivating, processing and marketing efforts. More efforts will be made to raise awareness and education on the distribution patterns and abundance of economically valuable as well as rare NTFPs. Guidelines will be implemented for sustainable harvesting as well as cultivation. Extraction methods need to be sustainable and replicable. Co-operation among small-scale producers will be encouraged to maximize marketing potential. Initial efforts will include a study that looks at diversity of products in the market in order to maximize comparative advantages and where value is best added in the NTFP production process. Support will be extended for development of the NTFP market in Nepal and export to India and other countries. A mechanism will be developed to make NTFP marketing information available to the communities.

#### ***3.2.4.2.2. Promoting eco-tourism***

Eco-tourism will be promoted to ensure that benefits reach nearby communities. The promise of eco-tourism is tremendous in the Terai, with Chitwan at the forefront of national parks that attract tourists. Eco-tourism not only increases the value of maintaining species in their natural habitat, thereby providing incentives for conservation, but also generates revenue for both government and communities. Tourism entrepreneurs and officials should ensure that benefits from eco-tourism, whether through salaried employment or actual sharing of revenue generated, reach local communities. Furthermore, environmental education for tourists and communities should be incorporated so as to minimize negative impacts on the environment and local culture.

### **3.2.4.3 Improving Community Access to Services**

#### ***3.2.4.3.1 Increasing credit access for the poor***

Credit schemes are critical for poverty reduction where the poor are able to have access to the banking systems. The ministry will work with concerned government institutions, implementing agencies and the private sectors to improve the availability of rural credit and banking schemes for the poor.

#### ***3.2.4.3.2 Expanding local people's access to health and sanitation***

Co-ordination with the Family Planning Association of Nepal and other relevant bodies will be prioritized to strengthen the provision of family planning services. Similar co-ordination with other government and non-government agencies will be established to ensure the availability of basic health and sanitation facilities to everyone.

#### ***3.2.4.3.3 Strengthening the availability of alternative energy for the poor***

Alternative energy will be made available and affordable to the poor through partnerships with the private sectors and NGOs. These include biogas, solar energy, briquettes, LPG (Liquidified Petroleum Gas) and Micro Hydro. Efficient use of energy will be promoted through technologies such as improved cooking stoves and energy efficient technologies will be introduced particularly for fuelwood using industries such as brick kilns.

### **3.2.4.4 Reducing the Need for Resettlement in Forests**

Local governments will be encouraged to turn over wasteland or public land for resettlement and meet the need of other government agencies. Non-agricultural livelihood options will be developed for people being resettled, eg., by providing livelihood opportunities together with collective housing (e.g. flats in semi-urban areas). The ministry will encourage increased investment in development, services and generating employment opportunities in the mid-hills.

### 3.2.5 Species and Ecosystem Conservation

Threats to biodiversity conservation include habitat degradation and loss owing to encroachment, conversion to agriculture and other uses, grazing of livestock, forest fires, floods and landslides together with over exploitation of natural resources, invasive alien species and natural succession in grasslands and wetlands. The decline in species population is attributed to poaching, retaliatory killing of wildlife and imbalance between prey and predator species. The underlying social causes identified are population growth, poverty, traditional uses and exploitation and the low level of awareness and participation. Institutional weaknesses were also identified such as inadequacies in capacity and resources. With policies such as the Tenth Plan and the APP that aim at increasing productivity through use of inputs and irrigation, biodiversity conservation can sometimes become a lesser national priority unless institutional coordination is undertaken. Other threats stem from the uncontrolled and increasing pollution, and the open and poorly monitored border with India, which allows increasing illegal extraction and trade of wildlife species. There also remain major gaps in research on the status and conservation of biodiversity.

**Strategic Goal 3.2.5:** *To conserve and manage species and sub-ecoregional habitats and ecosystems represented in the Terai Duar Savannas and Grasslands and Himalayan Subtropical Broad-leaf Forests ecoregions as intact, natural communities within the protected areas of the landscape, and to provide the necessary ecological conditions for dispersal and migration of wildlife species in corridors.*

#### 3.2.5.1 Managing Species Diversity

Strategies for species and ecosystem management in the TAL include identification of all focal species (threatened and endangered species, umbrella and keystone species, endemic species and habitat specialists). Management plans for the TAL protected areas will ensure that all representative species are conserved in intact ecological communities (rather than attempting to increase the population density of a single or few focal species), using the focal species to monitor the ecological status of natural communities and wildlife populations.

