STRATEGY AND ACTION PLAN 2015-2025
Terai Arc Landscape, Nepal

Government of Nepal
Ministry of Forests and Soil Conservation

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Foreword

Nepal is one of the pioneering countries in the world to initiate and implement landscape level conservation practice on the ground. In the beginning of the new millennium, when Nepal started considering landscape scale conservation, we strongly believed that this would be the future strategy to manage the complex landscapes in the country. Now, conservation results have proved us right. Nepal's conservation success story has been covered in the international media as a model to the global conservation community. Populations of wild animals have been increasing through consecutive years of zero poaching and reduced illegal trade. We are heading towards meeting the target of doubling the number of wild tigers by 2022, a target set by the head of states of the Tiger Range Countries at St. Petersburg in 2010.

Nepal's commitment to the conservation of biodiversity and improvement of people's livelihoods is exhibited through its National Biodiversity Strategy and Action Plan 2014. At the landscape level, the government is implementing these commitments through landscape level strategies. Terai Arc Landscape (TAL) is one such area where we have implemented the landscape approach for more than a decade. Based on field learning and new science, particularly climate science, a revised conservation strategy for TAL has been prepared. Hopefully this strategy will be implemented successfully in the coming decade in the rapidly changing socio-economic and political context of the TAL.

The effective implementation of the strategy and its action plan depends on functional partnerships and coordination among key stakeholders across the landscape. Government line agencies, local government bodies and civil society organizations are keys to the success of landscape approach. The Ministry of Forests and Soil Conservation is committed in taking the lead for the successful implementation of the TAL strategy. I am confident that complementary financial resources will be generated by the development partners supporting Government in this work.

I would like to thank all the people involved in the formulation of this ten year Strategy and Action Plan for TAL (2015-2025). I hope their successful implementation will conserve and enhance the ecological integrity of the landscape and improve the lives of the millions of people who live in it.

Mahesh Acharya

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Acknowledgements

The Terai Arc Landscape in Nepal (TAL-Nepal) stretches between the Bagmati River in the east and the Mahakali in the west. The TAL-Nepal is globally renowned for its rich biodiversity, especially the charismatic mega-vertebrates such as the tiger and greater one-horned rhinoceros, and as the first landscape-level initiative to conserve these species. The TAL conservation initiative is a high priority program for the Government of Nepal because it extends conservation strategies beyond the protected areas, moving towards managing large landscapes through participatory land use planning based on ecological, social and economic needs.

Historically, Nepal has taken notable steps in conservation of its rich biological resources by enacting legislation and committing to international conventions. With the endorsement of the National Biodiversity Strategy and Action Plan there has been significant progress in the recent years. The TAL-Nepal Strategy and Action Plan is a major step forward to achieving the government's commitment to conservation at the landscape level. But for such ambitious conservation to be effective, actions need to be coordinated at all levels, and partnerships among all stakeholders, institutions and individuals are vital. This 'Broad Strategy Document' is the first revision of the TAL- Nepal Strategy and Action Plan.

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 preparation team formed under the leadership of Krishna P. Acharya, representing different governmental and non-governmental organizations- Department of Forests, Department of National Parks and Wildlife Conservation, National Trust for Nature Conservation, World Wildlife Fund, Nepal, United Nations Development Program , United States Agency for International Development, International Centre for Integrated Mountain Development and the International Union for Conservation of Nature. The team of experts that supported to develop this strategic document included Dr. Khadga Basnet, Mr. Bijendra Basnyat, Dr. Gobinda Basnet, Dr. Bhagwat Rimal, Mr. Ram Prasad Acharya, Mr. Suman Dhakal, Ms. Gita Khadka and Dr. Mohan Wagley. I would like to thank WWF Nepal and USAID funded Hariyo Ban Program for providing financial support to produce this document.

I would like to express special thanks to Mr. Gauri Shankar Timala, Mr. Fanindra Kharel, Ms. Madhuri Karki (Thapa), Dr. Maheshwar Dhakal, Mr. Santosh Mani Nepal, Dr. Ghana Shyam Gurung, Dr. Shant Raj Jnawali, Mr. Shiv Raj Bhatta, Dr. Naresh Subedi, Mr. Gokarna Jung Thapa, Mr. Soraj Koirala, Dr. Eric Wikramanayake and Ms. Judy Oglethorpe who worked tirelessly to bring the document to this level.

I believe this strategy and implementation plan (2015-25) will provide clear guidance to maintain the social and ecological integrity of TAL and continue to develop it as a successful model of landscape level conservation, tackling emerging conservation challenges including climate change and natural disasters.

Madhu Prasad Regmi
Secretary

ABBREVIATIONS AND ACRONYMS

ACOFUN	Association of Collaborative Forests Users of Nepal
BZ	Buffer Zone
BZCFUG	Buffer Zone Community Forest User Group
BZMC	Buffer Zone Management Committee
CAPA	Community Adaptation Plans for Action
CARE	Cooperative for Assistance and Relief Everywhere
CBAPU	Community Based Anti-poaching Unit
CBO	Community Based Organization
CBS	Central Bureau of Statistics
CDM	Clean Development Mechanism
CFCC	Community Forest Coordination Committee
CFUG	Community Forest User Group
CITES	Convention on International Trade in Endangered Species
CPAD-Nepal	Centre for Policy Analysis and Development Nepal
DADO	District Agriculture Development Office
DDC	District Development Committee
DFID	Department for International Development
DFO	District Forest Office
DFRS	Department of Forest Research and Survey
DFSCC	District Forest Sector Coordination Committee
DHM	Department of Hydrology and Meteorology
DIO	District Irrigation Office
DLSO	District Livestock Services Office
DNPWC	Department of National Parks and Wildlife Conservation
DoA	Department of Agriculture
DoF	Department of Forests
DSCO	District Soil Conservation Office
DSCWM	Department of Soil Conservation and Watershed Management
E-Flow	Environmental Flow
EIA	Environment Impact Assessment
ER-PD	Emission Reductions Program Document
ER-PIN	Emission Reduction Project Idea Note
FECOFUN	Federation of Community Forestry Users, Nepal
FNCCI	Federation of Nepalese Chambers of Commerce and Industry
GESI	Gender Equality and Social Inclusion
GIS	Geographic Information System
GLA	Government Line Agency
GoN	Government of Nepal
Ha	Hectare
HDI	Human Development Index
HMG	His Majesty's Government
HWC	Human-Wildlife Conflict
ICIMOD	International Centre for Integrated Mountain Development
IEE	Initial Environmental Examination
IGA	Income Generating Activity
ISWMP	Integrated Sub-Watershed Management Plan
IUCN	International Union for Conservation of Nature
LAPA	Local Adaptation Plans for Action
LFP	Livelihoods and Forestry Programme
LSU	Landscape Support Unit
LULC	Land Use and Land Cover
M&E	Monitoring and Evaluation
MAP	Medicinal and Aromatic Plant
MIS	Management Information System
MoAD	Ministry of Agriculture Development
MoFALD	Ministry of Federal Affairs and Local Development
MoFSC	Ministry of Forests and Soil Conservation
NBCC	National Biodiversity Coordination Committee
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-Government Organization
No	Number
NP	National Park
NPR	Nepalese Rupee
NRM	Natural Resource Management
NTB	National Tourism Board
NTFP	Non-Timber Forest Product
NTNC	National Trust for Nature Conservation
PA	Protected Area
PES	Payment for Ecosystem Services
RD	Regional Directorate
RDO	Regional Directorate Office
REDD+	Reducing Emissions from Deforestation and Forest Degradation
REET	Rare Endangered Endemic Threatened
SAGUN	Strengthening Actions for Good Governance in Nature Resource Management
SE	Socio-economic
SEA	Strategic Environmental Assessment
SMART	Spatial Monitoring and Reporting Tool
SMF	Sustainable Management of Forests
SNV	Netherlands Development Organization
TAL	Terai Arc Landscape
TALWG	Terai Arc Landscape Working Group
TCC	TAL Coordination Committee
VDC	Village Development Committee
UNDP	United Nations Development Program
USAID	United States Agency for International Development
USD	US dollar
WCCB	Wildlife Crime Control Bureau
WR	Wildlife Reserve
WS	Wildlife Sanctuary
WTLCP	Western Terai Landscape Complex Project
WWF	World Wildlife Fund

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Executive Summary

The Terai Arc Landscape (TAL) program was initiated in 2004. The first 10-year TAL Strategy and Implementation Plan (2004-2014) provided a touchstone to guide and address urgent conservation management issues and to tackle priority threats to make the TAL an ecologically functional landscape. This second strategy and action plan prepared by the Ministry of Forests and Soil Conservation will continue to guide conservation in the TAL from 2015 to 2025 by addressing persisting and emerging threats to ensure socio-ecological integrity of the TAL over the next 10 years and beyond. Their preparation followed a participatory and consultative process, and included review of past experiences and achievements. They will build on past successes and take advantage of current opportunities.

TAL vision: The TAL supports some of Nepal's most charismatic and endangered wildlife, highest human population densities, and is the most productive region. All these attributes are co-dependent, but require strategic conservation and management for harmonious co-existence. Hence the TAL vision is for a *globally unique landscape where biodiversity is conserved, ecological integrity is safeguarded, and the socio-economic well-being of the people is secured in a dynamic environment of land, water, and resource use.*

TAL goal: The overall goal of the TAL is to conserve the ecosystems of the Terai and Churia hills in order to ensure integrity of ecological, economic, and socio-cultural systems and communities.

Principles: The TAL Strategy and Action Plan 2015-2025 is based on the principles of: *sustainability* of natural resource use and management to prevent degradation of valuable biodiversity, ecosystems, and ecosystem services; a *holistic approach* based on ecosystem conservation to capture and include relevant economic and socio-cultural processes and links, and to include both ecological and human communities; *coordination*, with horizontal and vertical inter-sectoral links and cooperation for efficient, conflict-free, and synergistic program implementation; *inclusiveness* to involve all relevant stakeholders and partners in conservation at all levels and to ensure a transparent process; an *adaptive process* that combines on-the-ground action and learning with flexibility to enable effective management responses to changing conditions; building *partnerships*; *respecting traditional knowledge and local decision making*; and *equitability* with proactive empowerment of women, poor and disadvantaged in governance, implementation, and access to resources.

Outcomes: Seven outcomes are expected from implementation of this plan:

1. The biodiversity and ecosystems of the TAL are conserved, with viable populations of key flagship species such as tiger, rhinoceros, dolphin, gharial, and vultures and supporting ecosystems and ecosystem processes maintained.
2. Strategic forests, grasslands, and wetlands that contribute to the TAL goal are conserved in the protected areas and sustainably managed in corridors and buffer zones (BZs), without conflicting land use and people's livelihood.
3. Socio-economic well-being of local people is assured.
4. Better, transparent and equitable governance practices are in place.
5. Risks and vulnerabilities to ecosystems, people, and infrastructure from natural disasters and environmental changes, including those due to climate change, are reduced.
6. Infrastructure in the TAL and upstream from it is made climate smart and 'greened' to minimize environmental and ecological impacts.
7. Sustainable financing is in place for TAL conservation.

Strategies: Sixteen strategies—each with specific strategic actions—have been identified to achieve the TAL goal and its outcomes. These strategies fall under three thematic areas based on species and ecosystem conservation, forests and land management; and the socio-economic well-being of the TAL communities. The strategies are:

Species and ecosystem

Strategy 1. *Strengthen protected areas, buffer zones and corridors*

Strategy 2. *Manage the rare and endangered mammals as meta-populations in two major complexes: Shukla-Bardia-Banke in the west and Chitwan-Parsa complex in the eastern TAL*

Strategy 3. *Protect, restore and manage critical habitats*

Strategy 4. *Manage grasslands and wetlands/rivers in protected areas*

Strategy 5. *Create and revise policies, regulations and action plans*

Strategy 6. *Strengthen coordination among law enforcement agencies*

Strategy 7. *Mitigate human-wildlife conflicts*
Strategy 8. *Ensure adequate environmental flows in the Narayani/East Rapti, Babai, West Rapti, and Karnali Rivers for dependent species, habitats, and ecosystems*
Strategy 9. *Conserve agro-biodiversity*

Forest and other land use

Strategy 10. *Strengthen and promote sustainable forest management*
Strategy 11. *Manage grassland and wetlands/rivers outside core areas*
Strategy 12 *Manage critical sub-watersheds*
Strategy 13. *Reduce loss and degradation of forests*
Strategy 14. *Promote private and public forestry*
Strategy 15. *Promote forest-based green enterprises*

Socio-ecnomic well-being

Strategy 16. *Provide local communities with innovative, sustainable economic incentives linked to forest and river conservation*

Cross-cutting themes: Nine cross-cutting themes have also been identified, each with specific strategic actions. They are: institutional coordination and strengthening; policy and governance; local capacity building; gender equality and social inclusion; infrastructure development; climate change; research, documentation and dissemination; awareness and education; and sustainable financing.

TAL ten-year targets:

Species and ecosystem targets for 2025 are:

1. management and conservation of at least two meta-populations of each focal species (tiger, rhinoceros, swamp deer, wild water buffalo, gharial) and restoration of the historical large mammal assemblage in Chitwan National Park (NP)
2. conservation of ecologically and demographically viable populations of the focal bird species (vultures, hornbills, floricans, cranes, and lesser adjutant stork)
3. promotion and establishment of community based species conservation areas
4. conservation of viable populations of gharial, mugger, and Gangetic river dolphins
5. conservation of rare plant and tree species, especially *bijaysal* and *satisal* in their original ranges
6. conservation of: critical ecosystems including: grasslands and wetlands in and around core areas; climate refugia; and critical corridors.

Forest and other land use management targets for 2025 are:

1. conservation of representative forests of the Terai Duar Savanna and Grasslands in critical corridors and buffer zones
2. reduction in forest loss and enhancement of forest productivity
3. restoration and conservation of forests, including climate refugia in Churia watersheds
4. institutionalization of forest based entrepreneurship
5. sustainable management of agricultural lands.

Socio economic targets for 2025 are:

1. functioning mechanism to benefit buffer zone and corridor communities through access to essential forest and river resources
2. benefits to communities from sustained water availability for their socio-economic well-being, within the constraints of climate change
3. sustainable and climate-smart economic development.

Implementation: The strategies will be implemented directly by the relevant institutions under the Ministry of Forests and Soil Conservation or by partner organizations. A multi-sectoral TAL Coordination Committee will function as the convergence point to coordinate activities undertaken, proposed, or funded by the multiple actors for strategic implementation. The TAL Coordination Committee will also be responsible for coordinating with the district forest sector coordination committees (DFSCCs) for planning, implementation, and monitoring.

Monitoring and evaluation: Progress on the strategy implementation will be reviewed after five years and a final review will be done at the end of the strategy period. The mid-term review will propose adaptive actions, depending on progress and extenuating circumstances that warrant changes.

Budget: A total of NPR 28,111.4 million has been estimated to implement the activities under different themes and crosscutting themes over a period of ten years.

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1. TERAI ARC LANDSCAPE

1.1. General Overview

Nepal has been formally protecting its rich biodiversity for more than five decades. While the early efforts focused on species and protected areas, there was a growing recognition that certain wide-ranging species such as tiger could not be conserved through protected areas alone. This resulted in a paradigm shift to a landscape-scale approach with creation of the transboundary Terai Arc Landscape (TAL), and the portion in Nepal was declared a priority conservation landscape by the Government of Nepal (GoN) in 2001.

The entire TAL extends for over 900 km from the Bagmati River, Nepal in the east to the Yamuna River in Uttaranchal India in the west, with an area of 51,002 km^2 (Figure 1).

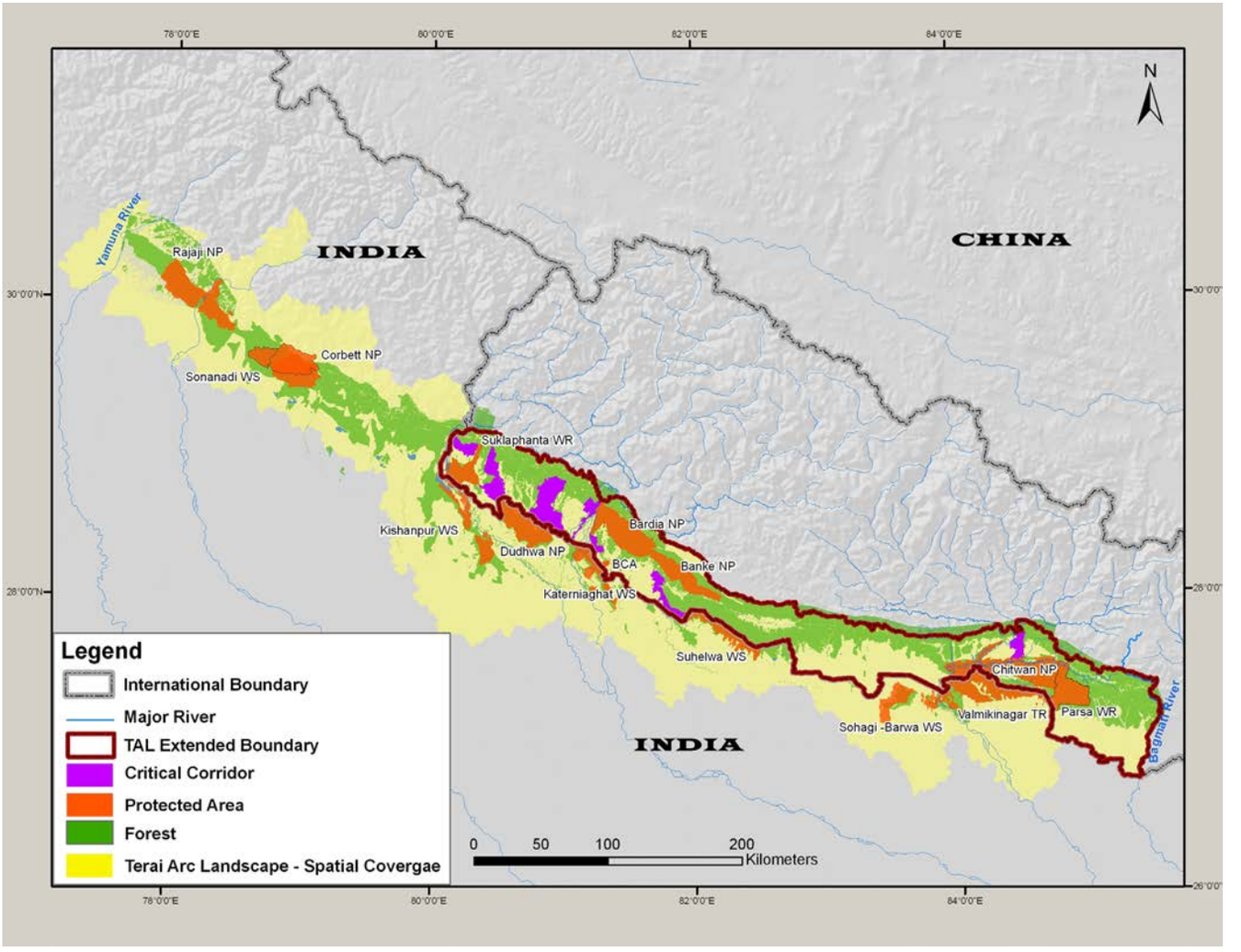

Figure 1. Map showing TAL in Nepal and India

In Nepal, the northern boundary has been revised to include the north-facing slopes of the Churia for climate adaptation and connectivity. TAL-Nepal now covers 24,710.13 km^2 spread across 18 districts: Dadheldhura, Kanchanpur, Kailali, Bardia, Salyan, Surkhet, Banke, Dang, Arghakhachi, Kapilbastu, Rupendehi, Palpa, Nawalparasi, Chitwan, Makwanpur, Bara, Parsa and Rautahat (Figure 2). Among these districts, Arghakhachi, Palpa, Nawalparasi, Chitwan and Makwanpur overlap with Chitwan Annapurna Landscape (CHAL). The area of TAL-Nepal in each district is given in Annex I.

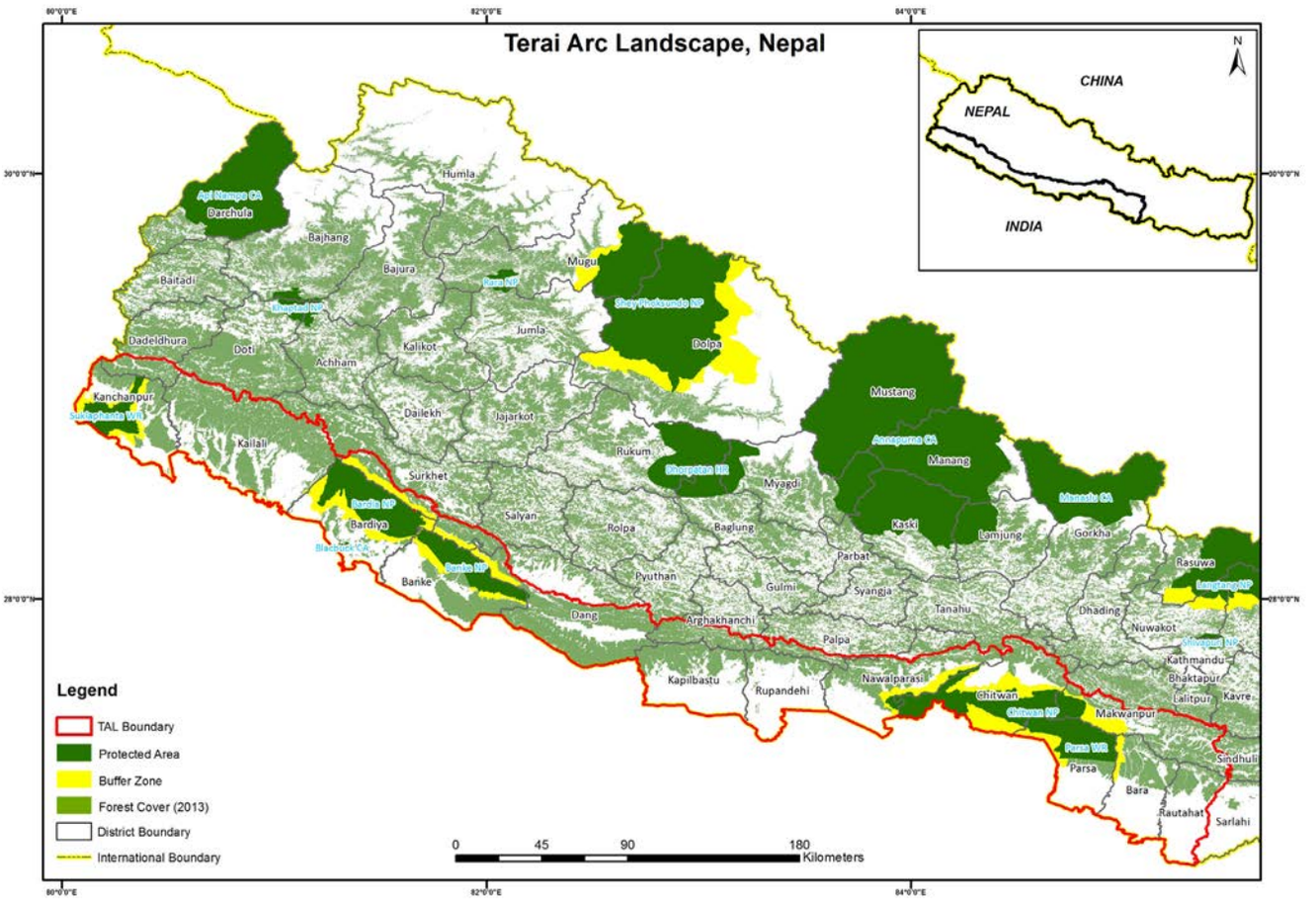

Figure 2. TAL with district boundaries

The TAL harbours globally important biodiversity of the Terai Duar Savanna and Grasslands ecoregion (Olson et. al., 2000). It adopts a landscape-level approach to: conserve several of Asia's large mammals, birds, reptiles, and freshwater fishes; sustain environmental flows that maintain important ecosystems; and provides ecosystem services that support the socio-economic well-being of people and development in the Terai and Churia region of Nepal. The scale of the landscape also allows for ecosystem based climate change adaptation strategies. The main features of the Nepal portion of TAL are listed in Box 1.

Box 1: Main features of the TAL-Nepal

1. The TAL-Nepal stretches from the Bagmati River in the east to the Mahakali River in the west. In the south it extends from the Indian border north to include the central and western parts of the Churia range.
2. With the extension of the northern border of TAL-Nepal to include an additional 1,511.13 km^2 of important climate refugia along the northern flanks of the Churia and inner Dun valleys between the Churia and Mahabharat ranges, the landscape covers 24,710.13 km^2 in 18 districts.
3. The TAL supports meta-populations of important mega-fauna (e.g., tiger, elephant and rhinoceros) by providing ecological connectivity through habitat corridors that link protected areas. Several corridors are transboundary, connecting with protected areas in India.
4. Large river systems (Narayani, Karnali, Mahakali and their tributaries) create critical habitats and connectivity between the Churia hills and the lowland Terai; parts of these large river basins lie upstream from TAL-Nepal.
5. The river systems also provide environmental flows that are critical for maintaining ecological communities and sustained ecosystem services for people.
6. The TAL protected areas and cultural sites are major tourist destinations in Nepal. These include two World Heritage sites (Chitwan National Park and Lumbini) and three Ramsar wetlands of international importance (Bishazari Lake, Ghodaghodi Lake, and Jagadishpur Reservoir).
7. The TAL is Nepal's food basket and an economic hub with rapid infrastructure development prospects.
8. The TAL has a high human population growth rate (more than 2.1% per annum); its population of more than 7.5 million is rich in culture (45 different ethnic groups and indigenous communities such as Tharu, Chepang, Bankariya, Bote, Majhi, Danuwar, Sonaha etc.).
9. More than 75% of the forests of the lowland Terai and Churia falls within the TAL boundary, and these forests will play a significant role in Nepal's greenhouse gas emission reduction program, contributing to implementation of REDD+ in the country.