Forest corridors that connect the core-protected areas will be managed to allow species to migrate and disperse between core refuges. The corridors will be managed under community and collaborative forest management modes, while leasehold forestry will be encouraged in the outlying areas. By managing the corridors through forestry practices that simulate forest analogs,<sup>9</sup> the corridors will also allow some facets of biodiversity to survive and maintain viable populations within them. Systematic and regular ecological monitoring will be an integral component.

##### 3.2.5.1.1 Strengthening capacity for law enforcement

Protection of focal species and restoring habitats are critical for ensuring that current population sizes of the key wildlife species do not shrink. For this purpose, focus will be placed on strengthening capacity, funds, infrastructure and mechanisms for combating poaching within PAs. Outside PAs, community-based anti-poaching mechanisms and units will be strengthened and expanded. Capacity, resources and mechanisms for law enforcement by DNPWC and DoF, will be given high priority.

##### 3.2.5.1.2. Managing key species

Various species management practices such as translocation will be continued. Furthermore, veterinary services will be provided in the PAs, and programs will be developed for orphan and problem animals. Incentives will be developed to ensure that the harvesting of important tree species is done in a sustainable way. Guidelines for sustainable extraction of species should include zoning guidelines, eg., fish farming in the natural waters. To provide benefits from biodiversity to the country and people, biodiversity registration process will be supported.

#### 3.2.5.2. Managing Habitats of Key Species

Existing habitats of focal species will be maintained and secured while new habitats are extended. To do this, ecosystem conservation will be strengthened in PAs for grasslands, forests and wetlands (including eradication of invasive species in wetlands, conservation of river ecosystems and commu-

38

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40

nity management). Plantation of native species in both private and public lands will be encouraged. Wetlands conservation will also be prioritized in accordance with the Wetland policy. Sources of pollution will be identified, monitored and mitigated. Finally, communities will be supported to integrate conservation of priority ecosystems (forests, wetlands, and grasslands) within the Sustainable Forest Management system.

### 3.2.5.3 Enhancing Buffer Zone Management

The ecological and social values of protected areas are enhanced when surrounding communities receive benefits for local, social and economic development, through promotion of sustainable resource extraction and compensation. For long-term success of a protected area, it is necessary that the communities see it as an asset rather than a liability. Buffer zones if effectively and equitably managed can be the ideal vehicles for making this happen. The National Parks and Wildlife Conservation Act 1973 enables Buffer Zone Users Groups (BZUGs), formed in the Buffer Zones of National Parks, to receive 30-50% of the revenue generated by the Park. This revenue has been used for community development activities, and has significant value. The Royal Chitwan National Park (RCNP), for example, earned NRs. 39 million (approx US\$ 520,000) in the fiscal year 2001/02, 50% of which was ploughed back to Chitwan's BZMC (Buffer Zone Management Committee). While income from the other TAL-Nepal parks is significantly less, there remains considerable potential for increasing tourism revenue in future.

#### 3.2.5.3.1 Managing Buffer Zone for conservation and livelihoods

In the Buffer zones, sustainable and participatory forest management will allow access and use of timber, fuelwood, fodder and NTFPs, particularly to the poorest groups. In support, the Buffer Zone declaration in new areas will be expedited and BZ management will be strengthened in declared areas. Various management practices including grassland management, eradication of invasive species, sustainable livelihood program like organic farming and fire control management will be promoted in BZs.

#### 3.2.5.3.2 Mitigating human wildlife conflict

Human-wildlife conflict mitigation strategy will be developed and emphasized with measures such as fencing, trench construction, and cultivation of non palatable alternate crops. Other innovative and site-specific mechanisms for human-wildlife conflict mitigation will be developed. Effective measures will be applied for problem animals. Furthermore, existing indirect compensation and relief support for wildlife damage and injury will be strengthened.

### 3.2.6 Churia Watershed Conservation

The Churia forests play a crucial role in providing not only ecological services but also the biological connectivity between protected areas. However, the Churia Hills are experiencing serious environmental degradation, in particularly due to soil

#### Management Recommendations

Protected forestry with limited use (Provision for Leasehold Forestry, Community Forestry, government managed forest etc.) or without limited use (strict protection)

erosion and degradation of natural forests. Geologically, this is an unstable area, prone to natural disasters set off by heavy rain, drought, steep slopes and loose soil structures. In recent years, deforestation has accelerated the degradation of Churia. Downstream flashfloods are occurring

more frequently, depositing sands and gravel on fields, destroying standing crops and reducing the future productivity of the land. Moreover, deforestation is resulting in a reduced capacity of the land to hold and recharge water.

The Tenth Plan mentions that integrated watershed management and soil conservation programs will be focused in the Churia in order to conserve water sources, increase land productivity, minimize flood havocs in the Terai and maintain the hydrological linkages of the Churia to the Terai. It also emphasizes that taking into consideration the fragility of the Churia Hills, major focus will be accorded to increasing land productivity through soil conservation and integrated programs of watershed management. These programs will be implemented through people's participation and maintaining co-ordination with forest, livestock, soil conservation, agriculture sectors as well as

41

42

local NGOs and institutions. Forest Policy, 2000 states that the Churia Hills will be managed as protected forests as they are geologically fragile and recharge the Terai ground water.

The causes of degradation in the Churia Hills were categorized by the RCA into three. These are unsustainable use of natural resources, degradation owing to distant infrastructure demands, and natural disasters. Causes common to all of them are the lack of clear directives and programs to ensure Churia conservation, the fact that watershed management policies are not effectively implemented, and growing population pressures. The Churia forests are also heavily used for NTFP collection by local communities, distant users and for commercial purposes such as the paper industry. Moreover, the fragile soils and slopes of the Churia are degraded by inappropriate farming and livelihoods practices, including farming on marginal lands and overgrazing. Many causes for the degradation of Churia are same as for the rest of Terai, so the strategies mentioned under other program areas are also applicable to Churia. Moreover, this section contains the strategies specific to Churia.

***Strategic Goal 3.2.6:** To enhance land productivity, conserve soil and water resources, reduce poverty and minimize erosion and flood havoc in the Churia through integrated soil conservation and watershed management programs together with environmentally sensitive forest management.*

#### **3.2.6.1. Developing Integrated Watershed Management Plan**

Priority critical sub watersheds measuring 15-25 sq km will be identified so as to implement integrated watershed management programs effectively. An integrated watershed management plan will be developed at sub-watershed levels for the entire Churia Hills of TAL-Nepal. Catchment ponds will be developed and drainage maintained to catch run off water and to minimize soil erosion. An integrated watershed management plan requires co-ordination between the Department of Soil Conservation and Watershed Management and other concerned sectors for strengthening watershed management in the Churia Hills. The concerned VDC will be made responsible for the implementation of various interventions as per the sub-watershed management plan.

#### **3.2.6.2. Developing Integrated Landuse Planning**

A co-ordinated land use plan will be developed for the Churia conservation. Implementation will take place through the coordinating role of DDC program and support from District Soil Conservation Office (DSCO). The importance of geological fragility and natural disaster prevention in the Churia will be incorporated into district level planning processes for resource extraction and infrastructure development.

#### **3.2.6.3. Strengthening Participation and Institutional Co-ordination**

Soil conservation and watershed management programs will be developed in co-ordination with the agriculture, livestock, water resource, forestry and soil conservation sectors. Moreover, emphasis will be given to indigenous, low cost technologies and local resources combined with people's participation as well as participation of local CBOs, NGOs and INGOs to carry out the mentioned integrated activities.

#### **3.2.6.4. Practicing Sustainable Agriculture**

Livelihood strategies will be improved so as to have minimal negative impacts upon the already fragile geology. Sustainable hill farming techniques such as Sloping Agriculture Land Technology (SALT) will be promoted to stabilize soils. Perennial crops will be encouraged so as to minimize soil erosion and reduce riverbank cutting. Other strategies to lessen the environmental impacts include reducing uncontrolled grazing in the Churia forests, which will require coordination with livestock and agriculture sectors and disseminate hill-farming systems. Finally, community forest fire control mechanisms will be developed specifically for the Churia Hills.