The TAL has six protected areas—three national parks, two wildlife reserves (WRs) and one conservation area—and their buffer zones, which cover 5,538 km^2 (Table 1); blocks of protected areas are ecologically connected by forest strips along the Churia foothills and Terai.

Table 1. Protected areas in TAL-Nepal

Protected area	Declared year (AD)	Core area (km^2)	Buffer zone (km^2)	Total area (km^2)
Chitwan National Park	1973	932.00	750.00	1682.00
Bardia National Park	1976	968.00	507.00	1475.00
Shuklaphanta Wildlife Reserve	1976	305.00	243.50	548.50
Parsa Wildlife Reserve	1984	637.37	285.30	922.67
Banke National Park	2010	550.00	343.00	893.00
Krishnasar Conservation Area	2009	16.95	-	16.95
Total area		**3409.32**	**2,128.80**	**5,538.12**

Source: DNPWC, 2015

The habitat corridors facilitate movement and dispersal of wildlife, especially tiger and rhinoceros. Seven such corridors have been identified and managed through a participatory conservation approach, and four transboundary corridors have been declared as protection forests (Table 2).

Table 2. Protection forests and corridors in TAL-Nepal

Corridors		Forest Corridor (km^2)	Impact Zone (km^2)	Total Area (km^2)
Barandabhar	Corridor and protection forest	148	113	261
Basanta	Corridor and protection forest	181	471	652
Brahmadev	Corridor	138	10	148
Kamdi	Corridor	291	159	450
Karnali	Corridor	149	78	227
Khata	Corridor and protection forest	74	128	202
Laljhadi-Mohana	Corridor and protection forest	202	153	355

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1.2. Species and Ecosystems

The highly productive alluvial grasslands and riverine forests of the TAL support Asia's largest herbivores and carnivores. The fauna include 85 species of mammals, 565 species of birds, 47 species of herpetofauna, and more than 125 species of fish. Key species for conservation in the TAL are tiger *(Panthera tigris tigris)*, greater one-horned Rhinoceros *(Rhinoceros unicornis)*, swamp deer *(Cervus duvaucelii duvaucelii)*, Asian elephant *(Elephas maximus)*, blackbuck *(Antilope cervicapra)*, Gangetic dolphin *(Platanista gangetica)*, gharial *(Gavialis gangeticus)*, great hornbill *(Buceros bicornis)*, sarus crane *(Grus antigone)*, Bengal florican *(Houbaropsis bengalensis)*, lesser adjutant stork *(Leptoptilos javanicus)* and several species of vultures. These species are protected by the National Parks and Wildlife Conservation Act 1973. They need special attention and have to be conserved through active habitat management.

The ecosystems in TAL range from early successional tall grasslands established in the alluvial floodplain to climax stage sal forest at lower elevations, and broad leaved forest in the Churia range. Major forest ecosystems include sal forest, riverine forest, mixed forest and grasslands. Sal forest is dominated by *Shorea robusta* associated with *Terminalia* spp., *Dillenia pentagyna, Careya arborea, Lagerstroemia parviflora* and *Buchanania latifolia.* The riverine forest grows along water bodies and is dominated by *Mallotus phillipinensis, Trewia nudiflora and Bombax ceiba.* Wooded grasslands have sparsely dispersed trees, including *Mallotus phillipinensis, Bauhinia spp., Lagerstromia parviflora* and *Adina cordifolia.* Newly created riverbeds and floodplains are colonized by pioneer species such as *Acacia catechu* and *Dalbergia sissoo*. Rare tree species like satisal *(Dalbergia latifolia)* and bijaysal *(Pterocarpus marsupium)* thrive in the TAL. Tall grassland is dominated by *Saccharum* spp., *Themeda* spp., *Arundo donax, Phragmites karka* and *Narenga porphyrocoma*. Major aquatic ecosystems include wetlands, rivers and flood plains. Bishazari Lake, Jagadishpur Reservoir and Ghodaghodi Lake are wetlands of international importance. Mahakali, Karnali, Babai, Rapti, Tinau, Narayani and Bagmati are important river systems that drain TAL (all originate outside the landscape).

The TAL also harbours dozens of trees and other plant species that yield non-timber forest products (NTFPs), as well as medicinal and aromatic plants (MAPs). These include *Terminalia chebula*, *Terminalia belarica, Emblica officinalis, Asparagus racemosus, Acacia concinna, Rauvolfia serpentina, Piper longum, Tinospora cordifolia, Aegle marmelos, Cassia fistula, Centella asiatica, Solanum nigrum, Solanum khasianum, Azadirachta indica* and *Alstonia scholaris.*

1.3. Forest and other Land Uses

Forests are the dominant land cover form in TAL-Nepal, followed by agricultural land and areas built up for settlements and infrastructure (Table 3). Of the total land area, 53.95% is occupied by forest; 5.06% by shrub and grassland; 35.29% by agriculture; and 1.27% by water bodies. Average timber growing stock across Terai and Churia is estimated at 135 m^3/ha and 115 m^3/ha, respectively (FRA/DFRS 2014). Most of the natural grasslands in Terai have now been converted for settlement and agriculture expansion. Many grassland patches in protected areas (PAs) are being encroached by woody perennials in the absence of the annual monsoon floods that set back natural succession and maintain grasslands.

Table 3. Land use type and areas under different land uses in TAL-Nepal

Land use/ land cover type	Area under Terai (km^2)		Area under Churia (km^2)		Total TAL-Nepal area (km^2)	
	Area	%	Area	%	Area	%
Forests	3,500.56	30.77	9,831.54	73.74	13,332.10	53.95
Agriculture land	6,737.88	59.23	1,983.04	14.87	8,721.92	35.29
Shrub/grassland	436.48	3.84	813.17	6.10	1,249.65	5.06
Water bodies	192.47	1.69	122.03	0.92	314.50	1.27
Other land uses	509.23	4.48	583.73	4.38	1,092.96	4.42
Total	**11,376.62**	**100.00**	**13,333.51**	**100.00**	**24,710.13**	**100**

Source: 2013 Rapid Eye Satellite Image Classification (not validated)

Forests in the TAL are managed under different management regimes: government managed forest, protection forest, protected areas and buffer zones, collaborative forest, community managed forest, and religious and private forest.

Over the past 13 years changes in land use and land cover (LULC) have been observed. Agricultural land increased by over 253 km^2 whereas natural grasslands and shrub land decreased by over 884 km^2 between 2000 and 2013 (Table 4). However, the analysis also revealed a recent trend where fertile agricultural land is being converted to settlements. Because of the local and national socio-economic implications associated with loss of prime agricultural land, the Government of Nepal introduced the National Land-use Policy (2012) to promote effective utilization and management of land.

Table 4. Land use change between 2000 and 2013

Land use/land cover types	2000 (km^2)	2013 (km^2)	Change between 2000 and 2013(km^2)
Forest	12,246.19	12,474.10	227.91
Grass/shrub land	1,331.48	447.02	-884.46
Agriculture land	8,572.46	8,825.95	253.49
Wetland/ water body	247.54	1,146.42	898.88
Other land (settlement, fallow, barren land)	801.33	305.51	-495.82

Source: 2013 Rapid Eye Satellite Image Classification (not validated)

1.4. Socio-economic Situation

The average per capita annual income (2011 data) in the TAL was Rs 50,781, which is almost on par with the national average of Rs 51,879 (GoN/UNDP 2013. This also reflects a substantial increase over the past 15 years, from Rs 7,200 in 2001 (HMG 2004). However, the average per capita income varies across the TAL districts, ranging from Rs 33,840 in Rautahat district to Rs 68,748 in Chitwan district.

Other economic indicators also vary by district. The human development indices (HDIs) of the 18 districts range between 0.386 in Rautahat and 0.551 in Chitwan, compared to the national average of 0.490 (GoN/UNDP 2013). Region wise, the Far-Western, Mid-Western, Western, and Central Terai have HDIs of 0.466, 0.476, 0.480, and 0.443 respectively.

Although there has been an improvement in the socio-economic (SE) status of people and their income levels over the last 10 years, about 20% of the TAL population falls below the poverty line (CBS 2013). The percentage of poor people ranges from 9% in Chitwan district to 36% in Kailali district. Overall, the percentage of people below the poverty line has declined from 35% a decade ago, and can be attributed to the various development initiatives and remittances from overseas workers. Bara, Parsa, and Rautahat districts, however, recorded an increase in poverty rates by 3, 6, and 3%, respectively.

The main sources of income for households are agriculture, animal husbandry, employment and remittance. However, a large number of households depend on natural resources for food, fodder, fuel wood and medicines. The TAL is also a major hub for industries and tourism.

1.5. Demography

According to the 2011 census there are more than 7.5 million people in the TAL (CBS 2011). The average annual population growth rate is 2.1%, but ranges from 0.03% in Palpa to 2.78% in Banke. In general, the population growth rate is low in the hill districts and much higher in the Terai districts. The latter is partly due to migration of people from the hills and mountains to the highly productive lowlands. The 2011 census also indicated that most of the eastern and central hills and mountains have experienced a negative inter-decadal population growth, whereas the western hills and mountains have witnessed a higher population growth rate compared to the national average.

In the recent past, migration of youth to foreign countries for employment has become a major demographic phenomenon, affecting local level resource management. According to the 2011 census, there were 474,022 absentee people from the TAL districts; Nawalparasi district has the highest absentee population (63,220) and Parsa has the lowest (7,376). Males represent the overwhelming majority of the absentee population, skewing the gender balance in these districts and the TAL as a whole. These factors have forced a change in gender roles, increasing the number of women-headed households and compelling women to take on a greater role in natural resource governance.

1.6. Infrastructure Development

In addition to existing large infrastructures, several new large and linear infrastructure developments are being planned (Figure 3). These include highways, railways, airports, transmission lines, large-scale irrigation projects, and sand and gravel mining which are likely to have serious ecological and socio-economic implications (WWF Nepal 2014). These projects, as planned now, will cut through protected areas and wildlife corridors, and encourage people to clear and settle critically important forest areas. Infrastructure development will also displace people, disrupting their livelihoods and social relationships if appropriate environmental, climate change and social safeguards are not considered. The large hydroelectricity projects and high dams planned upstream from the Terai will also have cascading impacts downstream, affecting flow regimes of major rivers and diminishing environmental flows.

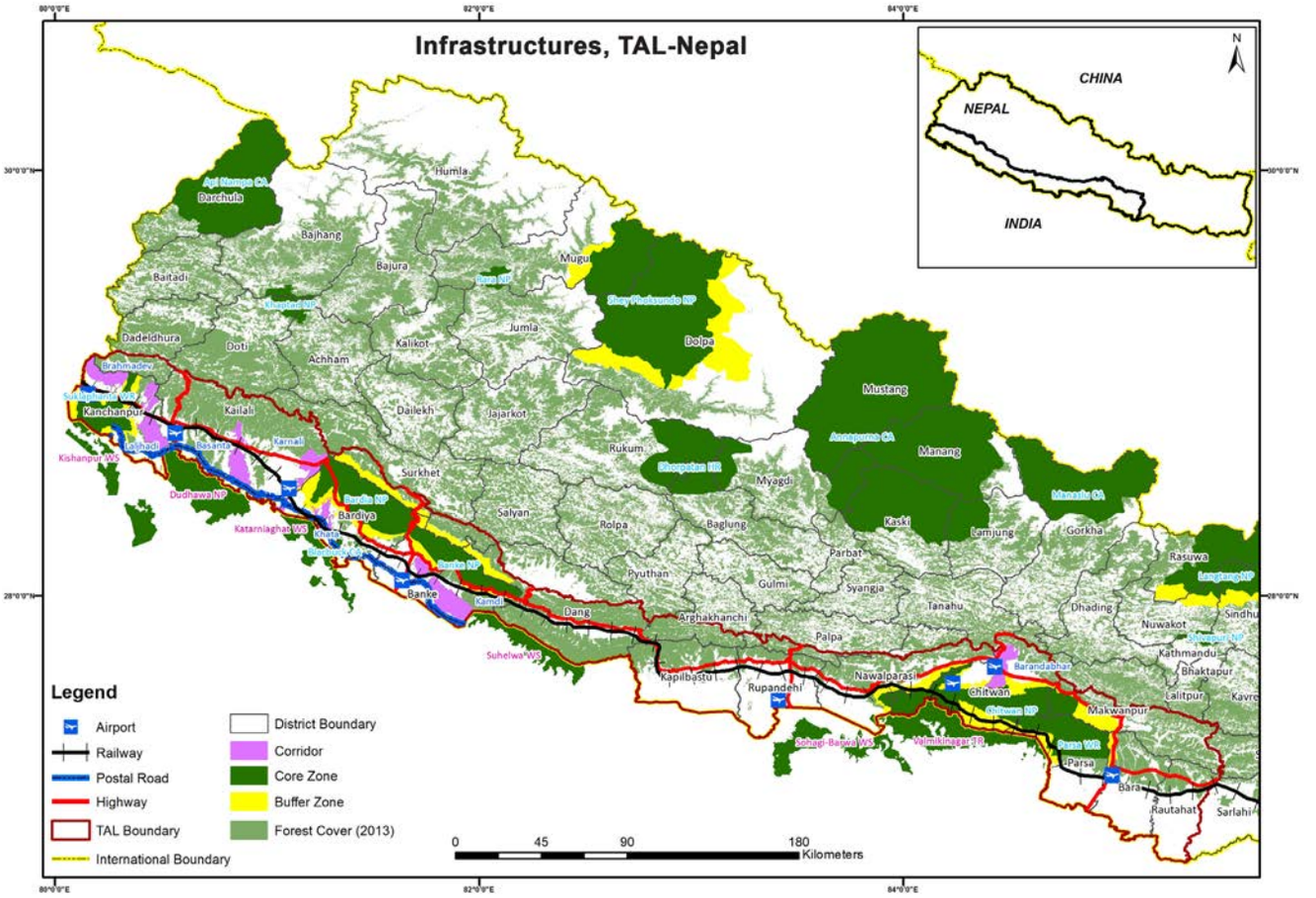

Figure 3. Map showing existing and upcoming infrastructure development in TAL- Nepal

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Some of the infrastructure developments implemented with little regard to conservation in TAL are given in Box 2.

Box 2: Examples of insufficient integration of conservation friendly infrastructures in TAL-Nepal

HULAKI ROAD

The Hulaki road along the Nepal-India border will traverse critical corridors: Kamdi in Banke; Khata in Bardia; and Karnali, Basanta and Mohana Laljhadi in Kailali. These corridors provide connectivity between protected areas in Nepal and India. After over a decade of investment in conservation, the Khata corridor is now functional with empirical evidence to show that tigers and rhinos are using the corridor to cross the border and move between the protected areas. Analysis of historical data suggests that the recovery of the tiger population in Bardia National Park is due to this connectivity with Katerniaghat Tiger Reserve (DNPWC 2014). Full operation of the Hulaki road will greatly obstruct the movement of wildlife between protected areas in Nepal and India.

SIKTA AND RANIJAMARA IRRIGATION CANALS

Originating from the West Rapti River, the Sikta canal cuts across Banke National Park and prevents species movements, separating populations within the park. Access to food and water may be prevented for some species, and drowning of wild animals has been observed. Construction of wildlife crossings could have maintained connectivity. Similarly, the Ranijamara irrigation canal originates from the Karnali River near Chisapani and cuts across the Karnali corridor which is frequently used by elephant, rhino and tiger.

All of these infrastructures could have incorporated engineering designs to make them compatible with the conservation objectives of the TAL. It is more difficult to retrofit solutions after they have been constructed.

Large, linear infrastructure such as roads, the railway and canals should, wherever possible, avoid important biodiversity conservation areas. But where this is unavoidable, engineering designs should be incorporated to accommodate ecological and conservation objectives. While future, planned infrastructure in the TAL should include eco-friendly and climate resilient engineering designs, existing infrastructure should be retro-fitted with the same. Being compliant with environmental regulations and conducting sound environmental impact assessments (EIAs) and initial environmental examinations (IEEs) is essential, and can address socio-ecological concerns during the early stages of planning. This will help ensure that the eventual economic and socio-ecological costs of development will be much lower, and result in greater overall benefits. The Government of Nepal has introduced a number of regulations with the objective of mainstreaming environmental concerns into development planning processes. While these regulations have scope for addressing issues at local level, Strategic Environmental Assessments (SEA) at a regional level are still essential to address complex, large-scale issues; this is currently a policy gap which the Ministry of Science, Technology and Environment is working to address.

1.7. Climate Change and other Disaster Risks

In recent years, global climate change has been recognized as a significant driver of ecological change. The Intergovernmental Panel on Climate Change (IPCC) has predicted that the average annual temperature in the Himalaya will increase faster than the global average. Precipitation is expected to increase, but occur less predictably. Climate projections conducted by Nepal Climate Vulnerability Study Team indicate the mean annual temperature will increase by 1.4°C by 2030 with higher temperature increases in western and central Nepal, along with an increase of 15-20% in monsoon precipitation (MoE 2010).

A more immediate manifestation of climate change is increased climate variability. The Terai region is already experiencing more extreme weather events, with more frequent, devastating floods. More intense rainfall, coupled with denuded and deforested watersheds in the Churia range and Mahabharat, is resulting in soil erosion. Poorly managed extraction of sand, gravel, and boulders from streams and rivers in the fragile Churia is changing river profiles and flow regimes. Construction of roads without adhering to appropriate engineering safeguards has caused slopes to become unstable and susceptible to landslides. All of these factors are resulting in increased sedimentation in the flat lands of the Terai, with shifts in river channels and flooding. Downstream communities, ecosystems, and infrastructure are now more vulnerable to floods and other natural disasters. The upstream-downstream linkages and the need for mainstreaming disaster risk reduction into overall development planning has been recognized by the government, and steps have been taken to address these issues at policy level.

Global climate change can also cause species range shifts. As habitats and environmental conditions become unsuitable for their survival some species may shift (often to cooler, wetter areas at higher altitudes, or in sheltered valleys or north-facing slopes), whereas others may become extirpated. Vegetation structure may change as edaphic and climate conditions change. Encroachment of invasive alien plant species may accelerate. Some species may adapt, or be resilient enough to survive under sub-optimal ecological conditions. Projections of climate change on ecosystems have indicated that some forest areas of the northern slopes of the Churia and the inner *dun* valleys will be resilient to change (Figure 4). The deeply dissected, complex topography will also provide climate micro-refugia for species (Thapa et al. 2014).

Climate change and consequent increase in frequency and intensity of natural disasters can disrupt and endanger socio-economic systems. Agricultural systems can fail from floods, droughts, changing or unpredictable seasonality and precipitation patterns, and disruption of irrigation systems. Destruction of infrastructure by flood or landslide—from roads and bridges to telecommunication systems—can cause loss of communication, with consequent economic, social, and livelihood disruptions. Floods and droughts can cause people to migrate from rural and urban areas causing a disruption of the social fabric, and possibly political instability. People may move into the few remaining natural areas—especially the steep slopes of the Churia and riparian areas—and clear the vegetation cover, exacerbating the loss of ecological services and creating feedback loops that intensify the negative impacts of climate change and increase vulnerabilities.

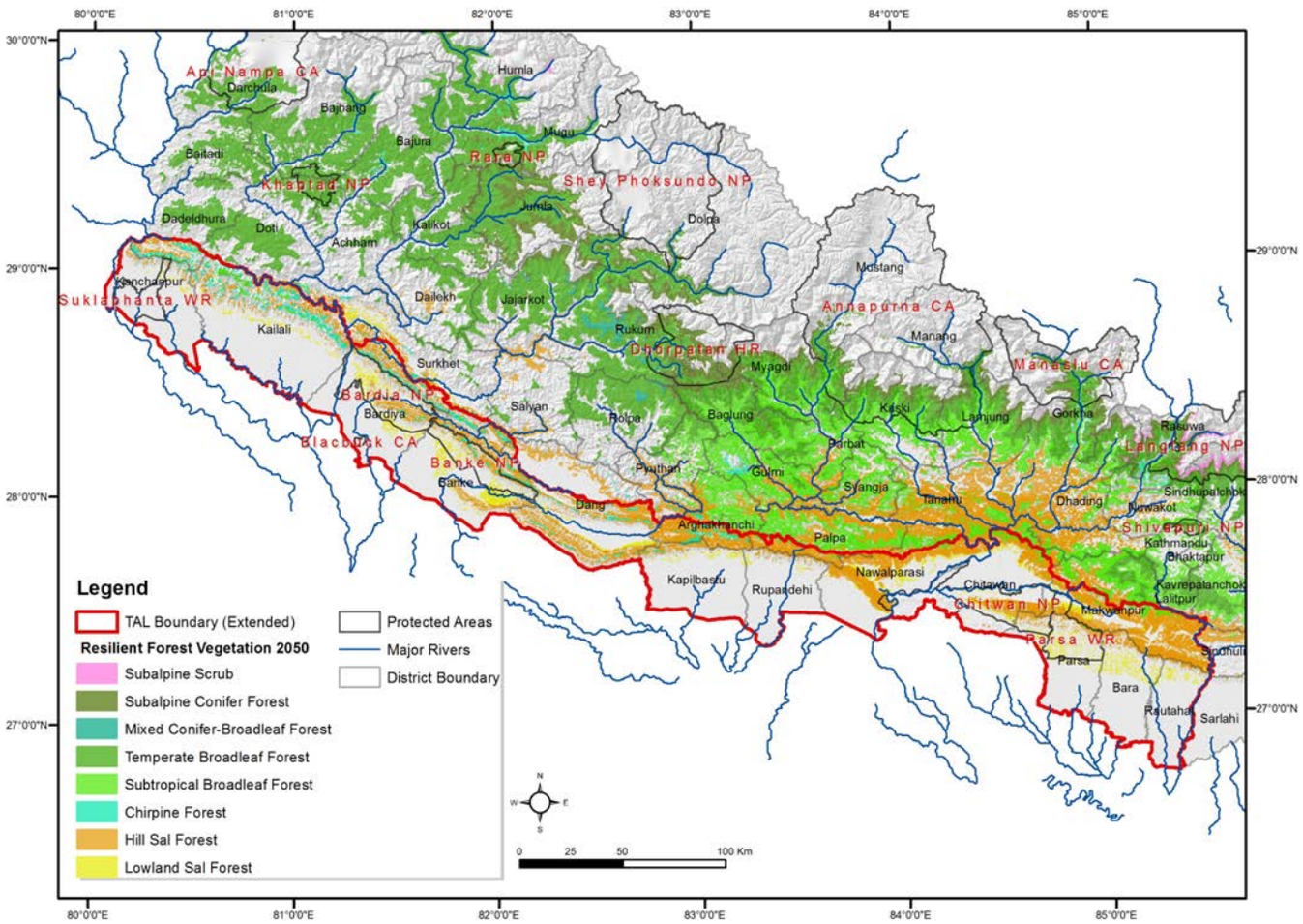

Figure 4. Map showing climate refugia

1.8. Administrative and Political State of TAL-Nepal

The TAL falls within four development regions: central, western, mid-western, and far-western. The lowest administrative unit is the village development committee (VDC) in rural areas, and the municipality in urban areas. The district development committees (DDCs) are responsible for administration at the district level, with regional directorates at regional levels. Representatives of VDCs, DDCs and municipalities are elected through a democratic process, although local elections have not been held for several years. All these administrative and political bodies will contribute to the development and implementation of the TAL action plan at their respective administrative levels.

Politically, at the time of writing (2015) Nepal is in a process of constitution building. It is very likely that a provincial system will be agreed on and implemented. The TAL may be represented by at least three provinces. These political units will pose additional challenges and opportunities for coordination and collaboration, including issues related to land and natural resource use. Therefore, when the final political decisions are taken on the number of provinces and the devolved rights and provincial boundaries, this strategic plan should be reviewed and adapted as necessary.

2. KEY ACHIEVEMENTS, CHALLENGES AND LESSONS

Review of the achievements and lessons learned from the implementation of the first TAL strategy (GoN 2006), including GoN's regular programs and other various conservation related projects over the last 10 years, provides a foundation for revising the TAL strategy for the next 10 years. The major projects include: the Terai Arc Landscape Program with multiple projects; the Western Terai Landscape Complex Project (WTLCP); Hariyo Ban Program; Biodiversity Sector Support Programme for Siwaliks and Terai (BISEP-ST); Strengthening Actions for Good Governance in Nature Resource Management (SAGUN); Livelihoods and Forestry Programme (LFP); the Rastrapati Churia-Madhesh Conservation Program; Land Use Policy; the Global Environment Facility-funded Churia Land Degradation Project; Multi-Stakeholder Forestry Project, and Tourism for Rural Poverty Elimination Program. These activities have been supported mainly by various conservation and development partners such as WWF, NTNC, UNDP, USAID, SNV Netherlands Development Organization, World Bank, Department for International Development (DFID), Swiss Development Cooperation, Government of Finland, IUCN, Cooperative for Assistance and Relief Everywhere (CARE), ICIMOD, Bird Conservation Nepal, buffer zone management committees (BZMCs) and community forest user groups (CFUGs).