#### **3.2.6.5. Developing Special Provision for Churia Forest**

As the forest of Churia provides ecological service, the forests need to be managed under special provision as 'Protected Forestry' with limited use. However, this change in status should not hamper the sustainable extraction of NTFPs by the local communities.

### 3.2.7 Awareness and Education

Landscape conservation is a visionary undertaking. Obviously, its success depends on the support and participation of the local people, the stakeholders, the decision makers, the policy makers and many agencies and departments involved. Among the threats and constraints, the analysis identified low awareness on the need of conservation of natural resources among the stakeholders. At the same time, there is a lack of awareness of the crucial services provided by the Churia Hills.

Forestry is not adequately recognized for all the services it provides to the nation. This deficiency of awareness is apparent among the public as well as government departments. Similarly, the concept of landscape level conservation and its benefits is a fairly new one that needs to be comprehended. For long-term conservation, it is important that children, who are the future generation in the landscape, should understand the need for its conservation. Awareness raising and education is key to changing people's attitudes and behaviour as well as influencing political decisions to attain sustainable livelihoods and the conservation of natural resources.

***Strategic Goal 3.2.7:** To raise awareness and education on the importance and need of landscape level conservation among the local people including children, other stakeholders, decision makers, policy makers and concerned departments and agencies.*

#### 3.2.7.1 Developing TAL- Wide Communication Strategy

A TAL-wide communication strategy will be developed and implemented to communicate the TAL vision to all stakeholders, both at local and central levels. This includes campaigns, and the development and use of promotional and educational materials for different media. It will also allow for the integration of the TAL vision in the communication materials of programs and projects operating in the landscape.

#### 3.2.7.2 Campaigning for the Churia

The Churia Hills are incredibly fragile and require protection. Campaigns will be launched to ensure the limited use status of the Churia Hills, targeting stakeholders and civil society.

#### 3.2.7.3 Expanding Awareness and Education Programs

Awareness and education programs on biodiversity conservation and sustainable forest management will be expanded to reach communities, school children, local decision-makers and the public. Eco Clubs, which have a very successful track record, will also be expanded in the schools of the landscape. To support awareness building, environmental education materials and methods will be developed for the children attending schools as well as through the non-formal education system. Programs will focus on:

- Sustainable livelihoods
- Grazing management
- Sustainable management of timber, fuelwood and NTFPs
- Ecological services
- Churia Hills watershed
- Species and ecosystems conservation
- Wildlife protection

#### 3.2.7.4 Raising Awareness on Threats, Methods and Strategies

In the process of developing this strategic plan, various research questions have already emerged and gaps are being filled. The resulting strategies and actions will be communicated to the stakeholders of the TAL at the local, regional and central levels. Examples include implementing awareness and education on strategies to combat forest fires through prevention and control and prevent and mitigate pollution. An adaptive strategy to diffuse such emerging issues that did not come during the planning phase in the beginning will be communicated to the stakeholders. Similarly, new methods and arrangement at domestic and international front will be communicated.

<sup>8</sup> Bottleneck areas are those located within a forest corridor that have been narrowed or constricted by external threats. In these areas, the continued provision of ecological conditions for potential wildlife movement is tenuous.

<sup>9</sup> Community forests made to mimic natural forests, which is essential to promote biodiversity instead of a few key species or a plantation.