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2.1. Achievements and Gaps

Over the past decade there have been significant contributions to biodiversity conservation and livelihood improvement in the TAL, which has gained global recognition as one of the pioneering initiatives in landscape-scale conservation in Asia. TAL-Nepal was also integrated into Nepal's national planning process, and is now included in the National Biodiversity Strategy and Action Plan 2014-20, and in the subsequent periodic development plans. The TAL has also catalyzed initiation of other conservation landscapes in Nepal and in the region.

The TAL implementation plan (2004-2014) has five thematic areas: Species and Ecosystem Conservation, Sustainable Forest Management, Soil Conservation and Churia Watershed Management, Sustainable Livelihoods, and Governance. A broad review of the plan's achievements and gaps in each of these areas is presented in Table 5 as a basis for the next plan (2015-2025).

Table 5. Key achievements and gaps in implementation of the first TAL strategy and action plan (2004-2014)

Key achievements	Gaps
• Strong policy commitments and replication of landscape conservation approach	• Weak horizontal and vertical inter-sectoral coordination, leading to land use conflicts
• Declaration of protection forest in major corridors	• Concentration of program and project activities in some areas resulting in geographic imbalance
• Increase in focal species populations	• Poor utilization of financial capital
• Restoration of fragmented habitats	• Poor coordination of plans and programs of different sectoral agencies; inadequate synergy among different sectors and programs/projects
• Expansion and strengthening of protected area network	• Poor database management at programmatic level and weak knowledge documentation
• Increase in community awareness, capacity, participation and ownership with institutional mechanisms	• Weak integration of climate change
• Diversification of livelihood options including employment and income generation for local communities	• Insufficient integration of conservation friendly infrastructures
• Growing number of conservation activists and volunteers including youth mobilization in conservation	• Weak governance in addressing forest and PA encroachment
• Increase in conservation investment and financial capital	• Inability to up-scale livelihood options such as tourism and green enterprises.
• Enhancement of transboundary cooperation	
• Reduction in poaching of endangered species including zero poaching of rhinoceros for three years	
• Gold standard biogas project	
• Synergetic efforts of DNPWC and DoF with conservation partners for conservation outcomes and improved governance	

Species and Ecosystem Conservation:

Conservation of tiger, rhinoceros, gharial and vultures was a priority for interventions during the past decade. Status and trends of major species are summarized below:

Tiger: A target to double the adult tiger population in TAL-Nepal by 2022 was set during this period as Nepal's commitment to the global tiger conservation goal. Between 2011 and 2014 the tiger numbers in TAL-Nepal protected areas increased by over 60%, to 198 adult animals, and Nepal is on track to achieve the 2022 target of at least 250 adult tigers managed in meta-populations in the landscape (DNPWC 2013b).

Rhinoceros: The rhino population increased to 645 animals in 2015 from a low of 372 in 2005 during a period of intense poaching. Functionality of the Khata corridor is being confirmed by tracking movement of satellite-collared rhinos to India's Katarniaghat WS.

Gharial: Over 800 captive bred gharials have been released into the Narayani, Rapti, Karnali, Babai and Koshi river systems to augment wild populations. A survey in 2013 estimated the wild gharial population at 124 animals, which is a 21% increase since the previous count in 2008. Evidently most of the gharials released move downriver and across the barrages along the Nepal-India border (or are washed down during floods), but survive in India, contributing to the populations in the TAL rivers, albeit in India.

Dolphin: The Gangetic river dolphin is now confined to the lower reaches of the Koshi, Narayani and Karnali Rivers and the latter's tributaries in Nepal and India. The major threats to dolphin are floods that alter river flows and habitats; intensive, destructive fishing practices; infrastructure development; and intensive agricultural practices that withdraw water and release pollutants. The barrages established along the Nepal-India border prevent transboundary movement, isolating the small populations upstream in Nepal. It is important to have a transboundary dialogue with India on the future conservation strategy for dolphin.

Blackbuck: The establishment of a small subpopulation of blackbuck in its former range in Shuklaphanta Wildlife Reserve (WR) has been a milestone in species conservation. Previously the species occurred only in a small reserve in Khairapur, and in captivity. A number of animals (28) from various captive facilities was reintroduced in Shuklaphanta to establish a second population; they are currently (in 2015) in an enclosed area in Shuklaphanta WR's Hirapur grassland until their numbers increase to a level where they can be released. This is all the more important since the Khairapur population was badly affected by flooding in August 2014; the new Shuklaphanta population helps to hedge against this type of stochastic event.

Vultures: Six vulture species *(Gyps bengalensis, G. tenuirostris, G. himalayensis, Aegypius monachus, Neophron percnopterus* and *Sarcogyps calvus)* have been recorded from the TAL. In the early 2000s there was a precipitous decline in vulture populations across the northern Indian subcontinent due to Diclofenac poisoning. The vulture populations in the Nepal TAL underwent a similar decline (Prakash 2012) and felling of large trees in the TAL also resulted in the loss of nesting and roosting habitat. However, conservation interventions such as the Vulture Conservation Breeding Center, vulture restaurants, the ban on the use of Diclofenac, habitat conservation, and protection and monitoring of vulture nests with community engagement has increased the vulture populations by over 3-fold during the past decade.

Satisal and Bijaysal: In-situ conservation of satisal *(Dalbergia latifolia)* and bijaysal *(Pterocarpus marsupium)* has been initiated. Both species are rare, threatened, high-value timber trees of the subtropical Bhabar forests, and are protected in Nepal.

The first TAL strategy placed major emphasis on restoring connectivity along critical corridors. Habitat restoration in corridors (Figure 5) yielded mixed results.

Khata corridor: The Khata corridor links Bardia NP in Nepal and Katarniyaghat Wildlife Sanctuary (WS) in India. Tiger, rhino and other 25 mammal species- including 15 IUCN 'Red Listed' species have been confirmed (CPAD-Nepal 2012). However, its connectivity and functionality are now seriously threatened by the Hulaki road and a parallel border road in India that will also cut through the corridor. A small settlement at Dada gaon is vulnerable to floods and the community would like to be voluntarily resettled in a safer area. From a conservation viewpoint, this would also provide additional habitat and stop further encroachment in the corridor forest.

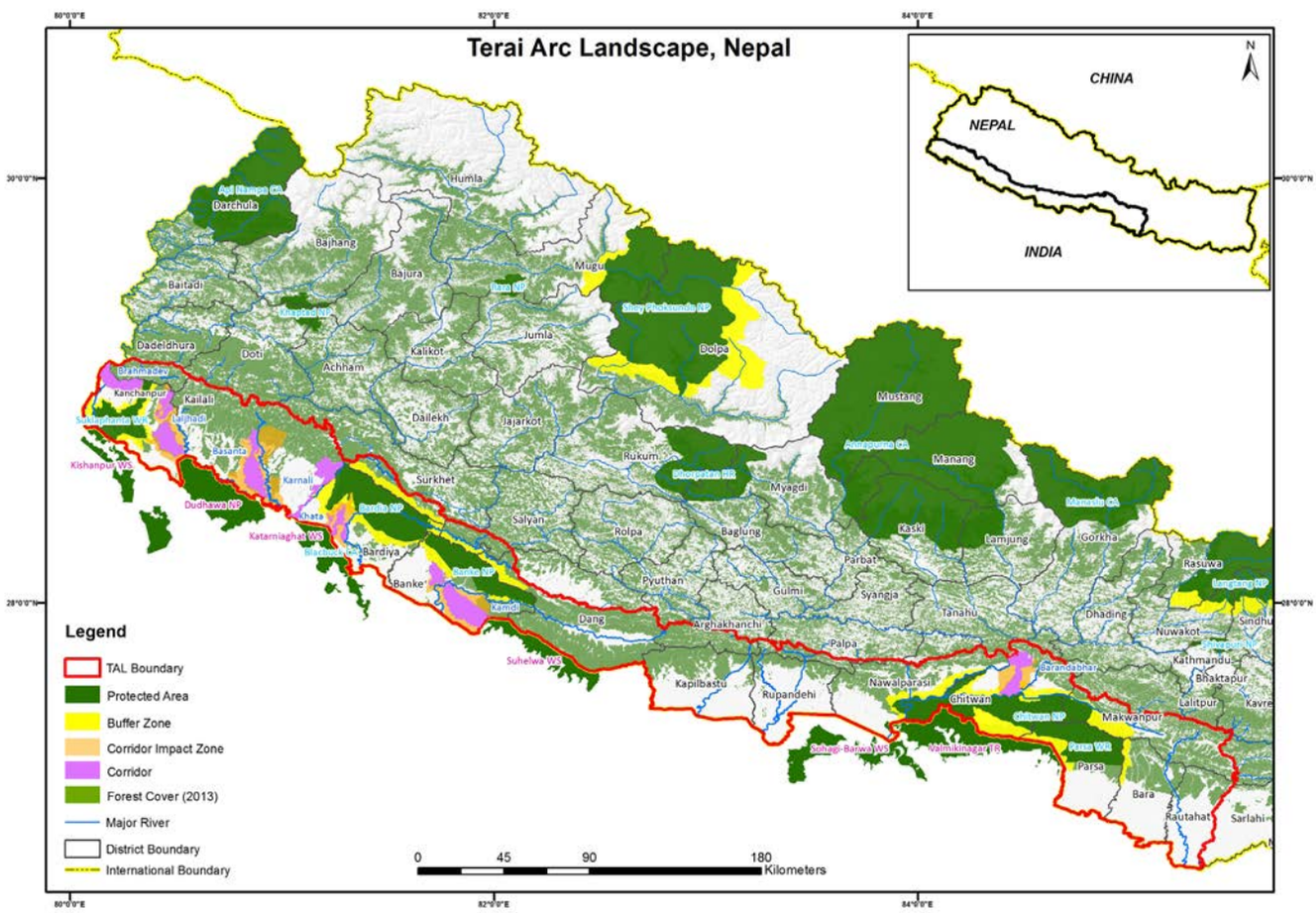

Figure 5. Map showing critical forest corridors and impact zones in TAL

Kamdi corridor: The Kamdi corridor links Banke NP in Nepal and Shohelwa WS in India. Tiger and common leopard, and their prey species such as wild pig, spotted deer, and four-horned antelope have been recorded in the corridor, as have sarus crane, vultures, giant hornbill and lesser florican. Encroachment and overgrazing are the key threats to this corridor. The corridor is bottlenecked in the Rapti River area and needs immediate restoration. Some forest areas in the fragile Churia range are encroached. The Lamahi bottleneck along the Churia corridor was reforested and restored during the period of the first TAL strategy, and several spring sources have been rejuvenated, providing local communities with reliable water supplies.

Basanta corridor: The Basanta corridor still suffers encroachment and overgrazing by domestic livestock. Encroachment has fragmented the forests in the core area, and over 3,600 ha of forest has been lost from this corridor (CPAD Nepal 2012). Recent tiger occupancy surveys failed to confirm the presence of tigers in Basanta corridor. Floods and river bank cutting have emerged as major climate-induced hazards in this corridor, especially along the Kandra River where settlements and agricultural fields are threatened by river cutting. Restoration of the riverine forests and

grasslands is imperative to buffer against flood damage and also create important transboundary habitat for wildlife connectivity, linking Nepal's Churia forests with India's Dudhwa NP. The corridor is bottlenecked in several sites that need immediate restoration.

Karnali corridor: The Karnali River corridor has been identified as a priority for ecological connectivity between the Churia, Nepal and India's Katerniaghat WS. A narrow strip of forest in the corridor stretches along the western bank of the river. The flood plains in the southern part are degraded due to overgrazing. A newly established settlement in the south near the border hinders the movement of wildlife. The forest strip in this corridor is bottlenecked in several areas and needs restoration through plantation. Frequent use of this corridor by elephant, rhino, and tiger has been reported. Gangetic dolphin and gharial are found in the Karnali River. Illegal logging, wildlife poaching, forest fire, flood, riverbank cutting, and landslides remain primary threats in this corridor.

Barandabhar corridor: The Barandabhar corridor provides connectivity between the TAL and the Chitwan-Annapurna Landscape (CHAL). The corridor includes Bishazari Lake, a Ramsar site, and several other wetlands. Forest restoration and community stewardship in this corridor have now resulted in the presence of rhino and tiger, as well as 31 other mammals and more than 270 species of birds (WWF 2010a). Some of the important persisting threats in the corridor are land use change, infrastructure, wildlife poaching, floods, riverbank cutting, illegal logging, and forest fire. The East-West Highway bisects the corridor and hinders north-south movement of wildlife species. The catchment of the Khagedi River is encroached and threatens survival of the Ramsar site.

Laljhadi-Mohana corridor: The Laljhadi-Mohana corridor connects the Churia forests and Shuklaphanta WR with Dudhwa NP in India. Tiger signs and frequent use of this corridor by elephant have been reported, and it has important flora such as bijaysal and satisal. This corridor suffers from encroachment, overgrazing and over-extraction of forest resources. Connectivity with Dudhwa NP is compromised in the Doke bazaar area due to forest clearing for agricultural expansion.

Brahmadev corridor: The Brahmadev corridor borders the eastern bank of the Mahakali River and connects Shuklaphanta WR with Doon Forest in India. The corridor has several wetlands and streams. Tiger and elephant have been reported in this corridor, along with common leopard, goral, and blue bull. The corridor is bottlenecked in Bhimdutta and Daijee. Land use change including encroachment and forest fires are some of the major threats in this corridor; illegal logging occurs along the southern areas.

Community forest management has contributed to create additional habitats for focal and associated species. Khata has been the most successful of all the corridors. It confirms that maintaining corridors for tiger and rhinoceros can also provide a conservation umbrella for several other TAL species. Importantly, the corridor has gained support from local communities who have benefited from livelihood activities. A significant level of investment has been made in the Khata corridor to achieve these results over the last ten years.

With recovering wildlife populations, an increase in human-wildlife conflict (HWC) has been inevitable. Most conflicts in the TAL occur with elephant, rhino, tiger, leopard, sloth bear, wild boar and ungulates. A range of mitigation measures (such as solar power fences, deep trenches, viewing towers and cultivation of unpalatable crops) have been employed to reduce conflict, with mixed results. Programs to establish community-based anti-poaching units (CBAPUs), Eco-Clubs, citizen scientists, and other education and awareness programs have been successful. Provision for relief funds at community level has been piloted aiming at quick response.

Forest and other Land Uses:

Sustainable forest management has been initiated in a few TAL districts with the objective of increasing forest land productivity and enhancing the supply of forest products. Scientific forest management also addresses the drivers of deforestation and forest degradation, thereby reducing carbon emissions. Encroached forest areas were evacuated and restored through plantation. Degraded forests, mainly in corridor bottlenecks, were restored through natural regeneration. These restored areas are now used by many species of wildlife, from mammals and birds to reptiles. Community forestry, and to a lesser degree leasehold and collaborative forestry, were the primary strategies to engage local communities in forest management outside protected areas during the past decade.

Under the World Bank's Forest Carbon Partnership Facility Carbon Fund, Nepal prepared an Emission Reduction Project Idea Note (ER-PIN) for a sub-national REDD+ project in TAL (REDD Forestry and Climate Change Cell 2014) which was approved in 2014. A more detailed Emission Reductions Program Document (ER-PD) is now being prepared (in 2015). The program proposes to build on the community and collaborative forest management systems and address key gaps in enforcement and scientific management of forests. It will transition management of 300,000 ha of

national forests to community or collaborative forest management over a 7-year period and provide the resources required for initial implementation of best management practices to reduce deforestation and forest degradation. Fourteen million emission reduction units of carbon offset will be sold in the regulated market.

The Churia Rivers are the main sources of water for both people and wildlife in the TAL. The Churia range and its watersheds are geologically fragile and prone to severe environmental degradation, with soil erosion, landslides, and flash floods. Degradation of the Churia was flagged as a priority in the TAL strategic plan of 2004-2014, and an Integrated Soil and Watershed Management Programme was developed for priority sub-watersheds, micro watersheds and some hotspots to protect the fragile watersheds. It was implemented through the Department of Soil Conservation and Watershed Management (DSCWM), BISEP-ST and LFP Terai. The Rastrapati-Chure-Madhesh Program was launched with support from the highest levels of government with the recognition of the importance of the ecological role of the Churia range in sustaining and providing critical ecosystem services.

Several projects to reforest critical corridors in the Churia were initiated through community forestry. Many spring sources in the Churia foothills were restored as a result of grassland and forest restoration. Small reservoirs now provide sustainable water supplies for communities immediately downstream, while the restored source sites support wildlife.

In light of climate change, a TAL climate vulnerability assessment of socio-ecological systems was conducted, with recommendations for building resilience (WWF Nepal 2015). At sub-landscape scales, several Community Adaptation Plan of Action (CAPAs) and Local Adaptation Plan of Action (LAPAs) have been prepared and implemented.

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Socioeconomic well-being:

Implementation of sustainable livelihood activities during the past decade has been relatively effective. Co-operatives supported through this program are functioning well and have been providing funds to local people for investments in on-farm and off-farm activities, enhancing social capital, ensuring sustainability, and providing equitable access to resources and livelihoods (LFP 2013). The micro-enterprises supported (e.g., rattan furniture, juice-making from forest fruits, essential oil production) have provided livelihood opportunities to the local people while creating awareness of the economic, livelihood and disaster risk reduction values of forests.

Home-stay programs have promoted eco-tourism for the benefit of communities in buffer zones. The home-stay program in Amaltari has now been developed into a more holistic sustainable village concept with potential for replication in other areas of the TAL, especially in critical corridors. Innovative financing mechanisms, from nature tourism to carbon sequestration-based approaches with value-addition through premium payments for presence of wildlife, have to be developed to further encourage community stewardship and provide other livelihood opportunities. Community initiatives for conservation of wildlife species (e.g., blackbuck, goral, pangolins, vultures, hornbills, floricans, and cranes) should be initiated and tied to nature tourism programs.

Livestock-related activities have included support for buffalo and goat farming targeting the poorest segment of society. Zero grazing projects have been implemented to promote stall feeding or restricting livestock to designated grazing areas.

Human migration and the resulting labor shortage, shifting economic activities, energy shortages, recognition of changing gender roles in resource management and social leadership, and possible gender-specific risks and vulnerability are some important issues that have yet to be addressed.

Governance

Most of the activities relevant to governance issues have been successful. Dissemination of information on relevant policies to local communities has taken place and the people are now able to understand the social, ecological, and economic links and benefits of biodiversity conservation, especially as it directly links to their livelihoods and well-being. The feedback from local communities has also been helpful in revising new policies and regulations.

The declaration of Banke NP, Krishnasar Conservation Area, and four protection forests (in Barandabhar, Khata, Basanta, and Laljhadi-Mohana) has contributed to successful conservation initiatives during this period. Policy documents such as the Tiger Action Plan, Rhinoceros Conservation Action Plan, Elephant Conservation Plan, National Fire Management Strategy, Convention on International Trade in Endangered Species (CITES) draft bill, and protected area management plans were formulated.

Capacity building programs for government officials helped to improve the efficiency of relevant institutions to fulfill responsibilities and mandates to meet TAL-Nepal's vision. Regular transboundary meetings facilitated actions against poaching and illegal trade of wildlife.

The low level of success in securing the Basanta corridor and mitigating the impacts of infrastructure that affects other corridors and protected areas can be attributed to inadequate coordination among government line agencies and local organizations. The upcoming large infrastructures such as the proposed international airport in Bara district, the Kathmandu-Nijgadh fast-track road and extension of the high tension line between Nawalparasi and Hetauda also reflect inadequate inter-sectoral communication that has led to land use conflicts and conservation challenges. Some of the key issues that need to be addressed are: inadequate transparency; inadequate horizontal (inter-departmental, as well as across stakeholders) and vertical (hierarchal) communication; ambiguities in institutional arrangements (Churia watersheds, protection forests); and insufficient representation of stakeholders from different sectors in District Forest Sector Coordination Committees (DFSCCs).

Gender Equality and Social Inclusion

Over the last decade remarkable achievements have been made in empowering women and vulnerable groups in TAL. Women have had meaningful participation in forest user groups in all community managed forest regimes including buffer zones and critical corridors. Women are organized in women's groups and cooperatives and hence community based institutions have been becoming more inclusive. DFSCCs and Community Forest Coordination Committees (CFCCs) are established and strengthened in TAL. Women-led user groups are engaged in plantation and forest restoration. Dependency on forest products has been reduced through the introduction of alternative energy, with time-saving technologies such as biogas and improved cooking stoves which reduce women's work loads and improve health. Income generating activities have been targeted to women and marginalized groups. Household access and participation in forest management have also increased through community forestry programs. Community forests are exercising governance practices to increase participation of women, poor and vulnerable groups, and to ensure equitable sharing of the benefits generated from natural resource management (NRM).

However, achievements in gender equality and social inclusion are still patchy. Many women engaged in the NRM sector are experiencing gender based violence. Mainstreaming of gender equality and social inclusion (GESI) with meaningful participation of marginalized communities, women and Dalits in decision-making is imperative.

2.2. Lessons Learned

Species and Ecosystem Conservation

- Adequate investment in sound protection and monitoring systems for focal species populations and their habitats is important. For tiger conservation, a major focus should be on maintaining prey species.
- Emerging issues and threats to species and habitat integrity, such as large infrastructure, natural disasters, diseases, invasive species and climate change, should be detected and anticipated early for timely action. Therefore, monitoring systems are necessary to ensure adaptive management.
- Community stewardship is important for corridor and buffer zone management. In the mid-2000's, when poaching was heavy in the protected areas, the CBAPUs in Khata were able to prevent poaching of tiger and rhinoceros in the corridor. Local youths must be engaged as community stewards of wildlife and citizen scientists mobilized in regular survey and monitoring in buffer zones and critical corridors.
- Success in biodiversity conservation and species recovery inevitably leads to greater HWC and has to be dealt with proactively, before tolerance thresholds are exceeded. Innovative methods should be introduced to mitigate conflict. High conflict areas can be anticipated and predicted based on restoration plans and monitoring.
- Landscape connectivity is essential for long-term persistence of large species. Corridors that are smaller in size (e.g. Khata) with engagement of homogenous communities are managed well and are functional. Engagement in these corridors should be continued. However, more investment and greater efforts at effective community engagement is required for corridors (e.g., Basanta) that still suffer encroachment, over extraction of natural resource and overgrazing of livestock.
- Transboundary coordination is essential to address transboundary conservation issues including wildlife trade, poaching, research and monitoring in border areas.

Forest and other Land Uses

- A conservation landscape approach can support economic stability and secure livelihoods of local communities while sustaining ecological integrity and conserving biodiversity in the TAL.
- Conservation efforts where the traditional knowledge and skills are integrated into modern and scientific approaches can be highly effective, and encourage ownership and stewardship by local communities.
- Alternative energy programs can be an effective means of reducing firewood consumption and carbon emissions.
- Awareness and education programs on conservation and its benefits can bring about positive changes in the attitudes and behaviors of the local communities.
- Integrated watershed management practices can be an effective tool for conservation of watersheds, but climate change should be considered and integrated into these practices.
- Churia watershed management is essential to ensure ecological integrity of the Terai, and to provide sustainable water for environmental flows and ecosystem services.
- Forested areas in the northern slopes of Churia serve as climate refugia and need proper conservation and management.

Socio-economic well-being

- Green enterprise development harmonizes economic well-being of people with biodiversity conservation objectives. Support to local communities by providing diversified income generating activities, sustainable livelihood opportunities, and alternate energy can enhance prosperity and reduce dependency on forest resources and subsistence-based lives.
- Integration of livelihood programs with conservation adds value. For example, income generating activity (IGA) revolving funds were based on fulfilling biodiversity conservation criteria, and contributed to livelihoods improvement while ensuring natural resource conservation.
- Most projects have been implemented at site level, and have to be replicated or otherwise scaled up to make them meaningful at a landscape scale.
- Participatory planning and community based organization (CBO) capacity building is essential. When local stakeholders took the lead in planning and implementing activities there was enhanced ownership of the programs while risks were minimal. Participatory planning also strengthened the capacity and engagement of CBOs.
- Climate change has to be considered in livelihood strategies.

Governance

- The process of policy formulation for conservation and development should involve representatives from different sectoral line agencies to ensure ownership and coordination among the agencies.
- An effective coordination mechanism among all concerned stakeholder is imperative for successful implementation of the strategy.
- Implementation can be effective with collaborative and coordinated efforts of stakeholders at local, national, and transboundary levels to build ownership and accountability of programs.
- All projects should coordinate with the government line agencies as these agencies provide sustained support for activities and will reduce conflicts of interest among stakeholders.
- Implementation of projects through existing institutions is cost effective and time efficient.
- Both government and non-government organizations have special roles and niches in landscape conservation programs. Thus, strategic partnerships must be developed for successful implementation of programs.
- Capacity strengthening programs help to develop leadership in community people.

Gender Equality and Social Inclusion

- Engagement of community of multi-ethnicity, gender and low income and benefits from nature-based economic opportunities should be distributed equitably among the different segments of society for social and gender inclusion and equity.
- Pro-poor forest-based enterprises has been constrained by regulatory barriers, inefficient harvesting regimes, dated processing technologies, inadequate market identification and access; lack of investment environments and linkages to the private sector, and lack of reliable energy, infrastructure, and inadequate program investment.
- Women's roles in natural resource conservation and utilization are crucial, since they use specific forest resources, and in light of migration trends. With the skewed gender ratio due to emigration of men for employment, more women have been taken on leadership roles at household and community level. Thus appropriate training, empowerment and knowledge enhancement opportunities should be made available for women to participate more fully in community processes, including forest management.

3. THREAT ANALYSIS FOR BIODIVERSITY LOSS AND ENVIRONMENTAL DEGRADATION

The TAL-Nepal strategy and implementation plan for 2015-2025 was prepared with participatory stakeholder consultations, a literature review, a situation analysis based on the outcomes and achievements of the previous plan, and spatial analyses of changes in land use and land cover (Figure 6). Emerging issues, challenges and opportunities were explored during the consultations and analyses. A climate change impact assessment and adaptation plan that had been prepared was reviewed and the recommendations were integrated into this plan. Threat analyses had been commissioned for individual corridors by the Hariyo Ban Program and by WWF's TAL program. A threat analysis of the TAL forests had been conducted and prioritized by the REDD Cell for the ER-PIN submitted to the World Bank. The results from these analyses were considered in this plan. Two regional and one central level workshops were conducted to validate the strategic actions and solicit comments and suggestions for the plan, which was then revised.

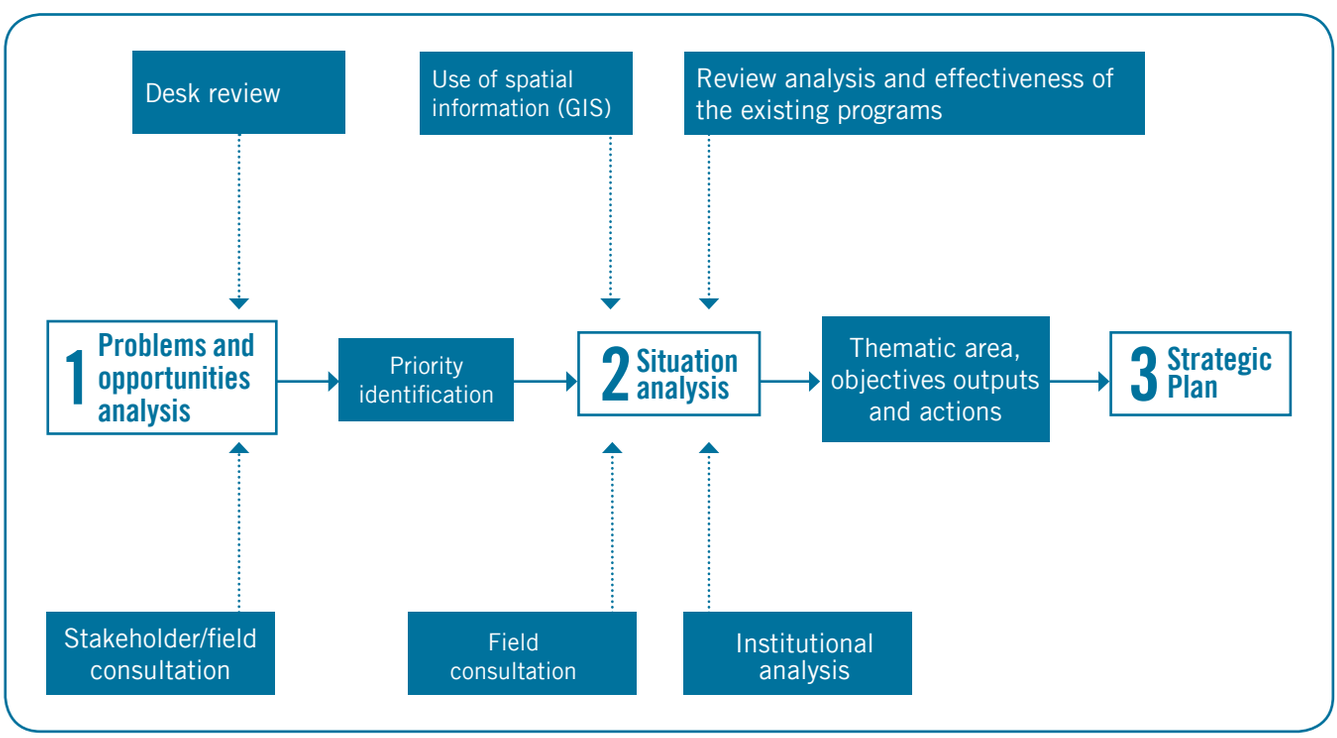


Figure 6. Strategic plan formulation process

3.1. Opportunities and Threats

Despite conservation interventions in the TAL over the past decade, several threats still persist and require continued interventions. Large infrastructure projects and climate change have also emerged as new threats that can act in synergy with other direct threats.

Site-scale intervention successes from the past decade should now be scaled to the landscape level.

Opportunities (Table 6) such as Nepal's REDD+ agreements, the awareness of the importance of the TAL's natural capital, high-level recognition of the threats to the Churia range and its importance for economic growth in the region, engagement of youth in conservation and environmental issues, and awareness of climate change should be used to build the next phase.

Table 6. Opportunities and threats for TAL-Nepal in 2015

Opportunities	Key Threats
• Rich and unique biodiversity	• Encroachment
• Economic potential	• Poaching and illegal trade
• Existing institutions and service providers	• Infrastructure development
• Enabling environment	• Unsustainable harvesting of resources
• Indigenous knowledge and practices	• Uncontrolled forest fire and grazing pressure
• Communication technology	• Human-wildlife conflict
• Accessibility	• Invasion of non-native species (e.g., Mikania, Lantana and Chromolaena)
• Mechanism for corridor management and their continued validity	• Climate change
• Climate initiatives and carbon financing	• Natural disasters

3.1.1. Threats

The threats identified during consultations with key stakeholders and partners were ranked for the major targets using Miradi software during the TAL strategy planning process (Figures 7, 8, 9). The analysis indicated that the highest overall threats to species and biodiversity targets were from large infrastructure, illegal fishing, river diversion and channeling, prolonged drought, encroachment, and wildlife poaching and illegal trade (Figure 7). This strategy will focus interventions to tackle threats that are ranked very high and high, and then to medium ones.

Threats\Targets	Large Mammals	Agrobiodiversity	Large Avifauna..	Rare trees: Bija...	Large Aquatic fauna...	Summary Threat Rating
Large infrastructure	Very High		Very High		High	Very High
Illegal Fishing			High		High	High
River diversion/channeling	High		Low		High	High
Drought	High	High	High	High	High	High
Encroachment	High		High			High
Wildlife Poaching/illegal trade	Very High					High
Severe Floods					High	Medium
River poisoning/pollution			Medium		High	Medium
Invasive species	High					Medium
Unsustainable fuel wood & NTFP	High					Medium
Human wildlife conflict/retaliatory	High					Medium
Illegal logging	Medium		Medium	High		Medium
Livestock grazing	High					Medium
Fire	Low		Low			Low
Disease epidemics	Medium					Low
Summary Target Ratings	Very High	Medium	Very High	High	Very High	Very High

Figure 7. Threat analysis of biodiversity and ecosystem targets for TAL-Nepal

Threats from invasive species, unsustainable fuelwood and NTFP collection, HWC and retaliatory killing, and grazing by livestock were also high for large mammals, while severe floods and river poisoning and pollution were high threats for the aquatic species. Illegal logging was a high threat for the rare tree species. This strategy will focus mainly to address the threats that are ranked Very High and High.

The highest overall threats to the forest and grassland ecosystems and agriculture lands in the TAL are from large infrastructure, encroachment, livestock grazing, river diversion and channeling, and prolonged droughts (Figure 8). Overall, the Churia, Terai grasslands, and Terai forests were under very high threat. This strategy will prioritize tackling threats that are ranked Very High, High, Medium and Low.

Threats\Targets	Churia	Rivers and wetlands	Agriculture Land	Terai Grasslands	Terai Forests	Summary Threat Rating
Large Infrastructure	Very High	High		Very High	Very High	Very High
Encroachment	High			High	Medium	High
Livestock Grazing	High	Low		Medium	High	High
River Diversion/Chanelling	High	High		High	Medium	High
Droughts	High	High		High	High	High
Unsustainable Fuelwood/NTFP	Medium				High	Medium
Illegal Logging	Medium				Medium	Medium
River poisoning pollution		High				Medium
Invasive species	High			Medium	Medium	Medium
Severe floods	Medium	Not Specified	High	Not Specified	Medium	Medium
Fire	Low				Low	Low
Summary Target Ratings	Very High	High	Medium	Very High	Very High	Very High

Figure 8. Threat analysis of forest and land cover targets for TAL-Nepal

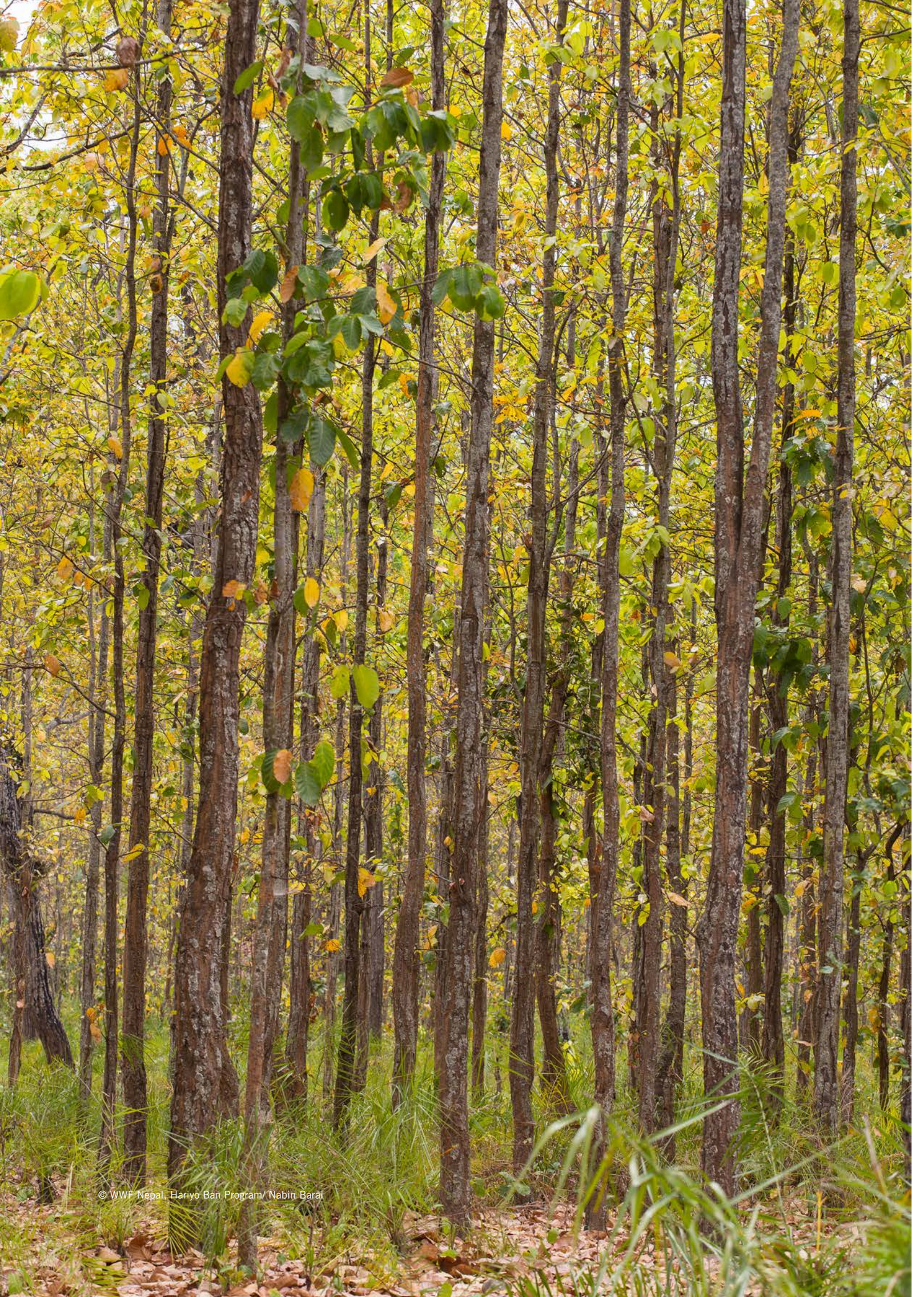
River diversion and channeling and natural disasters are high threats to the socio-economic well-being of all communities and economic development activities in the TAL (Figure 9). However, the communities in or close to buffer zones and corridors also had to contend with human wildlife conflict and the economic opportunity costs from conservation of forests, grasslands, and aquatic systems. This strategy will give priority to addressing threats that are ranked Very High, High and Medium on the priority basis.

Threats\Targets	SE well-being of BZ and corridor communities	SE well-being of other communities	Economic Development	Summary Threat Rating
River diversion/channeling	High	High		High
Natural Disasters (floods, landslies, droughts)	High	High	High	High
Human Wildlife Conflict	High			Medium
Disease Epidemics	Medium	Medium		Medium
Economic opportunity costs of conservation	High			Medium
Uncontrolled forest fire	Low	Low		Low
Summary Target Ratings	High	High	Medium	High

Figure 9. Threat analysis of socio-economic well-being targets for TAL-Nepal

A TAL-wide analysis of threats to forests was conducted by the REDD-Cell for the ER-PIN. This analysis has prioritized the most urgent threats to forests as unsustainable and illegal harvest of forest products, overgrazing, forest fires, and conversion of forests to other land uses (encroachment, resettlement, and infrastructure). Unsustainable harvest of forest products is largely driven by the increasing demand for forest products from population growth and a weak supply chain. For example, the emission reduction survey estimated that the demand for fuel wood in the 20 emission reduction program districts was 5.3 million tons/year, which was more than twice the estimated 2.58 million tons of the sustainable supply (REDD Cell, 2012). The annual demand for timber was estimated at 1.46 million m^3, compared to the estimated supply of 1.1 million m^3.

More than four million livestock including cattle, buffalo, goats, and sheep graze in national forests,



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destroying the understory and preventing forest regeneration. The emissions reduction study revealed an increase of about 15,000 livestock units across the program area from 2010 to 2011 (NLBC 2011).

An analysis of threats in the critical corridors indicated that uncontrolled forest fire, forest encroachment, overgrazing by domestic livestock, infrastructure, and river pollution were the most severe threats that were most common to the TAL corridors (Figure 10). However, the threat sources and relative importance of threats in the TAL corridors were different for each corridor. This strategy will address corridor-level threats based on priorities with more focus on those that are very high and high.

Figure 10. High ranked threats in TAL corridors

Notes: *Comparisons are within corridors. Red indicates very high threat, orange is high. Low threats are not shown. Relative threat rankings are comparable only within the respective corridors, and are not comparable between corridors.*

3.1.2. Opportunities

With high-level recognition of the importance of the TAL's ecosystem goods and services, and the negative consequences of degradation, support for conservation in the landscape has increased. This support should be effectively leveraged in conservation strategies. The successes of the last decade can also be used as platforms from which to continue to build TAL conservation in the next phase. Specific opportunities include:

- The Rastrapati-Chure-Madhesh Program was initiated with support from the highest levels of government with the recognition of the importance of the ecological role of the Churia range in sustaining and providing critical ecosystem services. The fragile Churia forms the backbone of the TAL and is a major east-west directed corridor. Thus, conservation of this forested corridor remains a high priority. The northern flanks of Churia and inner valleys serve as climate refugia.
- Most people in the TAL still rely heavily on forests for food, fodder, non-timber forest products, and timber. Therefore, conservation of forests is a critical component of livelihood improvement and poverty reduction. The high value timber species such as Sal, Sissoo, and Khair generate considerable amount of revenue for local communities who manage the community forests. Water conservation, nutrient cycling, crop pollination, and other ecosystem services contribute significantly to livelihoods and economic development. Carbon sequestration and other payments for ecosystem services (PES) have potential for added economic benefits.
- The TAL already has a good network of protected areas that serve as core areas to protect populations of endangered species. TAL-Nepal also includes three Ramsar sites and two World Heritage Sites that have gained international recognition as conservation areas.
- There are several established institutions—from community-based to government—in the TAL that can facilitate project and program implementation. These include CFCCs, BZMCs, CFUGs, buffer zone community forest user groups (BZCFUGs), and cooperatives at the community level; and District Forest Offices (DFOs), District Livestock Service Offices (DLSOs), and District Agriculture Development Offices (DADOs) that are government service providers and regulators. Some institutions were formed and supported during the first phase of the TAL program to

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fill gaps for landscape-scale conservation and to expedite project implementation. The Landscape Support Unit will coordinate at national and transboundary levels.

- The TAL has gained international recognition as a successful, pioneering effort to conserve some of the world's largest and most endangered and charismatic wildlife. Several national and international conservation organizations such as NTNC, WWF, IUCN, Bird Conservation Nepal, Zoological Society of London and Fauna and Flora International, and bilateral and multilateral donors such as the Asian Development Bank, World Bank, Japanese International Cooperation Agency, SNV, USAID and DFID have recognized this and now provide financial and programmatic support to the TAL.
- Several policies and plans that were identified as important gaps have been formulated and brought into implementation. The government has recognized the need for landscape-scale conservation in Nepal, and has specifically recognized the TAL in its development plans. Protected areas management plans and species conservation action plans for several endangered species have been prepared and are being implemented. Community forest management policies and guidelines, community participation and equitable benefit sharing mechanisms for protected areas revenue sharing are included in the national policy.
- A landscape level climate change vulnerability assessment was conducted, with recommendations to build resilience and promote adaptation (WWF Nepal 2015). At the sub-landscape-scale, LAPAs and CAPAs have also been prepared and implemented.
- Indigenous people (Tharu, Sonaha, Chepang, Bankariya, Bote, Majhi, Danuwar and Mushhar) have been living in the Terai region for generations and their cultural and traditional values have evolved in response to their dependence on and use of natural resources from forests, grasslands, rivers, and wetlands. These practices can be incorporated to meet landscape-scale conservation objectives.
- Access to health, education, and transport has been increasing across the TAL. Over the past decade, the TAL program has been providing basic services to local communities to improve socio-economic conditions, especially among impoverished and underserved communities.
- Women have been active in livelihood, governance, and conservation initiatives. Their roles should be increased at all levels.
- Eco-clubs and conservation education and awareness programs have been implemented. CBAPUs have been formed through BZCFUGs and CFUGs to protect forests and their biodiversity, including endangered species such as tigers and rhinoceros that are under constant threat of poaching. Local youths have been capacitated to serve as citizen scientists and are mobilized in research and monitoring activities in critical corridors. Thus, many communities living in and around the buffer zones, and corridors are now aware and supportive of conservation objectives of the TAL. This has helped to develop stewards towards conservation of unique biodiversity of TAL.
- Market-based climate initiatives and other opportunities such as the Clean Development Mechanism (CDM) are being implemented in the TAL. The first Gold Standard Biogas Project is providing payments, and a second one is being established. There is potential for deriving benefits from Reducing Emission from Deforestation and Forest Degradation (REDD+), with the ER-PD currently under development to manage national forests through community and collaborative forest management with appropriate safeguards, and a benefit sharing mechanism that will bring economic benefits to local forest management groups. Nepal's Climate Change Policy (2011) aims to establish a national Climate Change Fund with diverse international, public, and private funding, REDD+ payments and PES (GoN/ WWF 2011). The TAL forests will play a significant role in these initiatives.

4. VISION, GOAL, STRATEGY AND ACTION PLAN

4.1. Vision

A globally unique landscape where biodiversity is conserved, ecological integrity is safeguarded, and the socio-economic well-being of the people is secured in a dynamic environment of land, water, and resource use stresses and climate change.

4.2. Goal

The overall goal of the TAL Nepal is to conserve the ecosystems of the Terai and Churia hills in order to ensure integrity of ecological, economic, and socio-cultural systems and communities.

This strategy adopts the ecosystem-based conservation approach that operates at scales necessary to capture representative biodiversity and conserve major ecological processes and services. It includes the socio-economic, political, and cultural aspects of the landscape and strives to: 1) maintain ecologically, demographically, and genetically viable populations of native species in two major complexes (Shukla-Bardia-Banke complex in the west and Chitwan-Parsa complex in the east), 2) represent all biodiversity within a system of ecologically connected protected areas; 3) maintain evolutionary and ecological processes; 4) adopt a basin/watershed approach to include and sustain ecosystem services; 5) be resilient and adaptive to large-scale environmental changes, including climate change; and, 6) accommodate human use and its occupancy within the context of sustainable development and conservation.

The second TAL Strategy (2015-2025) is based on a comprehensive assessment of progress made during the first strategic plan (2004-2014), and incorporates emerging issues and innovative approaches to conservation since the previous plan was developed. It also uses the National Biodiversity Strategy and Action Plan (2014-2020), Draft Forestry Sector Strategy (2015-2025), Forestry Sector Policy 2014 and Climate Change Policy 2011 as touchstones.

4.3. Broad Strategic Themes and Objectives

Considering the above and the priority issues that have to be addressed, the strategy for conservation in TAL Nepal in the next decade has been developed under the following three thematic areas. Key objectives for each thematic areas are given below:

Species and ecosystem conservation

Objective 1: To conserve and ensure recovery of endangered species and critical ecosystems

Forest and other land uses

Objective 2: To conserve and manage forests, grasslands, aquatic systems and agricultural land in a holistic manner

Socio-economic well-being

Objective 3: Engage local communities in successful landscape-level conservation and their well-being.

These thematic areas are supported by nine cross cutting themes:

1. **Institutional Coordination and Collaboration:** Better intra- and cross-sectoral coordination and collaboration is imperative. A critical analysis of progress during the first phase clearly indicates that there is a need for further strengthening of coordination and collaboration mechanisms and institutional capacity, and this will be done in the second strategy.
2. **Policy and Governance:** Several policy issues were addressed during the first phase of the TAL. However, gaps remain, and policy needs to be addressed in the back drop of state restructuring and emerging needs, including the process of federalization and creation of new provinces that will likely cut across TAL. Similarly, good governance practices with social inclusion and justice is crucial for effective functioning of conservation and development organizations at all levels. The components that characterize good governance have to be ensured within the government of Nepal policy framework.
3. **Local capacity building:** Capacity building in landscape level conservation among all stakeholders at all levels is essential. Since GoN agencies across all sectors, NRM groups (CFCCs, CFUGs, and BZUCs) and non-government organization (NGO) partners play a key role in landscape conservation, capacity building will be developed for climate-change integrated landscape conservation and management.
4. **Gender Equality and Social Inclusion:** There will be an increased representation of women, marginalized

and socially excluded people in TAL strategy implementation, management, administration, and governance. All decision-making bodies will actively engage women and marginalized groups for equitable representation. Gender-based violence and hardship related to natural resource management will be addressed. GESI provisions will be mainstreamed in all policies and guidelines and implemented.

5. **Infrastructure Development:** The TAL is one of Nepal's most important economic regions, with large population centers. Several large and linear infrastructures, including roads, airports, railroads, and industrial centers have been planned for the region and these will convert and fragment the remaining habitat severing ecological connectivity unless appropriate safegurads are taken. Hydropower development in the mountains will have ecological and environmental impacts downstream. The strategy will tackle these threats, working to mitigate their impacts.
6. **Climate Change:** Species and ecosystems, human communities, and economic development initiatives are vulnerable to climate change hazards resulting from changing weather patterns. A climate vulnerability analysis of the TAL has been conducted and recommendations for adaptation and vulnerability reduction have been made. These recommendations are integrated into the strategy and implementation plan.
7. **Research, documentation and dissemination:** Scientific research in all sectors is imperative to formulate, revise and update landscape level policy instruments, scientific management and implementation, and for advancing knowledge. The results generated from research and monitoring should be documented, published and shared through all modes.
8. **Awareness and Education:** Awareness and education programs have been successful in engaging local communities in landscape level conservation and development. These programs coupled with formal education have to be continued to educate the new generation and build leadership. Programs to raise awareness of policies, rights and responsibilities, and emerging issues such as climate change are also necessary and have to be continued as a priority.
9. **Sustainable Financing:** Landscape-scale conservation requires long-term investment and engagement of multiple partners, with commitment across a large spatial scale, which in turn requires sustainable financing. Thus, there is a need to create sustainable financing mechanisms.

4.4. Guiding Principles and Approach

The following principles provide guidance for action planning for the implementation of this strategy in future:

Holistic approach: The strategy will adopt an ecosystem-based approach and scale to include both biodiversity conservation and sustain socio-economic well-being of human communities.