IMPLEMENTATION, MONITORING  
AND RESEARCH

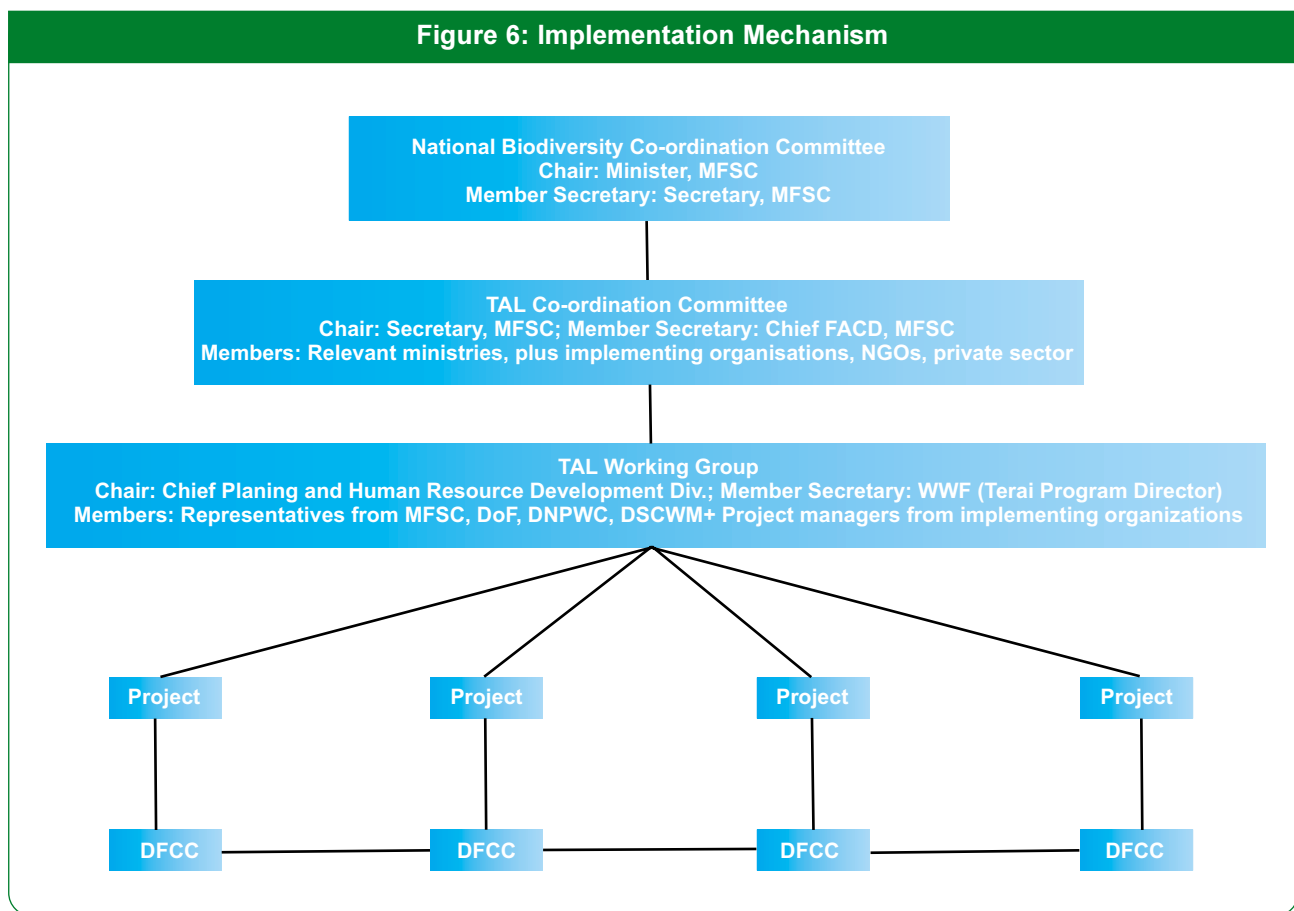
### 4.1 Implementation Mechanism

The TAL Strategic Plan proposes to follow existing national implementation mechanisms and structures rather than duplicating efforts. As such it will operate under the National Biodiversity Co-ordination Committee (NBCC) proposed by the Nepal Biodiversity Strategy (NBS) to facilitate its implementation.

The implementation mechanism will be multi-sectoral and will involve various partners at the central, regional and local levels in the landscape. The TAL Strategic Plan Core Team has reviewed various implementation structures of other strategies as well as programs including BISEP-ST, Western Terai Landscape Complex (GEF/UNDP/SNV/WWF/IPGRI/LI-BIRD/NARC), NBS modality and CARP. These modalities were discussed in the review and core team meeting to reach consensus on the best model for implementation of the TAL Strategic Plan. A detail implementation mechanism will be developed in the TAL Partnership Plan.

The broad implementation mechanism to implement TAL strategic Plan is presented in Figure 6:

**Figure 6: Implementation Mechanism**



A multi-sectoral high level TAL Coordination Committee under the NBCC needs to be formed whose function will be high level steering of the implementation of the Strategic Plan. The MFSC Secretary will chair this committee to make sure that its main role of co-ordination is achieved through mainstreaming it with government programs and priorities. The Chief Foreign Aid Co-ordination Division of MFSC will serve as committee's Member Secretary. Other members of this committee would comprise representatives from relevant ministries, donors, implementing organizations, NGOs and the private sector.

Under the TAL Coordination Committee, TAL working group will be formed under the chairmanship of Chief, Planning and Human Resource Development Division of MFSC. It would assist in implementation through co-ordination, sharing of lessons learnt and collaboration for policy and advocacy. As

main responsibility of this working group is supporting program implementation, the chairperson of this committee will be the Chief of the Planning and Human Resource Development Division, MFSC. Programs and projects being carried out in the TAL such as CARR, LFP, BISEP-ST, SAGUN would follow their own implementation modalities and communicate with the executing committee for the TAL-Nepal. This would require managers of these programs and projects to be represented there and allow knowledge sharing and collaboration.

A detail implementation mechanism will be prepared during the Second phase of TAL Strategic Plan development, after further consultations with partners.

## 4.2 Monitoring and Research

### Monitoring

Monitoring and evaluation (M&E) constitute a vital part of achieving the TAL-Nepal vision and will be a priority of the Strategic Plan. An effective M&E strategy will be developed early in the process of joint implementation of the TAL-Nepal Strategic Plan.

Under the proposed implementation structure, monitoring programs should be conducted at regional, landscape and transboundary levels. A detailed landscape-level monitoring framework encompassing both biological and livelihoods monitoring should be developed early in the implementation of the Strategic Plan. As a priority, efforts should be made to co-ordinate the monitoring of partner agencies working in TAL-Nepal to enable measurement of progress at the landscape level. The specific and site-level programs developed from the Strategic Plan should include more detailed monitoring mechanisms covering program and biological and livelihoods monitoring. The monitoring mechanism, outcomes and data will be linked with the existing management information system (MIS) of DoF, DNPWC and the MFSC.

### Research Areas

The RCA and livelihoods analysis have identified a number of knowledge and information gaps that need to be investigated and filled in during the early stages of implementation of the Strategic Plan. Some of the issues that were identified during the strategic planning process are:

#### 1. Sustainable forest management

- Forest encroachment: who, where, why. The extent, cause and impact of forest encroachment in TAL
- The impact of urban expansion and commercialization of agriculture on forest integrity in TAL.
- Economic valuation of forests (timber, biodiversity, ecological services, tourism etc)
- Sustainable, multi purpose forest management regimes
- Forest Cover change dynamics in TAL
- Different model of Collaborative forest management depending upon people forest interactions
- Overgrazing: the impact on forests
- Programs to introduce improved breeds, and research on ways in which this can be done sustainably while ensuring accessibility to the poor
- Cross-border issues in biodiversity conservation
- Illegal transport of livestock between India and Nepal
- Timber and fuelwood trade: legal and illegal, cross-border issues, market dynamics
- The impact of forest fires on the TAL forests and its linkage with livelihood issues of people
- The extent and impact of slash and burn agriculture/ cultivation in the Churia hills and in TAL

#### 2. Species and ecosystems

- The extent and quality of grasslands outside Protected Areas, and the impact on existing grasslands by encroachment of unwanted/ invasive and alien species
- The extent and impact of weeds like *Mikania micrantha*, *Lantana camara* etc on the forest ecosystem of TAL

### Principles of the TAL M&E System

- **Adaptive:** Adapting lessons learned from programs in TAL and feeding the results back into the program planning and implementation process;
- **Learning and Sharing:** Documenting lessons learned and sharing information between communities, partners, organisations and other stakeholders within TAL;
- **Reporting and Communication:** Reporting and communicating to relevant organisations, donors, communities and the general public the objectives, targets, achievements, failures, impacts and indicators of programs implemented in TAL;
- **Participatory:** Being participatory in the process of monitoring, involving communities, relevant government bodies and other organizations; and
- **Transparency and Accountability:** Ensuring that programs are transparent, and to local communities, local government, donors and the general public.