Sustainability: The natural ecosystems of the TAL—forests, grasslands, wetlands and other aquatic systems—are important to support biodiversity, but are also important sources of essential natural resources for local communities. However, unsustainable extraction has resulted in extensive degradation of these ecosystems. The TAL strategy will emphasize sustainable use of natural resources, while empowering and granting responsibility for sustainable management to local communities.

Coordination: This strategy will be built on existing successful initiatives, with horizontal and vertical inter-sectoral coordination for efficient, conflict-free, and synergistic program implementation.

Inclusive approach: The strategy will bring all relevant stakeholders together for a consultative, consensual, democratic process to achieve TAL goals and objectives. Consultations with local communities and stakeholders will ensure a transparent, inclusive process that respects input from all relevant partners and stakeholder interests, especially at local levels as appropriate.

Adaptive approach: The strategy considers landscape management as a continuous, adaptive process that yields on-the-ground action. It will be flexible to enable effective management responses to changing conditions, and will gain understanding based on research, monitoring, assessment, feedback and experience.

Building partnerships: The strategy recognizes that conservation interventions have complex linkages, involving multiple sectors and a variety of institutions. The landscape is highly influenced by economic and infrastructure sectors as well as conservation. Therefore this strategy will integrate planning frameworks of all relevant sectors and promote partnerships at different levels.

Respecting traditional knowledge and local decision making: The strategy emphasizes recognition of traditional knowledge, planning, decision-making, monitoring and control at local levels to the extent possible and appropriate.

Equitability: The strategy will be inclusive and empower women, poor and disadvantaged in governance and implementation. It will ensure that marginalized and underserved communities have equitable access to resources.

4.5. Conservation Themes, Strategies, and Strategic Actions

Sixteen strategies have been identified to achieve the targets for 2025. These are grouped under the three major thematic groups and objectives; 1) Species and ecosystems, 2) Forest and other land use, and 3) Socio-economic well-being of TAL communities (Figures 11, 12, 13). These strategies and supporting activities are in line with the National Biodiversity Conservation Strategy and Action Plan, Forest Sector Policy and Strategy (draft), and the National Conservation Strategic Framework for Sustainable Development. They build on past successes and lessons in the TAL.

4.5.1. Species and ecosystems strategies

The TAL supports globally important populations of tiger, greater one-horned rhinoceros, swamp deer, gharial, and Gangetic river dolphin. It also provides the best opportunity to conserve Asian elephant in Nepal. The alluvial grasslands, savannas, and forests of the TAL used to support a diverse assemblage of large mammals. As an ecological assemblage these species collectively contributed to maintaining the complex system of grasslands and savannas, wetlands, wallows, and forests between monsoon floods. However, several species, especially the wild water buffalo and swamp deer, have been extirpated from most core areas, causing changes in ecosystem dynamics. The TAL also supports several large, threatened bird species, (vultures, cranes, storks, hornbills) that require conservation attention, including management of at least two viable meta populations of focal species in two major complexes - Shukla-Bardia-Banke in the west and Chitwan-Parsa complexes in the east. Efforts will also be made to recreate the historic large mammal assemblages of the Terai in selected core areas through strategic translocations.

Most of the remaining natural grasslands that represent the Terai Duar Savanna and Grassland eco-regions are now restricted to the protected areas. But there are fragments of lowland subtropical broadleaf forests that are outside the protected areas, vested within the protective custody of the Department of Forests. Many of these forests are degraded; encroachment and overgrazing by free ranging livestock threaten their ecological viability. But these forests have several rare and protected tree species such as satisal *(Dalbergia latifolia)* and bijaysal *(Pterocarpus marsupium)* that should be conserved in these forests. The Department of Forests has been engaging the local communities in conservation and management of these forests through community and collaborative forestry programs. These forests also provide opportunities for community-based conservation of several threatened species, such as goral,

pangolin, vultures, hornbills, florican, and cranes. Two major protected areas (Chitwan and Bardia NPs) and the transboundary corridors that link them with India's protected areas are associated with large river systems that support several threatened, protected aquatic species, including gharial and Gangetic river dolphin. Both species have been the focus of conservation efforts for several years. Various threats—from over-fishing and use of damaging fishing methods to excessive water withdrawals that significantly alter river hydrology—have caused population declines of both species, and continue to do so. Both species are umbrella species for many other aquatic biodiversity because of the need for unpolluted river habitats and collective use of a range of riverine habitat types; the dolphin requires deep pools and runs, whereas the gharial requires shallower pools, runs and riffles with sand banks.

Species and ecosystem targets for 2025 are to:

- Manage and conserve at least two meta-populations of each focal species (tiger, rhinoceros, swamp deer, wild water buffalo, gharial) in the TAL including: (i) at least 250 adult wild tigers representing Nepal's global tiger conservation commitment to double its tiger population, (ii) at least two rhinoceros meta-populations of more than 100 animals each in the TAL protected areas/complexes and (iii) restoration of the historical large mammal assemblage in Chitwan National Park.
- Conserve ecologically and demographically viable populations of the focal bird species (vultures, hornbills, florican, cranes, and lesser adjutant stork) in the TAL.
- Promote and establish community based species conservation areas.
- Conserve viable populations of mugger and gharials, and Gangetic river dolphin in the river systems of Chitwan and Bardia NPs and associated corridors.
- Conserve rare tree and other plant species, especially bijaysal and satisal in their original ranges in TAL.
- Conserve critical ecosystems including grasslands and wetlands in and around core areas, climate refugia and critical corridors.


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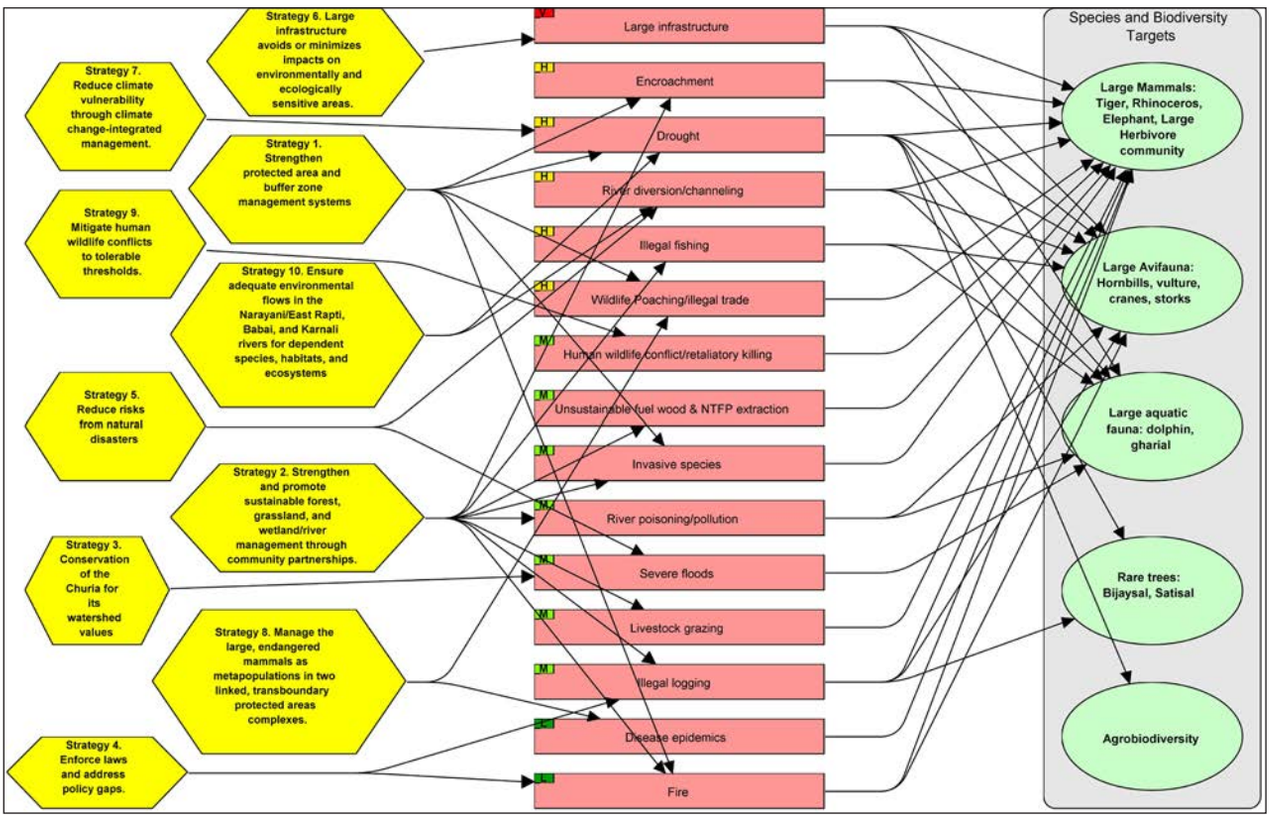

Figure 11. Species and Ecosystems targets, with major direct threats and broad strategies to address them

Strategy 1.1. Strengthen protected areas, buffer zones and corridors

- Build capacity of PAs, buffer zones and other critical forest areas
- Build capacity of enforcement agencies
- Build necessary infrastructures for protected areas and district forest offices including range posts and patrolling trails
- Implement Spatial Monitoring and Reporting Tool (SMART) patrolling, supported by cutting-edge technological advances and methods for anti-poaching activities
- Maintain and strengthen intelligence networks
- Engage community groups in information gathering on anti-poaching activities.
- Conduct periodic research and monitoring
- Maintain transboundary collaboration and dialogue to prevent cross-border trade and poaching.

Strategy 1.2. Manage the rare and endangered species of flora and fauna in two major complexes; Shukla-Bardia-Banke in the west and Chitwan-Parsa complex in the eastern TAL

- Manage at least two meta-populations of tiger and rhinoceros to reduce the risk of population extirpation and crashes due to disease epidemics, climate change hazards or other disaster.
- Translocate or reintroduce targeted species to establish founder populations and augment small populations
- Recreate original assemblages of wildlife species in their former ranges through reintroduction programs, taking into account climate change effects
- Conserve viable populations of focal bird species including vultures, hornbills, Florican, cranes and lesser adjutant stork
- Conserve viable populations of gharial, mugger and dolphin
- Establish community based species conservation areas outside PAs for gorals, cranes, pangolins and vultures
- Conserve and manage functional corridors between protected areas to allow species movements (especially tigers, rhino, and elephants).
- Inoculate livestock to reduce the risk of diseases from being transmitted to wildlife populations
- Conserve rare and protected flora in their original ranges, taking climate change effects into account.

Strategy 1.3. Protect, restore and manage critical habitats

- Control encroachment and restore degraded and encroached critical habitats
- Create, restore and manage critical water holes and wetlands
- Reduce grazing pressure from free-grazing livestock in forests and grasslands
- Engage local communities as river stewards to conserve rivers and flood plains
- Enforce regulations to prevent excessive extraction of sand, gravel and boulders from critical habitats and places
- Identify and manage critical micro-refugia, reducing non-climate stresses
- Conserve Churia range for its ecosystem and watershed values with upstream-downstream linkages
- Promote climate-smart biodiversity conservation in all community managed forest regimes.
- Prevent the spread of invasive species

Strategy 1.4. Manage grasslands, and wetlands/rivers in PAs

- Identify and manage grasslands in corridors
- Restore and rehabilitate critical wetlands
- Manage wetlands of international importance (i.e., Ramsar sites) with site specific management plans
- Conserve riparian areas, especially along designated corridors

Strategy 1.5. Create and revise policies, strategies, regulations and action plans

- Update National Parks and Wildlife Conservation Act 1973 and Forest Act 1993, and associated rules and regulations
- Harmonize conservation laws with local self-governance act
- Formulate and revise conservation action plans for focal plant and animal species
- Mainstream climate change into management plans

Strategy 1.6. Strengthen coordination among law enforcement agencies

- Strengthen coordination among law enforcement and implementing agencies.
- Capacitate front line staff
- Strengthen Wildlife Crime Control Bureau (WCCB) at local and central levels

Strategy 1.7. Mitigate human-wildlife conflicts

- Finalize and implement the national human-wildlife conflict management strategy
- Introduce innovative technologies to reduce HWC
- Establish wildlife rescue and rehabilitation centers
- Simplify HWC relief mechanism and create endowment funds
- Build institutional and frontline veterinary staff capacity
- Regularize monitoring for zoonotic diseases

Strategy 1.8. Ensure adequate environmental flows in the Narayani/East Rapti, Babai, West Rapti, and Karnali Rivers for dependent species, habitats, and ecosystems

- Undertake e-flow studies taking climate change into consideration
- Negotiate with developers, water-users and stakeholders for desired flows in the rivers to maintain the necessary ecological conditions for conservation of endangered species and their required habitats (e.g., ox box lakes, alluvial grasslands, and riparian forests) in the protected areas and corridors, including during periods of prolonged drought

Strategy 1.9. Conserve agro-biodiversity

- Encourage farmers to plant traditional native crop races to conserve agro-biodiversity
- Capacitate farmer groups to establish seed banks to store seeds of native crop races

4.5.2. Forest and other land use strategies

About 54% of the TAL is occupied by forest and 5% by shrub and grassland. Many species of forest flora are used by people for various purposes, from building materials, food and medicines to supporting livelihoods and livestock. Wetlands in this area offer excellent habitats for major flora and fauna, and support a wide range of goods and services including income generating opportunities for local people. Thus wetlands have high cultural and economic significance. The forested Churia watersheds also perform vital ecological functions by: a) stabilizing the fragile slopes and preventing erosion and landslides; b) preventing rapid rainfall run off; and c) recharging ground water in the Terai and regulating flows in the Churia rivers. Thus, conservation of forests, grasslands and wetlands are essential for maintaining biodiversity and ecosystem services, supporting the well-being of communities and promoting economic prosperity.

Nepal lost 0.57 million ha of forest between 1964 and 1991, with forest loss continuing in subsequent decades: in the Terai and inner Terai, the annual deforestation rate is approximately 0.44% (DFRS 2014). In addition to deforestation, forest degradation is also increasing. As a result, overall forest productivity is declining. Over the past 3 decades community-based forest management, including community forestry, collaborative forestry and other modalities, has been developed and promoted to harness the productive potential of forests – with a focus on local people's benefit. Private forests tend to be more productively managed but forest areas are small and scattered. There is significant potential to increase tree cover and forest production from private land to meet the growing forest product needs of the country. Therefore active forest management under all the different forest management modalities is needed to harness benefits. There should be strong coordination among all stakeholders involved in these programs. Experience from TAL has shown that involvement, engagement and partnership among communities, households, the private sector (including investors) and government is key for effective conservation of forests and their biodiversity. This strategy should be harmonized with the REDD TAL subnational project. The TAL-Nepal strategy aims to restore and conserve forests to maintain the ecological integrity and support sustainable livelihoods of the people living around it.

The proposed forest and other land use management targets for 2025 are:

- Maintain at least 40% forest areas nationally.
- Representative forests of the Terai Duar Savanna and Grassland ecoregion are conserved in the system of corridors and buffer zones of the TAL.
- Rate of forest loss is reduced and forest productivity is enhanced.
- Forests, including climate refugia of the Churia watersheds, are restored and conserved.
- Forest based entrepreneurship is institutionalized.
- Agricultural lands are managed sustainably.

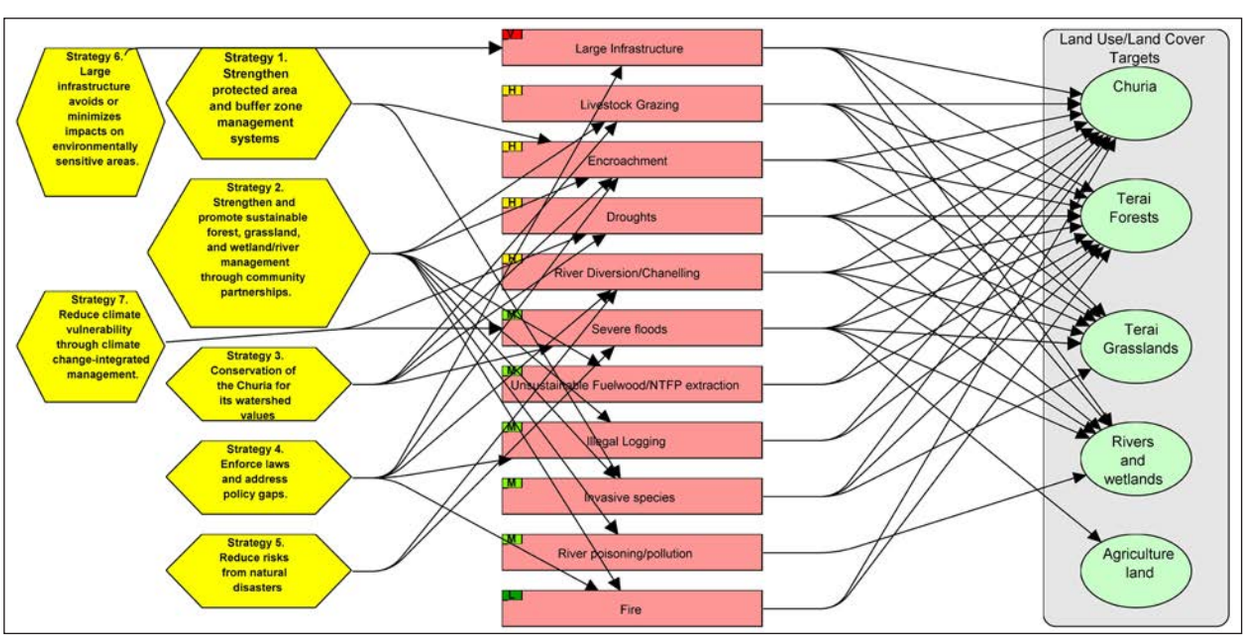

Figure 12. Forest and other land use targets, with major direct threats and broad strategies to address them

Strategy 2.1. Strengthen and promote sustainable forest management

- Support to maintain atleast 40% forest areas nationally
- Promote scientific forest management in all forest management modalities
- Build institutional capacity for government institutions for forest management
- Promote forest management with sustainable resource extraction and harvest regimes in community and collaborative forests.
- Capacitate CFUGs for forest management and biodiversity conservation
- Clarify the roles and responsibilities of the four major actors (central government, local government, community and private sector) in forest management, harvesting/production, marketing, revenue sharing and taxation (if necessary by amending the Forest Regulations)
- Encourage CFUGs to plant threatened indigenous trees, especially bijaysal and satisal
- Support implementation of Rastrapati Chure-Terai-Madesh Churia Conservation Program.

Strategy 2.2. Manage grassland and wetland/rivers outside Pas

- Identify and manage grasslands in corridors
- Restore and rehabilitate critical wetlands
- Manage wetlands of international importance (i.e., Ramsar sites) with site specific management plans
- Conserve riparian areas, especially along designated corridors
- Integrate climate change into management plans and strategies to build resilience and promote adaptation

Strategy 2.3. Manage critical sub-watersheds

- Identify critical sub-watersheds and micro-catchments in Churia range
- Prepare integrated sub-watershed management plans (ISWMPs)
- Engage sub-watershed communities to implement ISWMPs
- Promote upstream-downstream linkages

Strategy 2.4. Reduce forest loss and degradation

- Evacuate and restore encroached forest areas
- Relocate settlements from critical corridors and bottle necks, and from areas vulnerable to climate and disasters
- Prevent over grazing by livestock in forests and grasslands, with specific strategies like stall feeding and improved breed promotion
- Promote non-conventional energy sources and fuel efficient technologies to reduce firewood pressure
- Establish protection forest where necessary
- Strengthen community engagement particularly youths in protection of forests and critical river stretches

Strategy 2.5. Promote forestry in private and public lands

- Promote forests in private and public lands including urban areas and farm lands
- Build capacity in forest management
- Establish mechanism for utilization of private forest products
- Develop royalty system based on market prices for timber and international best practice
- Engage, promote and facilitate private sector production and marketing of seedlings of trees and NTFPs/MAPs
- Strengthen programs to stimulate public awareness of the economic and social benefits of private and commercial leasehold forestry
- Support effective implementation of Forest Decade Program

Strategy 2.6. Enhance, strengthen and promote networking of green enterprises

- Ensure sustainable supply of forest products including NTFPs and MAPs
- Promote NTFPs and MAPs cultivation and use
- Promote community based and private forest enterprises for livelihoods improvement and wealth creation especially for poorer people
- Promote forest-based job creation and incomes
- Give increased roles to the private sector to encourage investment in: cultivating forestry crops (including trees and NTFP/MAPs); forestry services; and forest-based enterprises and eco-tourism

4.5.3. Socio-economic well-being strategies

The TAL supports over 7.5 million people, and is one of the most densely populated areas of Nepal. Most of the population lives in urban areas, but a significant number lives close to protected areas, and in or near buffer zones and corridors. The rural populace depends on forest and river-based natural resources, but all the people in the TAL are in some way affected by impacts of ecosystem degradation and loss of ecosystem services in the TAL.

Conservation interventions should ensure sustainability of forest resources and ecosystem services, and that the benefits are accrued to a larger community of stakeholders, and not just a few. These interventions will, however, inevitably place restrictions and regulations on resource use and access, and there will also be an increase in HWC with successes in wildlife conservation. Thus, short-term opportunity costs from these constraints will become inevitable, but can be addressed through alternative livelihoods and value addition for forest and farm products, that will be a priority in TAL management.

Some communities tend to be excluded from the economic benefits and access to natural resources, and are thus under-served. The TAL management will explicitly consider the needs, vulnerabilities, and access constraints of the poor, marginalized, women and children. Community stewardship in resource management will be emphasized.

Socio-economic wellbeing targets for 2025 are:

- Buffer zone and corridor communities benefit from access to essential forest and river resources which are sourced at sustainable levels.
- TAL communities benefit from sustained water availability for their socio-economic well-being.
- Economic development is sustainable and climate-smart.
- Communities benefit from disaster risk reduction and disaster preparedness.

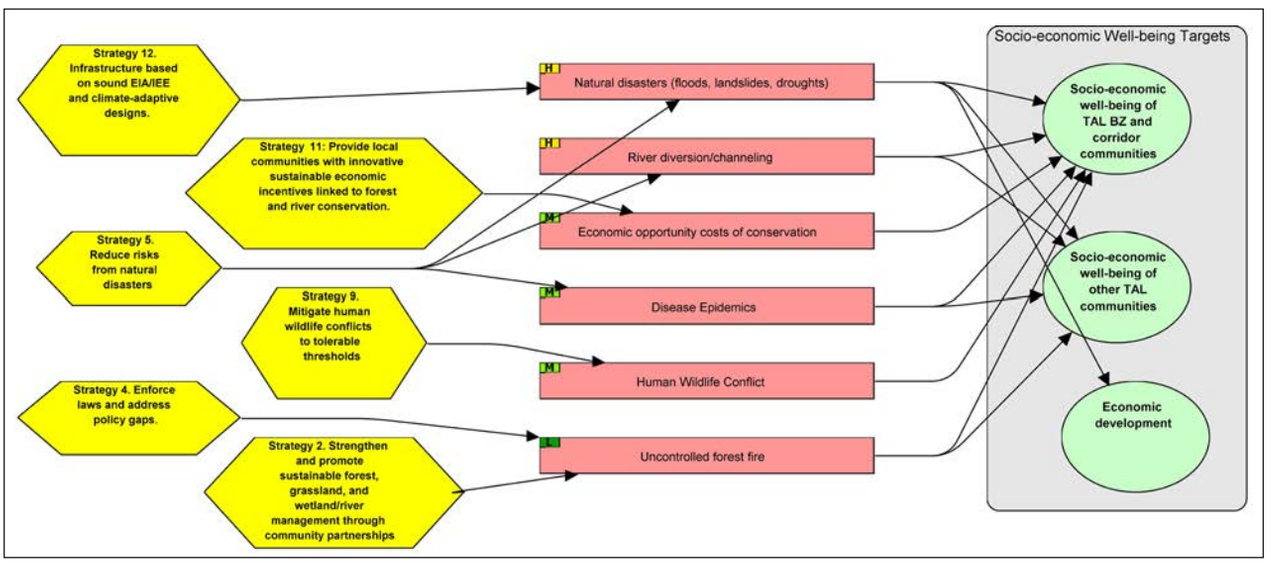

Figure 13. TAL community socio-economic wellbeing targets, with major direct threats and broad strategies to address them

Broadly speaking, sustainable development of the landscape will be achieved through: production based economy where appropriate service sectors are developed, forest based entrepreneurship is enhanced; agriculture activities appropriate for proximity to wildlife and forests are designed and implemented; mechanisms for balanced supply and demand of natural resources are well developed and implemented; equitable sharing of natural resource and ecosystem benefits is promoted; the risk of disasters is reduced including through restoring or maintaining ecosystem services; and climate change is strategically integrated to build resilience and promote climate adaptation.

Strategy 3.1. Provide local communities with innovative and sustainable economic incentives linked to forest and river conservation.

- Promote green enterprises, such as nature-based tourism
- Identify opportunities for PES and strengthen PES mechanisms
- Establish benefit sharing from CDM/ REDD+
- Enhance off-farm livelihood options
- Scale up credit schemes for small and medium sized enterprise start-ups
- Promote sustainable fisheries
- Scale up NTFP/MAP production for processing and value addition
- Mainstream gender equality and social inclusion, and governance
- Build individual and community skills for the green enterprise sector
- Promote holistic disaster risk reduction and disaster preparedness with adaptation and mitigation
- Raise awareness about climate change and ways to build resilience and adaptation

4.5.4. Enabling conditions and cross-cutting themes

Institutional coordination and collaboration

A critical analysis of the outcomes from the first TAL strategic plan indicated that there is a great need for inclusion and engagement of a wider range of stakeholders and partners for efficient and effective interventions in the TAL. A coordination committee representing sectoral ministries should be established at the central level under the chair of the Secretary, Ministry of Forests and Soil Conservation (MoFSC). The Landscape Support Unit (LSU) at MoFSC will be strengthened and operationalized to ensure that any land use allocations and changes will be assessed against the TAL goals and objectives before decisions are made. The LSU will also coordinate donor investments in the TAL for strategic resource allocations, using the TAL strategic plan as a guide. Effective coordination and collaboration will also be maintained among national and international conservation and development partners.

The TAL is a transboundary conservation landscape. Many corridors transcend the international border between Nepal and India. Both wildlife and poachers move across the border. Infrastructure along the border on both sides affects TAL's ecological viability. Resolution of these issues requires transboundary collaboration and dialogue. Over the past decade transboundary collaborative mechanisms have been established, and regular meetings between officials at local and central levels have been held to discuss these transboundary issues. The following actions are proposed to strengthen and maintain these important ties:

- Strengthen Landscape Support Unit
- Establish a coordination committee at the central level with multi-sectoral representation.
- Build capacity of local institutions
- Strengthen transboundary cooperation and collaboration.

Governance and policy

Several policy achievements were made during the first strategic plan period. However, there are some policy gaps in the areas of climate change adaptation and resilience building, land use planning, infrastructure development and legal recognition of wildlife corridors. With the planned shift towards decentralization, governance has been explicitly identified as a key crosscutting thematic area. As there is uncertainty about the specific structures and functions resulting from the decentralization process, the policy instruments need to be adaptive, and the case for maintaining the integrity of TAL across the new provinces should be made strongly. The strategy will be aligned with the Environment Friendly Local Governance guidance. Local community groups will be educated on good governance practices, with transparency and accountability in decision-making. The following strategic actions have been proposed for policy provisions and strengthening of governance in NRM sectors:

- Formulate policies to address emerging issues of climate change, landscape scale resource management, and land and resource governance with decentralization
- Strengthen good, transparent and accountable governance practices among stakeholders.
- Support implementation of land use policy and plan.
- Discourage conversion of forest land for other use.

Local capacity building

Conservation management in the TAL will include stakeholder engagement and stewardship, from local governments to community groups. The capacity of these stakeholder groups, such as government, conservation partners and implementing agencies (CFCCs, CFUGs, BZUCs, NGOs etc.) will be developed for climate-change integrated landscape conservation and management.

- Provide training to GoN staff in landscape level conservation through higher education, exposure visits, and participation in meetings, seminars and workshops
- Provide training opportunities, landscape-wide seminars and workshops, and study tours to local community groups engaged as conservation stewards (e.g., CFUGs, BZUCs, CBAPUs, NGO partners) to increase knowledge, awareness, and analytical capacity.

Gender Equality and Social Inclusion

The representation and roles of women in governance, administration, and implementation will be strengthened. The poor and marginalized communities will also be included in forest and livelihood processes, with adequate representation in decision making mechanisms. These groups will be provided training in governance, and awareness of issues. The following strategic actions have been proposed to address mainstreaming of gender equality and social inclusion:

- Strengthen engagement and roles of women, poor and marginal communities in landscape conservation at all levels
- Increase leadership roles of women, marginalized and socially excluded people in NRM group decision making bodies
- Reduce gender based violence related to natural resource management
- Mainstream and implement GESI provisions on policies and guidelines.

Infrastructure

There is need for better understanding among

stakeholders and development sectors of the concept and need for sustainable infrastructure development and conservation. It is imperative to build inter-sectoral coordination and collaboration to avoid planning and designing infrastructure that has adverse impacts on landscape level conservation, particularly in and near protected areas, critical corridors, and ecologically and geologically fragile and environmentally sensitive areas. Thus, emphasis will be geared towards promoting conservation friendly and climate smart infrastructure with the following strategic actions:

- Avoid new large and linear infrastructures (highways, railway lines, power lines, irrigation canals, dams, industrial zones, settlements) in protected areas and critical corridors
- Ensure that any infrastructures in protected areas, buffer zones, and corridors are conservation friendly in design and operation: e.g. ensure ecofriendly engineering designs to prevent disruption of ecological processes, such as viaduct structures (underpass and overpass) to allow safe movement of long ranging species such as tiger, elephant, rhino etc.
- Strictly regulate and monitor gravel and boulder extraction from river systems to avoid adverse environmental impacts
- Ensure EIAs and IEEs are of good quality, and ensure investment for EIA and IEE identified mitigation measures; once strategic environmental assessment (SEA) provisions are in place, ensure SEAs for large-scale and complex developments
- Ensure infrastructure design and operation takes changing climate conditions into account

Climate change

The Terai region is already experiencing climate change hazards including more frequent severe floods, prolonged droughts, and irregular seasonality. In some cases these hazards are exacerbated by bad land-use practices such as deforestation. The hazards cause loss of life, severe damage to infrastructure, economic hardships to people, and affect cultural practices and social harmony. The changing weather patterns will also affect the biodiversity of the TAL (for example, greater forest fire risk during prolonged drought periods; loss of dry season water sources for wildlife). Thus, proposed strategic actions to reduce vulnerability and increase resilience to climate change include the following:

- Conduct awareness programs of the potential risks from natural disasters due to ecosystem degradation and climate change
- Build institutional capacity to address climate change impacts and hazards such as flood, fire and drought
- Conserve and restore riparian areas that can buffer against flooding and river cutting
- Conserve and reforest upstream/upriver watersheds to naturally regulate streamflow, reducing the risk of flash floods, erosion, and landslides, and maintaining dry season flows
- Reduce the risks of disease outbreaks following natural disasters by promoting good health and sanitation practices and ensuring access to medical services
- Identify safe areas to which climate affected or climate vulnerable people can temporarily or permanently relocate in a planned way and as a proactive measure; include these shelter areas in district and river basin land use plans to create safer villages
- Encourage farmers to plant climate resilient, traditional crops and keep climate resilient livestock breeds for their ecological zones
- Provide reliable weather forecasting services to farmers
- Establish reliable early warning systems and ensure people's acess to these systems
- Create a climate change adaptation zone that includes the climate resilient habitats and climate corridors along the northern flanks of the Churia and the inner valleys between the Churia and Mahabharat ranges
- Promote planting of tree species that are likely to thrive in specific agro-ecological zones as climate change advances; encourage CFUGs to plant indigenous trees, especially bijaysal and satisal, in climate resilient and refugia community and collaborative forests
- Reduce climate vulnerability of irrigation systems
- Monitor climate impacts on wildlife, natural systems and human communities
- Integrate climate change resilience building and adaptation into management plans, strategies and local government planning

Research, documentation and dissemination

Research is key to policy development, scientific management and implementation, and for advancing knowledge. Thus a research program to investigate and gather information for adaptive management is essential. The outputs and outcomes of implementation should also be documented and published. The following strategic actions are proposed:

- Conduct periodic monitoring of key species of flora and fauna
- Undertake research on species and ecosystem function and dynamics
- Study potential adverse impacts of climate change and infrastructure in ecological and human communities
- Promote non-invasive genetic studies
- Promote cutting edge technology in research and

monitoring
- Undertake studies on land use land cover and functions of corridors
- Support presentations and publications in scientific and technical forums

Awareness and education

Awareness and education are a priority to ensure that people in TAL, across Nepal, and internationally are aware of the importance of the TAL. The following activities will be continued to ensure that: school children in the TAL are well educated in conservation and are aware of the importance of conservation in the TAL; and national and international awareness is raised of the importance and successes of TAL as a conservation landscape:

- Continue education and awareness programs in schools and eco-clubs, taking account of turn-over of students
- Recruit alumni as future educators
- Engage eco-clubs and members as citizen scientists, and network them for landscape-scale perspectives through seminars, meetings, exchange visits, and other fora
- Engage communities in ecosystem and landscape level conservation initiatives through hands on practices, exposure visits, workshops, and interactive meetings
- Engage conservation experts and professionals to educate key stakeholders including decision-makers at different levels
- Present the TAL successes and its importance as a climate-integrated conservation landscape through national and global media and forums

Sustainable financing

Sustainable financing to implement the conservation programs in the TAL is essential. Many conservation interventions require long-term engagement for outcomes. Financing and implementation through short-term projects is not a viable approach to achieve results at this scale. The TAL forests and rivers play critical roles in providing a plethora of environmental and ecosystem services and other forest and river-based natural capital. These benefits serve TAL communities and Nepal's national economy (e.g., water, agriculture support). They also have regional (e.g., water) and global benefits (e.g., REDD+, carbon sinks). Therefore, innovative financing mechanisms based on this natural capital will be developed to support conservation in the TAL.

- Develop REDD+ subnational project
- Initiate Second Gold Standard Biogas Project
- Promote PES projects in TAL including ecotourism
- Promote sustainable harvesting and value addition of natural resources
- Explore opportunities for wildlife premium payments in conjunction with the REDD framework

5. EXPECTED OUTCOMES

Expected outcomes of this strategic plan are:

Outcome 1: The biodiversity and ecosystems of the TAL are conserved, with viable populations of key flagship species, such as tiger, rhinoceros, dolphin, gharial, and vultures and supporting ecosystems and ecosystem processes maintained. This will be achieved through conservation and recovery of key species populations; protecting and managing biodiversity hotspots and core areas; and maintaining ecological connectivity. Conservation at the landscape scale will be achieved through strategic partnership between government, non-government, and local community groups.

Outcome 2: Strategic forests, grasslands, and wetlands that contribute to the TAL goal will be conserved in the protected areas and sustainably managed in corridors and buffer zones, without conflicting land use. This will be achieved through community participation and stewardship, and include climate change-integrated management. The productivity of existing agricultural areas will be increased to provide better yields, rather than increased the agricultural estate through conversion of natural forests and grasslands. The REDD+ program will be implemented to encourage forest conservation and management, while bringing economic revenue to local communities.

Outcome 3. Socio-economic well-being of TAL community and private sector is assured. This will be achieved by empowering local communities to manage their natural resources sustainably, and promoting sustained ecological services; providing improved natural resource-based, on-farm and off-farm livelihoods; and reduced HWC. The private sector will be engaged in green enterprise development, value addition locally, networking, and marketing of the products.

Outcome 4: Good governance practices in place. This will be achieved by strengthening and developing organization capacities; organizational restructuring; strong inter-sectoral coordination mechanisms; training and awareness programs; supporting policy; and empowering and engaging women and marginalized groups.

Outcome 5: Risks and vulnerabilities to ecosystems, people, and infrastructure from natural disasters and environmental changes, including those due to climate change reduced. This will be achieved through climate resilience building and adaptation, and disaster risk reduction strategies.

Outcome 6: Infrastructure in the TAL made climate smart and 'greened' to minimize environmental and ecological impacts. This will be achieved through climate resilient, 'green' engineering designs and appropriate operation and maintenance of infrastructure, including retro-fitting existing infrastructure; and sound EIA and IEE practices that consider climate change impacts and the goal of the TAL, with SEA on a larger scale once provisions are in place.

Outcome 7: Sustainable financing for TAL conservation. Innovative sustainable financing mechanisms will be developed and institutionalized. Landscape level conservation planning and investment is a national and sub-national priority. This includes several opportunities through PES including REDD+, ecotourism, wildlife premium, and payments for ecosystem services in the water catchments of Churia.

6. FINANCIAL PLAN

The TAL will secure funding from the following major sources: a) locally generated from traditional sources; b) generated from innovative approaches; c) government support; and d) external assistance.

- **Locally generated revenue from traditional sources:** These revenues will be generated from the TAL natural capital. It will include funds such as: from the sale of forest products sustainably extracted through community-managed forests; and nature-based tourism. It also includes the revenue from local governments (DDC and VDC). Apart from this, resources spent by CFUGs, in terms of their labor and expenditure on forestry activities are also considered as internal sources. Local revenues include: revenue from sale of forest products adopting block forest management and other modalities of participatory forest management; DDC/VDC allocated funds for forest-sector development; revenue received from DFO (DDC receives 10 percent of revenue); sale of sand, stone, gravel and boulders from authorized sites; the DDC annual budget; resources (human and financial) spent by CFUGs on forestry development; and CFUG contributions as part of their income generated from surplus sale of forests products.

- **Sustainable financing from innovative approaches:** Because of the importance of sustained financing for TAL conservation activities, innovative revenue generation strategies based on the TAL natural capital are needed. Already, there is one Gold Standard Biogas project receiving payments for avoided emissions from firewood, and a second in development. The TAL subnational REDD+ project is under development and should become operational during the period of this plan. There is good potential for other PES schemes in TAL, for example linked to water supplies, and flood and sediment reduction in the Churia. Potential buyers include downstream industries (many of Nepal's industries are based in TAL); municipalities and villages; and farmers. There is an opportunity to explore "wildlife premium" payments for local communities charged with conserving and restoring forests, involving payments for conserving biodiversity. It could use the same distribution systems as REDD+ finance to ensure that funds are monitored and equitably distributed (REDD Cell 2014). These and other opportunities will be investigated and promising ones developed, piloted, and implemented over the next 10 years. When testing new and innovative ideas, there is the likelihood that some will fail. However, without taking such chances, there will be no progress. The TAL has been a pioneer in landscape conservation where many new approaches have been tested. This bold stance will continue, including with sustainable funding.

- **Government support:** The Government of Nepal will provide regular budgetary support to line agencies for development expenditure and to meet salary and administrative costs. Development expenditure will be mobilized for implementation of various programmatic activities proposed in the plan.

- **External assistance:** Since TAL is unlikely to become entirely self-financing during the period of this plan, there will still be an important role for external assistance, especially in the early years, through: a) grants and loans from multi-lateral and bilateral organizations; b) contributions from I/NGOs/CBOs, private sector and individuals; and c) externally funded projects operated in the districts.

Considerable investment is required to move towards achieving the TAL Vision. A total of NRs 28,111 million has been proposed to implement the TAL strategy 2015-2025. Budget allocation under different themes and crosscuttings is given below, in Nepalese Rupees (NPR) and US dollars (USD):

Themes and cross cuttings	Million NPR	Million USD
Themes		
Biodiversity and ecosystems	7,900	79
Forest and other land uses	7,622	76
Socio-economic wellbeing	5,249	52
Cross-cuttings		
Institutional coordination and collaboration	1,202	12
Policy and governance	565	6
Local capacity building	108	1
Gender Equality and Social Inclusion	362	4
Infrastructure	2,078	21
Climate change	1,956	20
Research, documentation and dissemination	559	6
Awareness and education	172	2
Sustainable financing	267	3
Planning, monitoring and evaluation	72	1
Total	**28,111**	**281**

Note: *exchange rate USD 1 = NPR 100*

Based on the current level of investment in the TAL from various sources, it is likely that about one third of the estimated budget will be available. Therefore, additional fund-raising will be required to implement many of the activities to achieve all conservation targets. Thus, if this TAL strategy is to be implemented, an annual stock-taking of priority interventions should be made using the strategic plan as a guide, and funds should be raised for these activities. A logical framework is provided in Annex II.

The Landscape Support Unit will take a lead role in prioritizing and formulating projects and programs in collaboration with the relevant line agencies and target groups. External fund-raising will be undertaken by identifying strategic donors, taking into account their respective mandates, areas of interest, and previous commitments and contributions to conservation in the TAL.

7. IMPLEMENTATION MECHANISM

7.1. Coordination and Implementation Arrangements

The plan proposes a coordination and implementation management arrangement to ensure full and effective implementation and monitoring of the TAL 10-year strategy and plan (Figure 14). The activities under the TAL Plan will be implemented by government and partners at different levels. Both implementers and beneficiaries will have a clear understanding of the links between site level activities and the landscape as a whole. Activities under the TAL Plan will be implemented through the existing institutional framework of the local and central government. The proposed framework will ensure better landscape-wide linkages and coordination among inter-sectoral agencies to: a) prevent conflicts in land and other resource use and allocation; and b) ensure coordinated focus of funds and projects on a priority basis. These arrangements should be reviewed in light of the new Constitution and provincial boundaries, as there will be major implications for TAL coordination.

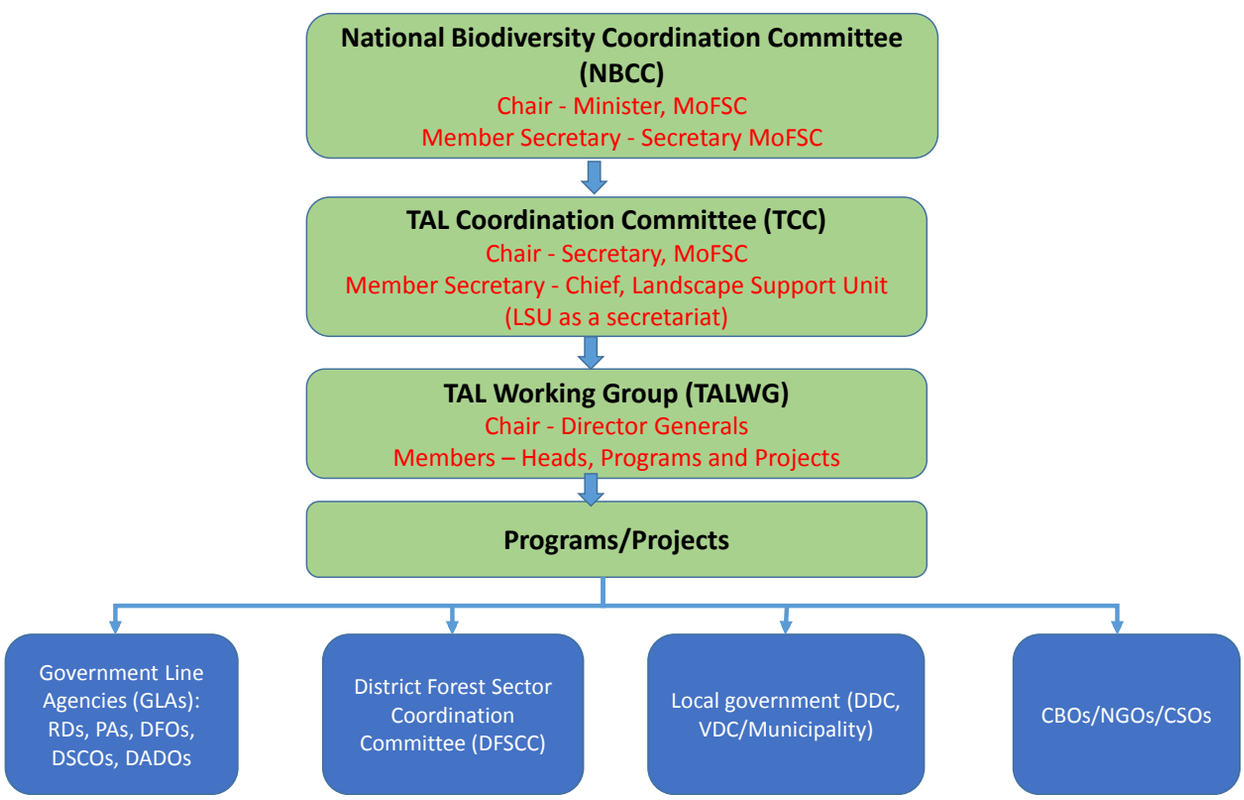

Figure 14. Coordination and implementation mechanism

Since conservation in the TAL will involve multiple partners with different working modes and interests, this strategic plan proposes a flexible, adaptive management and monitoring framework. The proposed Framework of Implementation is, to a large extent, concordant with the management structure proposed in the previous strategic plan; however, partner management structures and the work that contributes to the vision of TAL will be analyzed at a landscape level. The various institutions that will be involved in the TAL management structure are described in the following sections. The actors and their major roles in the implementation plan are presented in Table 7 and 8.

Table 7. Actors and major roles in plan implementation

Actors	Key roles
Government	Enabling policy, facilitation, coordination and monitoring, program implementation, service delivery
Local government bodies	Coordination, partnership, financial support, creating enabling policy, joint planning and coordination
Conservation partners	Financial assistance, technology development and transfer, implementation, capacity building, research and knowledge development
Private sector	Entrepreneurship development, business linkages, partnership, conservation finance
Community institutions and networks	Management implementation, direct beneficiaries, partnership and resource leverage

Table 8. Roles of the different government institutions

Level	Type of institution	Institutions	Key roles
National	Ministries, departments	Ministry of Forests and Soil Conservation, Ministry of Agriculture Development (MoAD), Ministry of Federal Affairs and Local Development (MoFALD), Ministry of Industry, DoF, DNPWC, DSCWM, Department of Industry, Department of Agriculture Development, etc.	Leadership, priority setting, budget allocation, enabling policy
Regional	Regional directorates	Regional Forest Directorates, Regional Agriculture Directorates, etc.	Leadership, monitoring and guidance
District	Line agencies, PA offices	DFO, District Soil Conservation Offices (DSCOs), DADOs, PA offices etc.	Planning, technical support, capacity building, implementation support
VDC/ Village	Community	Community institutions	Implementation

National Biodiversity Coordination Committee:

The National Biodiversity Coordination Committee (NBCC) is the main institutional entity for coordination and monitoring of biodiversity related programs at the national level. The NBCC is a 27-member body chaired by the Minister for Forests and Soil Conservation, and represented by the government, academic sectors, independent experts and I/NGOs (Table 9). This will also oversee and provide policy directives at the landscape levels.

Table 9. Composition of National Biodiversity Coordination Committee

	Designation and Organization	Position in NBCC
1	Honorable Minister, Ministry of Forests and Soil Conservation	Chairperson
2	Honorable Member (Agriculture and Rural Development Portfolio), National Planning Commission	Member
3	Secretary, Ministry of Agricultural Development	Member
4	Secretary, Ministry of Science, Technology and Environment	Member
5	Secretary, Ministry of Federal Affairs and Local Development	Member
6	Secretary, Ministry of Energy	Member
7	Secretary, Ministry of Commerce and Supplies	Member
8	Secretary, Ministry of Physical Infrastructure and Transport	Member
9	Secretary, Ministry of Finance	Member
10	Professor, Tribhuwan University*	Member
11	Professor, Agriculture and Forest University*	Member
12	President, Federation of Nepalese Chamber of Commerce and Industry	Member
13	Senior Official, National Foundation for Development of Indigenous Nationalities	Member
14	Chairperson, Nepal Federation of Indigenous Nationalities	Member
15	Country Representative, IUCN Nepal	Member
16	Representative of a conservation I/NGO*	Member
17	Chairperson, FECOFUN	Member
18	Chairperson, National Federation of Buffer Zone Development Council	Member
19	Chairperson, National Federation of Private Forestry	Member
20	Representative from Farmer Groups/Associations*	Member
21	Two independent biodiversity experts (at least one woman)*	Members (2)
22	Coordinators of thematic sub-committees on Forest and Protected Areas; Agrobiodiversity; Biosecurity; and Monitoring and Evaluation	Members (4)
23	Secretary, Ministry of Forests and Soil Conservation	Member Secretary

** As nominated by the NBCC Chairperson.*

Landscape Coordination Committee:

A multi-sectoral high-level landscape level Coordination Committee will function as the convergence point for landscape level coordination in the ministry. This will be a standing committee with representatives from all major partners working in the landscape. It will be responsible for examining the linkages and contributions of individual projects or programs towards realizing the landscape vision.

This committee will represent all stakeholders. To make it functional and manageable, the composition for the committee is proposed as shown in Table 10. The following roles have been identified:

- The Secretary, MoFSC, will chair this committee to make sure that its main role of coordination is achieved by mainstreaming with government programs and priorities.
- Chief, Landscape Support Unit, MoFSC will serve as committee Member Secretary.
- Other members of this committee will comprise representatives from relevant ministries, donors, implementing organizations, NGOs and the private sector.

The responsibilities of Landscape Coordination Committee will be to:

- Provide strategic direction to the programs implemented in all the landscapes in the country
- Identify priority areas and take decisions related to integrated landscape management issues
- Assess proposals for new policies, and facilitate their development
- Ensure stakeholder coordination
- Strategically involve new and prospective donors and partners interested in supporting Landscape activities
- Communicate and market the landscape visions
- Provide guidelines to sectoral ministries and DDCs for integrated landscape planning and program implementation
- Approve programs and budget
- Review and monitor the work of landscape working groups including DFSCC

Table 10. Proposed composition of Landscape Coordination Committee

Representation	No	Position	Remarks
Secretary, MoFSC	1	Chairperson	
Chief, Landscape Support Unit	1	Member Secretary	
Government agencies	8	Members	National Planning Commission, MoAD, MoFALD, Ministry of Water Resources, Division Heads and Regional Directors (RDs) of MoFSC
Department heads	4	Members	DOF, DNPWC, DOA, DSCWM, District Irrigation Office (DIO)
Donors		Members	All donors in the landscape (DFID, USAID, SNV, UNDP; this may change over time)
I/NGOs		Members	WWF, IUCN, NTNC and BZMC
Representatives from networks and forums	2	Member	As nominated by MoFSC
Private sector	2	Member	One person of national repute to be nominated by MoFSC
Other stakeholders	1	Member	One institution from TAL to be nominated by MoFSC
Chief, LSU	1	Member Secretary	

TAL Working Group (TALWG):

The TALWG will function as a main coordinating body. The Director Generals of the concerned Departments will act as co-chair and the heads of the programs and projects implementing organizations will serve as the members. The TALWG will designate the member secretary as and when needed.