- The extent and impact of disease on tree species, especially on the economically important Sisoo (*Dalbergia sissoo*)
- The impact of grazing of livestock in forests regarding purity of wildlife breeds
- The extent and impact of human - wildlife conflict, and the effectiveness of mitigation measures currently practiced in TAL
- Conservation and management related problems of the wetlands inside and outside of the Protected Areas

### 3. Sustainable development

- Peace and Conflict Analysis: The root causes of the insurgency in TAL districts and its effects at the local level, to inform strategy development and implementation
- Migration: The extent, causes (enabling environment) and impacts of migration in TAL: the extent of rural-urban migration (both within the TAL and from outside); and the seasonality of migration for work (within Nepal and into India)
- Rural-urban linkages: Identification and impact of urban demands for products of rural cottage industries; the extent to which these demands are being met; whether there are new markets which could be exploited and market dynamics
- Industry: Future trends in industrial development in the TAL; the use of forest resources by industries; the relationship between industrial employment opportunities and livelihoods
- Energy: on ways to reduce dependence on fuelwood and dung for domestic energy; the extent and impact of fuelwood alternatives for domestic energy on forests of TAL and identification of mechanisms to minimize dependence upon fuelwood
- Dispersion of tourists in protected areas other than highly crowded and regulation of tourism in protected areas.
- Impacts of Nepal's accession to WTO on its biodiversity

## 4.3 Risks and Assumptions

Several risk factors have been identified and assumptions are made while developing the strategies and it is important to consider them as they may affect the successful achievement of the conservation and strategic goals. The Strategic Plan therefore stresses consultation, flexibility and the partnership approach to ensure that the implementation mechanisms and management are adequately able to address and mitigate any major obstacles.

1. **Insurgency:** The continued insurgency will slow field operations, incur higher costs and apply more stress upon local communities and staff whose security will come under threat. Eventually, increased violence and the continued lack of political stability can debar the achievement of the landscape vision.
2. **Failure to Build Successful Partnerships:** The success of this visionary and ambitious approach depends on the co-operation of different stakeholders and partners. Lack of collaboration and successful partnership can offset the overall success of the TAL. Furthermore, transboundary coordination between Nepal and India should be prioritized as an important governmental partnership that is necessary to achieve the entire landscape vision.
3. **Unco-ordinated Large Infrastructure Development:** The construction of large infrastructure such as a mega hydro electric project, urban development, roads, without landscape considerations can adversely affect the success of the vision in a major way.
4. **Lack of Financial Sustainability:** TAL is a long-term vision, which requires continued financial commitments. The lack of sufficient funds will be one of the major risks to implement this strategic plan.

#### 4.4 Next Steps

The final TAL-Nepal Strategic Plan will have three main components namely:

1. Broad Strategy Document
2. Partnership Plan
3. Business Plan

The Broad Strategy document, which is this document, has been completed in the first phase. The Partnership Plan and the Business Plan will be completed in the second phase. This, in effect, will be the action plan for the strategies.

The Strategic Plan development process in the second phase will be taken forward under the leadership of Chief Planning and Human Resource Development Division of the MFSC. The TAL Strategic Plan Core Team will support the development process as before.

The TAL Strategic Plan Core Team will prepare a work plan for the second phase. Then, the following steps will be carried out leading to the completion of the Strategic Plan.

- Finalize and set up the Implementation Mechanism.
- Develop a communication strategy with partners.
- Develop the partnership plan. This will comprise of short term and long-term targets and partners identification through a consultation process.
- Develop and complete the Business Plan. This will consist of targets and costing and a sustainable funding plan.
- Complete the final write up of the whole Strategic Plan.

In conclusion, a 'good strategic planning process gets everyone involved, is perpetually fresh, forcing the asking of new questions and requires vigorous debate'. The TAL Strategic Plan is a living document and will adapt to changing circumstances to ensure maximum participation and partnerships for achieving the vision.

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