Responsibilities of TALWG:

- Coordinate overall programs/project implemented in TAL
- Facilitate implementation of programs/projects
- Provide relevant information to Landscape Coordination Committee in a timely manner so it can make informed decisions
- Facilitate coordination among TAL partners within government and outside
- Communicate regularly with all TAL based programs/ projects to share directives/decisions of Landscape Coordination Committee with regular monitoring to ensure that the directives are being followed
- Promote regular dissemination of information and engage in dialogue with respect to GON policies relevant to TAL and it's for programs/projects
- Carry out joint monitoring of programs/projects

District Forest Sector Coordination Committee (DFSCC):

No new structures or committees have been proposed at the district level. Instead, currently functioning institutions can be used to fulfil the required TAL management and coordination roles. The Local Self Governance Act planning framework can be used to implement landscape-level planning. DFSCC as a multi-stakeholder forum can carry out the collaborative processes of landscape planning in the districts. The DFSCC will provide a forum for consultation and collaboration among organizations working in the landscape, and take the lead in coordinating activities for landscape planning. It can also promote synergies and partnerships among the member organizations during this process. But the composition of the existing DFSCC members should be revised to represent all stakeholders working in the economic and infrastructure sectors, which will affect landscape planning. Table 11 provides suggestions for the composition of the DFSCC[1].

[1] *Revised to reflect the changed context and address landscape planning.*

Table 11. Suggested composition of the DFSCC

SN	Members	Position
1	Chairperson, District Development Committee	Chairman
2	Woman member of DDC	Member
3	Secretary, DDC (Local Development Officer)	Ex-officio member
4	Representatives of political parties within the district	Member
5	Chief Warden/Assistant Warden	Ex-officio member
6	Chief, Women Development Office	Ex-officio member
7	Chief, District Agriculture Development Office	Ex-officio member
8	Chief, District Livestock Services Office	Ex-officio member
9	Chief, District Technical Office	Ex-officio member
10	Chief, Land Reform Office	Ex-officio member
11	Chief, District Cottage and Small-scale Industry Office	Ex-officio member
12	Chief, District Soil Conservation Office	Ex-officio member
13	Chief, District Plant Resource Office	Ex-officio member
14	Two representative of NGOs working in biodiversity conservation	Member
15	Two representatives, forest users groups (including one woman)	Member
16	Representative, forest based industry, designated by District Federation of Commerce and Industry	Member
17	Representative, District VDC Federation	Ex-officio member
18	Representative of Municipality	Ex-officio member
19	Coordinator of the subject-wise plan formulation committee of DDC	Member
20	District Forest Officer	Member-Secretary

Beyond the general roles and responsibilities of the DFSCC, the following additional ones have been added related to integrated landscape planning:

- Provide strategic direction for plan implementation in the district, and coordination with landscape-level processes
- Develop polices for integrated landscape planning
- Review the program based on the guidelines provided by the TALWG and sectoral ministries, and identify priority areas (thematic, programmatic, and spatial)
- Take decisions related to integrated landscape management issues
- Provide programmatic guidelines and priority areas to relevant district level sectoral agencies, conservation partners and other external projects for integrated landscape planning and program implementation
- Provide instructions/guidelines to VDCs/integrated planning committee about integrated landscape planning
- Approve programs and budget
- Prioritize programs and submit to sectoral committees of DDCs for endorsement and necessary action
- Review and monitor the work of VDCs and their sectoral agencies
- Facilitate inter-agency coordination among the stakeholders

DFSCC meetings will be organized as per the DFSCC guidelines of the MoFSC. As member secretary of a DFSCC, the District Forest Office will function as the secretariat of the DFSCC. District working groups will be formed to provide technical backstopping support to the DFSCC secretariat.

7.2. Annual Program Planning Process

The annual program planning will be participatory. With the help of local stakeholders including local government agencies, NGOs, CSOs, CBOs and community, the field units of the concerned programs/projects will prepare integrated plans. These plans will be shared with DFSCC and regional planning meetings, and will be submitted to concerned central authorities of the respective Programs/Projects. The final plan will then be implemented by the concerned filed offices of the Programs and Projects in close coordination of TALWG and local government agencies.

8. MONITORING, EVALUATION AND KNOWLEDGE MANAGEMENT

8.1. Monitoring

Many activities under the TAL Strategic Plan will be implemented across the landscape by local government agencies and different partners. It is therefore imperative that the impact of the projects and activities made at specific site levels are monitored through a landscape-scale lens to ensure that the activities complement each other and produce a synergetic effect towards realizing the vision of TAL.

Three types of monitoring mechanisms are identified for the monitoring of the projects and activities under the Strategic Plan. These are:

- Mechanism to monitor the activities
- Mechanism to monitor the outputs
- Mechanism to monitor the outcomes and impact

For each one of these mechanisms, the responsibility and indicators are described as follows:

Activity monitoring: The activities identified under annual plans will be monitored by the respective agencies responsible for implementation. These agencies include the community based organizations, district government line agencies (DFOs, Park offices, DSCOs, DAOs), I/NGOs, and other service providers.

Activity monitoring will be through field observation and assessment of the implementation process. The baselines against which the activity monitoring will be made are annual plans. One of the important aspects of activity monitoring is monitoring implementation processes. Client satisfaction will be another fundamental dimension under activity monitoring. An indicative checklist of actions to be taken during the activity monitoring is presented in Table 12. A standard monitoring format must be developed for monitoring activities. Each implementing agency or program or project will adjust the format to suit their individual requirements.

Table 12. Checklist of actions to be taken during the activity and output monitoring

Rationale	Activity Monitoring	Output Monitoring
Baseline to compare	• Undertake baseline survey and annual plan of operation (activities, financial benchmarks)	• Output indicators from TAL log frame
When to do	• During the implementation or immediately after implementation of the activities (annually, or more often)	• After the implementation of activities
Measurement parameters	• The process of implementation of the activities • Adherence to technical and social standards • Time, funds, material and other resources involved	• Indicators in log frame • Adherence to technical and social standards (process)
Recommendation	• Corrective measures for the remaining period of the year • Corrective measures for the following years • Results for action learning • Resource optimization	Reinvention or continuation of the ongoing process • Results for action • Learning • Resource optimization

Rationale	Activity Monitoring	Output Monitoring
Process	• Field observation • Measurement of performance • Assessment of the process • Interviews with beneficiaries • Photography (dated)	• Field observation • Measurement of outputs • Interviews with key beneficiaries • Assessment and analysis
Responsibility	• Agency for implementation • District line agencies • RDO (occasionally) • Service providers	• RDO (generally) • Central level agencies (Monitoring and Evaluation (M&E) Division of MoFSC and departments) • Joint effort across donors, implementers • Service providers • TAL Support Unit
Where the information will be communicated and utilized	• Annual report • Annual planning process • Output level monitoring team • Line agencies across the landscape • Database	• Annual report (projects/ departments) • Project planning and adaptive management • Project logframe • Fund raising • Global forums (network, commitment) • Management of information system

Output monitoring: Output level monitoring is made at a higher level. The TAL log frame will be the basis for monitoring outputs under the TAL Strategic Plan. Field assessments will be made for indicators to the extent possible. Table 12 above depicts the actions and anticipated results of an output monitoring process. A common format for all partners will be developed for output level monitoring.

Monitoring logic: The entire TAL program will be managed according to the principle of adaptive management. Therefore, action learning, best practices, and successes and failures will be documented. These lessons will be incorporated into the adaptive management process. The highest degree of transparency will be maintained through joint monitoring of the activities and outputs across the program. Work plans and implementation plans will constitute an integral part of program implementation. The results of the monitoring will be made available to all the development partners so that they may also learn from the implementation of the TAL programs, adopt proven successful approaches, and avoid trying approaches that have already been found to be unsuccessful.

8.2. Evaluation

The schedule for TAL implementation evaluation is provided in Table 13. The evaluation will be done in presence of the representatives from the civil society to make the interventions more transparent.

Table 13. Evaluation plan for the TAL Strategy and Implementation Plan

SN	What		When	Who
1	Midterm Evaluation	Year 5	Independent team headed by an external (international) facilitator	
2	Final Evaluation	Year 11	Independent team headed by an external (international) facilitator	

8.3. Knowledge Management

A database and its management is an essential part of a complex monitoring plan. The TAL is a vision projected over 50 years, and the TAL Strategic Plan is for 10 years. If a proper database is not maintained, the learning and experience of the entire implementation process will not be documented properly for eventual assessments and evaluation. In order to keep track of the development of the process over the long period it is necessary that a comprehensive database is established, maintained, and supported.

The LSU will be responsible for information collection, to store and analyze data, and ensure that the database is updated and managed. However, at a higher level, a Forestry Sector Management Information System (MIS) Team consisting of representatives from the key landscape partners will be formed to streamline and validate the database. The Forestry Sector MIS Team will be formed under the leadership of the M&E Division of the Ministry. This team will be a permanent standing body with strong links to the TAL support unit. The major responsibility of the team will be to develop and manage a comprehensive database for the landscape. The team will thus collect, collate and validate TAL level data.

The LSU will maintain both spatial and attribute data. Landscape level partners will share their spatial databases with the LSU in order to build up the capacity of the unit in the beginning. Similarly, the LSU will also collect and collate attribute and spatial data from all partners. The Forestry Sector MIS team will validate and verify the integrity of such data.

Data from partners will be shared freely. The LSU will maintain an intranet with access to registered users to share the information among the partners of TAL. The major objective of the TAL Intranet will be to provide and obtain feedback in a continuous manner to share and update information.

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ACTION PLAN

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
1. Species and Ecosystems						
1.1.	**Strengthen protected area, buffer zone and other critical forest area management systems**					
	Strengthen capacity of protected area officials and local community on protected area management	Event	360	50,000	18,000,000	180,000
	Strengthen capacity of the BZ institutions including community based organizations on institutional development, governance, planning etc.	Event	360	100,000	36,000,000	360,000
	Strengthen law enforcement capacity of protected area officials	Event	90	300,000	27,000,000	270,000
	Strengthen surveillance and monitoring capacity of protected area (watch tower construction, culverts, road construction repair and maintenance etc.)	No	720	100,000	72,000,000	720,000
	Prepare/revise management plans of PAs and BZs	No	7	1,500,000	10,500,000	105,000
	Identify trans boundary conservation related issues for policy discussions	No	1	1,500,000	1,500,000	15,000
	Implement SMART patrolling	Event	12	250,000	3,000,000	30,000
	Organize trans boundary meetings at national level (between India and Nepal)	Event	10	2,500,000	25,000,000	250,000
	Maintain and strengthen intelligence network	No	20	200,000	4,000,000	40,000
	Organize trans boundary meetings at local level	Event	360	500,000	180,000,000	1,800,000
	Develop guidelines/operation modalities of trans boundary cooperation meetings/ interactions (code of conduct)	Event	1	1,000,000	1,000,000	10,000
	Provide policy and institutional reform support to the Government of Nepal, especially for transboundary cooperation	Event	5	1,000,000	5,000,000	50,000
	Sub-total (1.1)				**383,000,000**	**3,830,000**
1.2.	**Manage rare and endangered flora and fauna species in two major complexes: Shukla-Bardia-Banke in the west and Chitwan-Parsa in the east**					

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
	Maintain meta populations of focal species through reintroduction (tiger, rhino, wild buffalo, blackbuck etc.)	Event	10	5,000,000	50,000,000	500,000
	Strengthen species breeding centers for species such as elephant, crocodile	No	10	1,000,000	10,000,000	100,000
	Establish veterinary clinics, wildlife orphanages and rescue services	Event	72	500,000	36,000,000	360,000
	Maintain viable populations of gharial, mugger and dolphin	No	6	1000000	6,000,000	60,000
	Maintain viable populations of focal bird species including vultures, hornbills and floricans, cranes and lesser adjutant stork	No	10	500,000	5,000,000	50,000
	Establish community based goral and Bijaya sal conservation areas	No	2	5,000,000	10,000,000	100,000
	Support in-situ conservation of rare and protected plant species	Event	10	500,000	5,000,000	50,000
	Sub-total (1.2)				**122,000,000**	**1,220,000**
1.3.	**Protect, restore and manage critical habitats**					
	Control alien and invasive species	Ha	10,000	100,000	1,000,000,000	10,000,000
	Restore degraded and encroached critical habitats	Ha	10,000	300,000	3,000,000,000	30,000,000
	Create, restore and manage critical water holes and wetlands	No	90	500,000	45,000,000	450,000
	Engage local communities to conserve rivers and flood plains	No	54	400,000	21,600,000	216,000
	Protect and manage critical micro-refugia	No	18	1,000,000	18,000,000	180,000
	Restore degraded forest areas in Churia	Ha	10,000	40,000	400,000,000	4,000,000
	Engage community in biodiversity conservation in community managed forest regimes	No	36	200,000	7,200,000	72,000
	Sum (1.3)				**4,491,800,000**	**44,918,000**
1.4.	**Manage grassland, and wetland/rivers**					
	Support habitat restoration (grassland and other critical habitats)	Ha	10,000	100,000	1,000,000,000	10,000,000
	Conserve and restore oxbow lakes and other small wetlands	Area	2,700	50,000	135,000,000	1,350,000

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
	Prepare and implement management plan for wetlands of international importance	No	15	500,000	7,500,000	75,000
	Restore flood plains	Ha	5,000	200,000	1,000,000,000	10,000,000
	Sub-total (1.4)				**2,142,500,000**	**21,425,000**
1.5.	**Create and revise policies, regulations and action plans**					
	Formulate/revise policies to address emerging issues of climate change and landscape scale resource management	No	10	1,000,000	10,000,000	100,000
	Support implementation of Land Use Policy and Plan	No	1	5,000,000	5,000,000	50,000
	Support activities to discourage conversion of forest land for other uses	No	36	500,000	18,000,000	180,000
	Formulate and revise conservation action plans for focal plant and animal species	No	10	1,500,000	15,000,000	150,000
	Update NPWCA1973 and Forest Act 1993 and other policy documents	No	2	1,000,000	2,000,000	20,000
	Sub-total (1.5)				**50,000,000**	**500,000**
1.6.	**Strengthen coordination among law enforcement agencies**					
	Build Capacity of frontline staff	Persons	900	100,000	90,000,000	900,000
	Support strengthening of WCCB at local and central level	No	18	300,000	5,400,000	54,000
	Sub-total (1.6)				**95,400,000**	**954,000**
1.7.	**Mitigate human wildlife conflict**					
	Develop and implement human wildlife conflict mitigation strategy	No	1	1,500,000	1,500,000	15,000
	Promote cultivation of crops that are unpalatable to wildlife, such as medicinal and aromatic plants	Ha	180	150,000	27,000,000	270,000
	Establish endowment fund to provide compensation for HWC mitigation	No	27	3,000,000	81,000,000	810,000
	Construct infrastructures to minimize HWC (electric fencing, trenches, watch tower etc.)	No	400	500,000	200,000,000	2,000,000
	Expand awareness/knowledge on wildlife behavior	Event	240	20,000	4,800,000	48,000
	Promote specific result-oriented research and studies related to HWC mitigation	No	28	200,000	5,600,000	56,000

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
	Sensitize community to livestock and crop insurance opportunities	Event	240	20,000	4,800,000	48,000
	Strengthen the veterinary services especially vaccinations around PAs	No	18,000	500	9,000,000	90,000
	Sub-total (1.7)				**333,700,000**	**3,337,000**
1.8.	**Ensure adequate environmental flows in the Narayani/East Rapti, Babai, West Rapti, and Karnali rivers for dependent species, habitats, and ecosystems**					
	Build capacity for environmental flows (E-flows) assessments	No	5	1,000,000	5,000,000	50,000
	Undertake E-flows assessments of major river systems for infrastructure development and climate change	No	8	2,500,000	20,000,000	200,000
	Engage developers, donors and other stakeholders in environmentally sound infrastructure development	No	36	300,000	10,800,000	108,000
	Sub-total (1.8)				**35,800,000**	**358,000**
1.9.	**Conserve agro-biodiversity**					
	Encourage farmers to plant traditional native crop races to conserve agro-biodiversity	No	25	200,000	5,000,000	50,000
	Conduct survey of agro-biodiversity species in TAL area, including conservation threats	No	1	1,000,000	1,000,000	10,000
	Support for establishment and operation of community seed banks at district and VDC/ Municipality level	No	360	300,000	108,000,000	1,080,000
	Promote in-situ cultivation of agro-biodiversity species	Ha	5,000	20,000	100,000,000	1,000,000
	Establish/strengthen agro-biodiversity related enterprises	No	36	300,000	10,800,000	108,000
	Establish functional linkage between genetic resources center and community based seed or gene banks	No	1	100,000	100,000	1,000
	Strengthen quarantine, seed certification and registration programs	Event	180	100,000	18,000,000	180,000
	Build capacity of local communities on agro-biodiversity conservation	Event	180	20,000	3,600,000	36,000
	Sub-total (1.9)				**246,500,000**	**2,465,000**
	Sub-total (1)				**7,900,700,000**	**79,007,000**

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
2. Forest and Other Land Uses						
2.1.	**Strengthen and promote sustainable forest management**					
	Promote natural regeneration and plantation, nursery establishment	Ha	18,000	40,000	720,000,000	7,200,000
	Promote scientific management of national forests	Ha	18,000	50,000	900,000,000	9,000,000
	Build capacity of local users on sustainable forest management	Event	360	100,000	36,000,000	360,000
	Strengthen capacity of community institutions such as buffer zone community forest user groups, CFUGs and CFCCs on forest management and planning	Event	360	100,000	36,000,000	360,000
	Hand over an additional 70,000 ha of forest to local communities (collaborative, leasehold and community forests)	User group No	540	50,000	27,000,000	270,000
	Prepare/revise operational plan of the forests user groups	No	2,000	30,000	60,000,000	600,000
	Promote use of alternative energy sources (biogas, improved cook stoves and solar energy)	No	54,000	10,000	540,000,000	5,400,000
	Promote livestock stall-feeding practices (integrated livestock management with fodder production, cattle shed improvement, feeding troughs, etc.), including community sensitization on grazing control	No	2,700	10,000	27,000,000	270,000
	Build capacity in controlling forest fire	Event	90	100,000	9,000,000	90,000
	Support implementation of Rastrapati Chure-Terai-Madesh Churia conservation program	No	18	500,000	9,000,000	90,000
	Encourage CFUGs to plant threatened indigenous trees, especially bijaysal and satisal	No	25	200,000	5,000,000	50,000
	Sub-total (2.1)				**2,369,000,000**	**23,690,000**
2.2.	**Manage grasslands, and wetlands/rivers outside PAs**					
	Identify and manage grasslands in corridors	Ha	10,000	5,000	50,000,000	500,000
	Restore and rehabilitate critical wetlands	No	40	100,000	4,000,000	40,000
	Manage wetlands of international importance (Ramsar sites) with site specific management plans	No	5	100,000	500,000	5,000

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
	Conserve riparian areas, especially along designated corridors	Ha	2,700	5,000	13,500,000	135,000
	Sub-total (2.2)				**68,000,000**	**680,000**
2.3.	**Improve management of critical sub-watersheds**					
	Prepare and implement watershed and sub-watershed management plan of critical sub-watersheds	No	54	1,500,000	81,000,000	810,000
	Strengthen capacity of local community on watershed management	Event	540	100,000	54,000,000	540,000
	Strengthen up-stream and down-stream linkages in watershed management through interactions, integrated land use decisions and PES etc.	Event	180	200,000	36,000,000	360,000
	Community capacity building and engagement in watershed and sub-watershed management watersheds	No	54	1,500,000	81,000,000	810,000
	Sub-total (2.3)				**252,000,000**	**2,520,000**
2.4.	**Reduce forest loss and degradation**					
	Promote public and private agroforestry, especially in the southern side of all corridors	Ha	18,000	200,000	3,600,000,000	36,000,000
	Evacuate and restore encroached forest areas	Ha	10,000	10,000	100,000,000	1,000,000
	Relocate settlements from critical corridors, bottlenecks and climate and disaster vulnerable areas	No	10	10,000,000	100,000,000	1,000,000
	Prevent overgrazing by livestock in forests and grasslands (promote specific strategies like stall feeding, improved breeds and others)	Event	54	500,000	27,000,000	270,000
	Promote alternative energy sources and fuel efficient technologies to reduce firewood pressure	No	18,000	30,000	540,000,000	5,400,000
	Establish protection forest where necessary	No	5	2,000,000	10,000,000	100,000
	Strengthen community engagement particularly youths in protection of forests and critical river stretches	No	18	500,000	9,000,000	90,000
	Sub-total (2.4)				**4,386,000,000**	**43,860,000**

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
2.5.	**Promote private and public forestry**					
	Establish mechanism for utilization of private forest products	No	2	1,000,000	2,000,000	20,000
	Engage, promote and facilitate private sector production and marketing of seedlings (trees and NTFPs/MAPs)	No	180	200,000	36,000,000	360,000
	Promote effective implementation of Forest Decade programme	No	10	500,000	5,000,000	50,000
	Sub-total (2.5)				**43,000,000**	**430,000**
2.6.	**Promote forest-based green enterprises**					
	Develop and implement district NTFP management plans	No	18	500,000	9,000,000	90,000
	Promote farming of NTFPs and MAPs	No	90	500,000	45,000,000	450,000
	Create forest-based jobs and incomes in all areas of the sector through green enterprises	No	900	500,000	450,000,000	4,500,000
	Sub-total (2.6)				**504,000,000**	**5,040,000**
	Sub-total (2)				**7,622,000,000**	**76,220,000**
3. Socio-economic well being						
	Develop a market strategy for promotion of tourism in TAL while addressing needs of different segments of society	No	1	1,500,000	1,500,000	15,000
	Prepare tourism management plan for TAL	No	10	2,000,000	20,000,000	200,000
	Develop tourism related infrastructure (e.g. viewing towers, roads, bridges, etc.)	No	420	1,000,000	420,000,000	4,200,000
	Provide technical/financial assistance for maintenance and renovation of important cultural and religious heritage sites	No	280	700,000	196,000,000	1,960,000
	Train local people to work in tourism (nature guides, hospitality managers, cooks etc.)	Event	700	300,000	210,000,000	2,100,000
	Support establishment and operation of home-stay program	No	28	5,000,000	140,000,000	1,400,000
	Conduct destination marketing of TAL area	Event	20	800,000	16,000,000	160,000
	Conduct demand driven skill based IGA training programs and activities (28,000 people)	Event	1800	200,000	360,000,000	3,600,000

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
	Provide support to forest and farm based enterprises (technology, market sheds, ware houses, production infrastructure etc.)	No	1,800	500,000	900,000,000	9,000,000
	Provide entrepreneurship and business development training	Event	1,800	200,000	360,000,000	3,600,000
	Provide business development services	No	1,800	50,000	90,000,000	900,000
	Strengthen financial institutions, especially cooperatives to improve access to credit	No	2,700	150,000	405,000,000	4,050,000
	Support preparation of business plans for forest and farm related enterprises	No	500	300,000	150,000,000	1,500,000
	Develop business development information centers	No	18	2,500,000	45,000,000	450,000
	Support enterprises to obtain certification and eco-labeling of forest and farm based enterprises	Ha	350	500,000	175,000,000	1,750,000
	Promote cultivation of aromatic plants and NTFPs, and value addition and processing in forest enterprises	Ha	35,000	50,000	1,750,000,000	17,500,000
	Promote private sector investment in forest and farm based enterprises	Event	27	200,000	5,400,000	54,000
	Promote holistic disaster risk reduction and disaster preparedness	Events	25	100000	2,500,000	25,000
	Raise awareness about climate change and ways to build resilience and adaptation	Events	25	100000	2,500,000	25,000
	Sub-total (3)				**5,248,900,000**	**52,489,000**
4. Enabling Conditions and Cross-cutting Themes						
4.1.	**Promote institutional coordination and collaboration**					
	Strengthen Landscape Support Unit	Event	10	500,000	5,000,000	50,000
	Promote conservation education and awareness among major stakeholders, especially local communities, local government officials, school teachers, etc.	Event	420	300,000	126,000,000	1,260,000
	Mobilize CFUGs, CFCCs and other related groups to advocate on conservation issues in local and district level planning	No	1,800	100,000	180,000,000	1,800,000

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
	Strengthen capacity for work on landscape level conservation issues in community and forest officials	Event	840	150,000	126,000,000	1,260,000
	Improve the working conditions/environment of forest officials (housing conditions, work environment etc.)	No	360	500,000	180,000,000	1,800,000
	Develop local resource persons	No	2,700	50,000	135,000,000	1,350,000
	Organize exposure/learning visits for forest officials and community people	Event	360	500,000	180,000,000	1,800,000
	Strengthen capacity of DFSCCs, CFCCs, councils etc. to participate in the TAL plan	Event	540	500,000	270,000,000	2,700,000
	Sub-total (4.1)				**1,202,000,000**	**12,020,000**
4.2.	**Strengthen good governance practices among stakeholders**					
	Support implementation of Land Use Policy and Plan	Event	18	200,000	3,600,000	36,000
	Conduct public hearing/ public auditing of community institutions	No	1,500	100,000	150,000,000	1,500,000
	Conduct governance assessments of community institutions and identify capacity building needs	Event	1,500	50,000	75,000,000	750,000
	Provide counseling and mentoring support to BZCFUGs, CFUGs and CFCCs, and protected forest councils on good governance practices, including rule of law	Event	560	100,000	56,000,000	560,000
	Develop guidelines for sharing of income among CFUGs (Performance based financing)	No	1	500,000	500,000	5,000
	Pilot performance based financing mechanisms in community forestry and buffer zones	No.	270	1,000,000	270,000,000	2,700,000
	Develop and disseminate piloting lessons for wider policy influence	No.	10	1,000,000	10,000,000	100,000
	Sub-total (4.2)				**565,100,000**	**5,651,000**
4.3.	**Build local capacity**					
	Build capacity of GoN staff	Event	180	400,000	72,000,000	720,000
	Build capacity of CBOs and NGOs	Event	180	200,000	36,000,000	360,000
	Sub-total (4.3)				**108,000,000**	**1,080,000**

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
4.4.	**Promote gender equality and social inclusion**					
	Strengthen capacity of women, poor and marginalized to claim their rights to resources and take part in decision making using a rights based approach, including governance literacy classes and leadership development.	Event	900	150,000	135,000,000	1,350,000
	Document traditional and indigenous knowledge of local communities	Event	10	500,000	5,000,000	50,000
	Develop leadership capacity of women, poor and disadvantaged groups	Event	700	100,000	70,000,000	700,000
	Provide gender equality and social inclusion sensitization training to office bearers of conservation institutions	Event	700	100,000	70,000,000	700,000
	Provide incentives to promote positive discrimination policies to increase access of poor, disadvantaged and deprived groups to benefits and opportunities	Event	700	100,000	70,000,000	700,000
	Reduce gender based violence related to natural resource management	Event	180	50,000	9,000,000	90,000
	Mainstream and implement GESI provisions on policies and guideline	No	5	500,000	2,500,000	25,000
	Sub-total (4.4)				**361,500,000**	**3,615,000**
4.5.	**Promote sound environmental practices in infrastructure development**					
	Support to build sectoral coordination in developing infrastructure	Event	10	200,000	2,000,000	20,000
	Conduct environment audit of large scale infrastructure	No	30	1,500,000	45,000,000	450,000
	Disseminate audit report, including policy advocacy for environment friendly infrastructure development	Event	30	500,000	15,000,000	150,000
	Construct and rehabilitate community infrastructure such as productive infrastructure, road, health post etc.	No	1,800	1,000,000	1,800,000,000	18,000,000
	Monitor pollutions in selected industrial corridors and aware local level policy makers and planner	Event	420	300,000	126,000,000	1,260,000

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
	Promote eco-friendly engineering designs (under passes and over passes)	No	18	1,000,000	18,000,000	180,000
	Support capacity building of developers and other stakeholders	Event	360	200,000	72,000,000	720,000
	Sub-total (4.5)				**2,078,000,000**	**20,780,000**
4.6.	**Mainstream climate change into plan implementation**					
	Build capacity to address climate induced disasters such as flood, fire, drought	No	90	500,000	45,000,000	450,000
	Promote sound land use practices to reduce non-climate stresses	Ha	35,000	5,000	175,000,000	1,750,000
	Protect forests from uncontrolled fire and grazing to reduce non-climate stresses	Ha	21,000	1,000	21,000,000	210,000
	Promote limited use forest management	Ha	100,000	500	50,000,000	500,000
	Provide incentives to local communities to adopt environment friendly infrastructure construction practices	No	420	150,000	63,000,000	630,000
	Promote bioengineering and green infrastructure to reduce erosion and landslides	No	560	500,000	280,000,000	2,800,000
	Develop and enforce guidelines to promote sustainable utilization of sand and boulder resources in Churia taking climate variability into account	No	1	1,000,000	1,000,000	10,000
	Continue to assess climate vulnerability and integrate into TAL strategy	No	1	2,000,000	2,000,000	20,000
	Prepare and implement community adaptation plans of action	No	700	500,000	350,000,000	3,500,000
	Strict regulation and monitoring of gravel and boulder extraction from river systems	No	180	300,000	54,000,000	540,000
	Support rehabilitation, construction and maintenance of community infrastructure (irrigation, drinking water, road, bridges, culvert etc.)	No	1,800	300,000	540,000,000	5,400,000

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
	Provide training and exposure visits to the members of farmer groups, CFUGs, conservation management committees to enhance their knowledge and skills on climate change mitigation and adaptation to climate change	Event	540	50,000	27,000,000	270,000
	Promote climate smart technologies (e.g. green houses, water efficiency technology, alternative crop cultivation, farmer field schools, rain water harvesting, community ponds) to reduce specific climate vulnerabilities	Np	600	20,000	12,000,000	120,000
	Promote climate smart infrastructure including bioengineering on river banks, flood plains, erosion prone areas and road sides	No	180	300,000	54,000,000	540,000
	Establish early warning systems in selected vulnerable watersheds	No	30	5,000,000	150,000,000	1,500,000
	Identify and manage micro-refugia	No	18	1,000,000	18,000,000	180,000
	Undertake long term monitoring of climate change impacts on ecological and human communities and develop responses to build resilience	No	10	4,000,000	40,000,000	400,000
	Capacitate health institutions in tackling spread of diseases following natural disasters by providing access to medical aid	No	18	2,000,000	36,000,000	360,000
	Mainstream climate change into strategies, management plans, local authority plans, species action plans etc.	No	140	200,000	28,000,000	280,000
	Provide reliable weather forecasting to farmers	No	10	1,000,000	10,000,000	100,000
	Sub-total (4.6)				**1,956,000,000**	**19,560,000**
4.7.	**Undertake research, and document and disseminate results**					
	Conduct regular research and monitoring of species and ecosystems	Event	270	300,000	81,000,000	810,000
	Undertake research on land use/land cover	No	18	1,000,000	18,000,000	180,000
	Develop database system for reporting of results of TAL strategy	Event	1	2,500,000	2,500,000	25,000

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
	Maintain database at central and district level	Event	150	500,000	75,000,000	750,000
	Publish and disseminate annual TAL progress report, including lessons learned	Event	10	2,000,000	20,000,000	200,000
	Conduct independent review and assessment of TAL implementation status, emerging challenges etc. annually and discuss with local and national partners	Event	14	1,000,000	14,000,000	140,000
	Strengthen integrated landscape planning mechanism among stakeholders, including integrated planning	Event	14	300,000	4,200,000	42,000
	Conduct research on wildlife and plant species (including predator-prey relationships, translocation feasibility, habitat preferences, habitat shifts, carrying capacity assessments, ecological connectivity, climate change impacts, etc.)	Event	160	1,000,000	160,000,000	1,600,000
	Mobilize media on conservation threats related issues	Event	720	200,000	144,000,000	1,440,000
	Support presentations and publications in scientific and technical forums	No	100	400,000	40,000,000	400,000
	Sub-total (4.7)				**558,700,000**	**5,587,000**
4.8.	**Promote increased awareness and education about TAL**					
	Continue education and awareness programs in schools and eco-clubs	No	180	200,000	36,000,000	360,000
	Recruit alumni as future educators	No	360	100,000	36,000,000	360,000
	Engage eco-clubs and members as citizen scientists, and network them for landscape-scale perspectives through seminars, meetings, exchange visits, and other fora.	No	180	500,000	90,000,000	900,000
	Present TAL successes and its importance as a climate-integrated conservation landscape through national and global media and fora	No	10	1,000,000	10,000,000	100,000
	Sub-total (4.8)				**172,000,000**	**1,720,000**

SN	Strategic Actions	Unit	Quantity	Rate	Amount (NPR)	Amount (USD)
4.9.	**Promote sustainable financing**					
	Identify feasible sustainable financing mechanisms, and sensitize stakeholders on them	Event	180	200,000	36,000,000	360,000
	Conduct monitoring of conservation investment, including its utilization	Event	140	200,000	28,000,000	280,000
	Establish carbon, water, alternative energy, tourism etc. PES schemes	No	90	2,000,000	180,000,000	1,800,000
	Sensitize buyers and sellers on PES including its potential advantages	Event	25	100,000	2,500,000	25,000
	Develop REDD+ and other carbon based schemes and benefit sharing mechanism	Event	10	2,000,000	20,000,000	200,000
	Sub-total (4.9)				**266500000**	**2665000**
	Sub-total (4)				**7,267,800,000**	**72,678,000**
5. Planning, Monitoring and Evaluation						
	Integrate conservation in plans and programs of different agencies in TAL	Event	360	150,000	54,000,000	540,000
	Sensitize district stakeholders on impacts of development programs on resource conservation (capacity building)	Event	180	100,000	18,000,000	180,000
	Sub-total (5)				**72,000,000**	**720,000**
	Grand Total				**28,111,400,000**	**281,114,000**

ANNEXES

Annex I. Area of TAL by district

Districts	Area (km²)	Districts	Area (km²)
Arghakhanchi	478.26	Kapilbastu	1,651.39
Banke	1,882.60	Makwanpur	1,516.47
Bara	1,272.91	Nawalparasi	1,828.62
Bardia	2,003.74	Palpa	288.89
Chitwan	2,051.17	Parsa	1,406.70
Dadheldhura	351.46	Rautahat	1,036.69
Dang	1,937.94	Rupendehi	1,304.85
Kailali	3,293.84	Salyan	383.15
Kanchanpur	1,622.05	Surkhet	399.40
		Total	**24,710.13**

Annex II. Logical Framework for Action Plan

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
Program Goal			
By 2025, to conserve biodiversity, forests, soil and watersheds of the Terai and Churia Hills in order to ensure ecological, economic, and socio-cultural integrity of TAL with active participation of all stakeholders	Restoration and effective management of 700,000 ha of forest area in TAL	Mid-term and final evaluation	• Geographic information system (GIS) vegetation mapping/ analysis, field survey, key informant interviews
	Increase in habitat of megafauna	Mid-term and final evaluation	• Field records, Key informant survey
	Viable population of key species (tiger, elephant, rhino, dolphin, blackbuck, gharial, mugger and vultures maintained and enhanced; and in situ conservation of bijaya sal, sati sal, and other important floral species promoted)	Mid-term and final evaluation	• GIS vegetation maping analysis, biodiversity survey, key informant interviews
	Economic well-being (poverty incidence) of local communities improved without increasing pressure on TAL forests	Mid-term and final evaluation	• Reports, sample household surveys, focus group discussions, field observations, CBS data
	Area under critical watershed areas managed and conserved	Mid-term and final evaluation	• Field records, interaction with local communities

Outcome 1: Biodiversity and ecosystems of TAL conserved

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
PURPOSE			
1. Biodiversity assets and ecological integrity of the area maintained and enhanced	Area under effective management of protected areas, corridors, bottlenecks and other critical areas	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (baseline and end line survey)
	Viable population of key species (tiger, elephant, rhino, dolphin, blackbuck, gharial, mugger and vultures maintained and enhanced; and in situ conservation of bijaya sal, sati sal, and other important floral species promoted	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (baseline and end line survey)
	Area under in-situ/ex-situ conservation of rare and protected plant species	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (baseline and end line survey)
OUTPUTS			
1.1. Protected areas, buffer zones, critical corridors and bottlenecks of TAL conserved and restored	360,000 ha of corridors & bottlenecks under improved management	Annual	• DNPWC and DoF progress reports, TAL database, conservation partners' reports
	25,000 ha forest areas under encroachment evacuated and restored	Annual	• DoF progress reports, TAL database, conservation partners' reports
	15,000 ha of natural regeneration and plantation conducted	Annual	• DoF progress reports, TAL database, conservation partners' reports
	Six protected area management plans revised	Annual	• DNPWC progress reports, TAL database, conservation partners' reports
	32,000 ha of habitat restored (grassland, wetlands and critical habitats)	Annual	• DNPWC progress reports, TAL database, conservation partners' reports
	Corridor functionality (movement of wild animals) maintained as compared to 2014	Annual	• DNPWC/DoF annual reports, TAL database, conservation partners' reports

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
1.2. Rare and endangered species of flora and fauna managed	At least two meta populations of key species (tiger, rhino, blackbuck, gharial, vultures, mugger) in two complexes; and 1,000 ha of bijaya sal, sati sal forest maintained	Annual	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (baseline and end line survey)
	Area under in-situ/ex-situ conservation of rare and protected plant species (agriculture and forests)	Annual	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (baseline and end line survey)
	Poaching and trade of wildlife and protected flora controlled	Annual	• DNPWC progress reports, TAL database, conservation partners' reports
	Original assemblage of large mammals in at least in Chitwan maintained	Annual	• DNPWC progress reports, TAL database, conservation partners' reports
	Two community based species (goral and Bijaya sal) conservation areas established	Annual	• DFO annual reports, TAL database, conservation partners reports
1.3. Critical habitats protected, restored and managed	100,000 Ha of critical habitats under effective management	Annual	• Annual progress reports of government and conservation partners reports
1.4. Management of grassland, and wetland/river in core areas	Degraded wetlands, grasslands regain in its original condition	Annual	• Annual progress reports of government and conservation partners • Independent review and assessment report (baseline and end line survey)
	Representative floral, faunal and aquatic animals increased in grassland, wetlands	Annual	• Annual progress reports of government and conservation partners
1.5. Create and Revise policies, regulations and action plans	New and/or review of existing policies, regulations and action plans in forestry and protected areas management, soil conservation and other relevant sector policy formulation	Annual	• Number of policy documents, regulations and action plans formulated and revised
1.6. Strengthen coordination among law enforcement agencies	Increased number of coordination meetings, workshops and seminars	Annual	• MoFSC, DoF/DNPWC/ DSCWM and other sectoral government agencies databases, TAL database, conservation partners' reports

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
1.7. Human wildlife conflict reduced	Effective mechanism for distribution of relief fund, community level relief funds established	Annual	• Department of Agriculture (DoA) progress report, TAL database, conservation partners' reports
	Crops unpalatable to wildlife cultivated in more than 20,000 ha of agriculture field around vicinity of protected areas	Annual	• DoA, DoF and DNPWC progress reports, TAL database, conservation partners' reports
	Effective physical barriers to control wildlife intrusion into agriculture and settlements in place	Annual	• DoF and DNPWC progress report, TAL database, conservation partners' reports
1.8. Adequate environmental flows in the Narayani/East Rapti, Babai, West Rapti, and Karnali rivers for dependent species, habitats, and ecosystems ensured	Minimum flow of water level maintained in the Narayani, East Rapti, Babai, West Rapti, and Karnali rivers	Annual	• Department of Hydrology and Meteorology (DHM) and DNPWC progress reports, TAL database, conservation partners' reports
	Flood plain habitats and populations of flood plain dependent species maintained	Annual	• DHM and DNPWC progress reports, TAL database, conservation partners' reports
1.9. Agro-biodiversity resources conserved and sustainably utilized	300 community seed banks established and operational	Annual	• DoA progress reports, TAL database, conservation partners' reports
	In-situ conservation of land races in 2400 ha	Annual	• DoA progress reports, TAL database, conservation partners' reports

Outcome 2: Strategic forests, grasslands and wetlands conserved

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
PURPOSE			
2. Representative forests of the ecoregion are conserved, forest loss is reduced and restored and its productivity enhanced, climate refugia of the Churia watersheds, are restored and conserved.	500,000 ha area under sustainable forest management	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (baseline and end line survey)
	100,000 ha under scientific forest management	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent review and assessment report (baseline and end line survey)
	10,000 ha grasslands and wetlands under improved management	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent review and assessment report (baseline and end line survey)
	5,000 ha river and flood plains under effective management	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent review and assessment report (baseline and end line survey)
OUTPUTS			
2.1. Sustainable forest management promoted and strengthened	Additional 70,000 ha forests under community based forest management	Annual	• DoF progress reports, TAL database, conservation partners' reports
	600,000 ha of forests under scientific/sustainable management	Annual	• DoF progress reports, TAL database, conservation partners' reports
	Supply of forest products obtained from the sustainably managed forests compared to 2014	Annual	• DoF progress reports, TAL database, conservation partners' reports
2.2. Grassland, and wetland/river managed properly	Degraded wetlands, grasslands regain in its original condition	Annual	• DoF progress reports, TAL database, conservation partners' reports
	Representative floral, faunal and aquatic animals increased in grassland, wetlands and flood plains maintained	Annual	• DoF progress reports, TAL database, conservation partners' reports
	Critical sub-watersheds identified	Annual	• DSCO progress reports, TAL database, conservation partners' reports

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
2.3. Critical sub-watersheds in Churia restored and conserved	ISWMPs prepared and implemented	Annual	• DSCO progress reports, TAL database, conservation partners' reports
	Upstream-downstream linkage established and maintained	Annual	• DSCO progress reports, TAL database, conservation partners' reports
	Increase in forest area through reclamation and restoration of degraded lands	Annual	• DoA progress reports, TAL database, conservation partners reports
2.4. loss and degradation of forests reduced	Increase in forest area through evacuation of encroached areas	Annual	• DoA, DoF and DNPWC progress reports, TAL database, conservation partners' reports
	Number of bio-gas and intensive cooking stoves increased as compared to base year 2014	Annual	• DoF and DNPWC progress report, TAL database, conservation partners' reports
	25,000 ha forest in private lands	Annual	• DoF progress reports, TAL database, conservation partners' reports
2.5. Promote private and public forestry	50,000 ha forest in private lands	Annual	• DoF progress reports, TAL database, conservation partners' reports
	18 district level NTFP/MAP management plans prepared and implemented	Annual	• DoF progress reports, TAL database, conservation partners' reports
2.6. Promote forest-based green enterprises	25000 farmers practice NTFP/ MAPs farming	Annual	• DoF, DoA and Federation of Nepalese Chambers of Commerce and Industry (FNCCI) progress reports, TAL database, conservation partners' reports
	200,000 individuals engaged in farm based enterprises	Annual	• DoF, DoA, and FNCCI progress reports, TAL database, conservation partners' reports

Outcome 3: Economic wellbeing of the local people

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
PURPOSE			
3. Economic well-being of local targeted communities enhanced while promoting sustainable use of bio resources	Annual per capita income increased by 10 percent	Mid-term and final evaluations	• Independent periodic review and assessment report • Baseline and end line survey
	Increased number of days of employment	Mid-term and final evaluations	• Progress report of government and conservation partners • Baseline and end line survey
	Integration of environmental costs and benefits in investment plans and decisions	Mid-term and final evaluations	• Progress report of government and conservation partners • Independent periodic review and assessment report • Baseline and end line survey
OUTPUTS			
3.1. local communities provided with innovative, sustainable economic incentives linked to forest and river conservation	3600 forests and farm based enterprises operational	Annual	• DoA, DoF , DLSO, DSCWM and DNPWC progress reports, TAL database, conservation partners' reports
	Additional 27,000 ha farmland under NTFP/MAP cultivation	Annual	• DoA, DoF , DLSO, DSCWM and DNPWC progress reports, TAL database, conservation partners' reports
	360 forests and farm-based enterprises certified	Annual	• DoA, DoF , DLSO, DSCWM and DNPWC progress reports, TAL database, conservation partners' reports
	18 business development service centers established and operational	Annual	• DoA, DoF , DLSO, DSCWM and DNPWC progress reports, TAL database, conservation partners' reports
3.2. Sustainable water based enterprises	Additional 3,600 fisheries established and operational	Annual	• Department of Fisheries progress reports, TAL database, conservation partners' reports
	36 business development service centers established and operational	Annual	• Department of Fisheries progress reports, TAL database, conservation partners' reports
3.3. Sustainable tourism promoted and strengthened	1 TAL level tourism strategy and 25 site specific tourism plans developed	Annual	• National Tourism Board (NTB), DoF and DNPWC progress reports, TAL database, conservation partners' reports
	18,000 people trained on tourism related skills	Annual	• NTB, DoF and DNPWC progress reports, TAL database, conservation partners' reports
	36 home stay sites established	Annual	• NTB, DoF and DNPWC progress reports, TAL database, conservation partners' reports

Outcome 4: Better, transparent and equitable governance practice in place

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
PURPOSE			
4. Institutional mechanism and partnership for landscape level conservation strengthened, governance and policy, local capacity building, along with gender equality and social inclusion enhanced	Effective public private partnership in planning and implementation in place	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	Capacity of the stakeholders on landscape conservation strengthened	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	Number of transboundary meetings and events increased	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	Database system established and functional	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	Governance practices among stakeholders strengthened	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
OUTPUTS			
4.1. Capacity of stakeholders strengthened on landscape conservation	1,800 government employees in different sectors capacitated	Annual	• DNPWC, DoF and partners' progress reports
	2,700 local resource persons developed and mobilized	Annual	• DNPWC and DoF progress reports, TAL database, conservation partners' reports
	400,000 local people sensitized and capacitated on landscape conservation issues	Annual	• DNPWC and DoF progress reports, TAL database, conservation partners' reports
	18 DFSCCs and 900 community institutions (CF, CFCC, BZMC, BZUCs, councils) strengthened	Annual	• DNPWC and DoF progress reports, TAL database, conservation partners' reports

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
4.2. Governance practices among stakeholders strengthened	1,500 participatory governance assessment, participatory well-being ranking and public hearing public auditing events conducted in community institutions	Annual	• DNPWC, DSCWM and DoF progress reports, TAL database, conservation partners' reports
	18,000 people trained on good governance practices	Annual	• DNPWC, DSCWM and DoF progress reports, TAL database, conservation partners' reports
	Increased engagement of women and other disadvantaged groups in decision making level of community institutions	Annual	• DNPWC, DSCWM and DoF progress reports, TAL database, conservation partners' reports
	Decreased cases of gender based violence in NRM groups	Annual	• DNPWC, DSCWM and DoF progress reports, TAL database, conservation partners' reports
4.3. Comprehensive planning, monitoring and information system established and strengthened	Database system established and operationalized	Annual	• LSU, TAL database, conservation partners' reports and independent review
	Annual progress reports of TAL published	Annual	• LSU, TAL database, conservation partners' reports and independent review
	180 events of joint monitoring visits conducted	Annual	• LSU, TAL database, conservation partners' reports and independent review
4.4. Transboundary cooperation and collaboration strengthened	10 national level transboundary meetings	Annual	• Meeting minutes
	120 local level transboundary meetings	Annual	• Meeting minutes

Outcome 5: Risks and vulnerabilities to ecosystem, people, and infrastructure from climate change and disaster reduced

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
PURPOSE			
5. Risks and vulnerabilities to ecosystem, people, and infrastructure from climate change and other natural disasters reduced	700 LAPAs at VDC/Municipality level prepared and implemented	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	180 sub-watershed management plans of critical sub-watershed prepared and implemented	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
OUTPUTS			
5.1. Institutional and local capacity building to address climate induced disasters such as flood, fire, draught increased	700 number of community adaptation plan of action prepared and implemented	Annual	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	2100 community based infrastructure constructed/ repaired	Annual	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	180 sub-watershed management plan of critical sub-watershed prepared and implemented	Annual	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
5.2. Riparian areas and climate refugia conserved	10,000 ha climate refugia under effective management	Annual	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
5.3. Reliable forecasting and early warning systems in place	10 early warning systems in operation	Annual	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)

Outcome 6: Infrastructure in TAL climate smarted and greened

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
PURPOSE			
6. Better understanding among stakeholders and development sectors of the concept and need for sustainable infrastructure development and conservation developed	Environmental standards in developing infrastructures fulfilled	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	Better understanding on environmental friendly infrastructure among stakeholders of all sectors	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
OUTPUTS			
6.1. Environment friendly infrastructure development promoted	Environment auditing of mega infrastructure conducted	Annual	• DSCWM, DNPWC progress reports, TAL database, conservation partners' reports
	Pollution in critical water bodies and corridors monitored	Annual	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	Capacity of stakeholders on environmental friendly infrastructure development enhanced	Annual	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	Engagement with donors, developers and communities	Annual	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)

Outcome 7: Sustainable financing in TAL in place

Narrative Summary	Indicators	Reporting period	Means of Verification/ Source of Data
PURPOSE			
7. Innovative sustainable financing mechanisms based on ecosystem services and natural capital developed and institutionalized	Conservation investment from State and non-State agencies	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	Funds generated through market based mechanism	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
	Conservation benefits shared equitably with local institutions (BZUC, CFUGs etc.)	Mid-term and final evaluation	• Annual progress reports of government and conservation partners • Independent periodic review and assessment report (Evaluation)
OUTPUTS			
7.1. Establish and operationalize sustainable conservation finance practices	Annual investment of local bodies and private sector increased	Annual	• DDC, DoF, DNPWC, TAL database, conservation partners' reports and independent review
	50 PES schemes established and operationalized	Annual	• DDC, DoF, DNPWC, TAL database, conservation partners' reports and independent review
7.2. Ensure equitable sharing of conservation benefits among buffer zone institutions and forest user groups	Performance based financing (PFM) guidelines developed and implemented	Annual	• DoF, DNPWC, TAL database, conservation partners' reports and independent review

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