



## Review of Mainstreaming of Sustainable Land Management in Government Policies and Plans in Bhutan



### FINAL REPORT

National Soil Services Center  
Ministry of Agriculture  
Thimphu

October 2008



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Activity under UNDP/GEF Medium-Size Project on  
Sustainable Land Management

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## Acronyms and Glossary of Bhutanese Terms

### Acronyms

AAC	Annual Allowable Cut
CBD	Convention on Biological Diversity
DANIDA	Danish International Development Agency
DoA	Department of Agriculture
DoF	Department of Forest
DoR	Department of Roads
DYT	Dzongkhag Yargye Tshogdu
EA	Environmental Assessment
EC	Environmental Clearance
ECOP	Environmental Codes of Practice
EFRC	Environment Friendly Road Construction
EIA	Environmental Impact Assessment
FMU	Forest Management Unit
FRDD	Forest Resources Development Division
FYP	Five Year Plan
GDP	Gross Domestic Product
GEF	Global Environment Facility
GLOF	Glacial Lake Outburst Flood
GNH	Gross National Happiness
GYT	Geog Yargye Tshogchung
LMC	Land Management Campaign
MoA	Ministry of Agriculture
MoEA	Ministry of Economic Affairs
MTAC	Multi-disciplinary Technical Advisory Committee
NAP	National Action Program to Combat Land Degradation/ Desertification
NAPA	National Adaptation Program of Action for Climate Change
NCSA	National Capacity Self Assessment for Global Environmental Management
NEC	National Environment Commission
NES	National Environment Strategy
NLC	National Land Commission
NSSC	National Soil Services Center
RAP	Regional Action Program to Combat Land Degradation/ Desertification
RGoB	Royal Government of Bhutan

RNR	Renewable Natural Resources
SLM	Sustainable Land Management
SLMP	Sustainable Land Management Project
SRAP	Sub Regional Action Programme Combat Land Degradation/ Desertification
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
WWF	World Wildlife Fund

### Glossary of Bhutanese Terms

Chathrim	Act, statute
Chhuzhing	Wetland cultivation
Dzongkhag	District
Dzongkhag Yargye Tshogdu	District Development Committee
Geog	Administrative Block, generally made up of a few villages
Geog Yargye Tshogchung	Block Development Committee
Kamzhing	Dryland cultivation
Sokshing	A plot of government reserved forest leased out for leaf litter production and collection (Land Act of Bhutan 2007)
Tsamdro	Government reserved forest leased out for grazing and improved pasture management (Land Act of Bhutan 2007)
Tseri	Slash-and-burn cultivation

## Executive Summary

Land degradation is a major environmental and sustainable development issue across many countries around the world. Recognizing it as a global phenomenon and the need for collective international action to address it, the international community adopted the United Nations Convention to Combat Desertification (UNCCD) in June 1994. As of July 2008, 193 countries had become party to this international treaty. Bhutan acceded to it in August 2003.

In order to enhance support for implementation of the UNCCD, the Global Environment Facility (GEF) designated land degradation as a focal GEF area and conceived “Sustainable Land Management” (SLM) as a GEF Operational Program. This Operational Program provides a framework for development of activities eligible for GEF financing to address the root causes and negative effects of land degradation through SLM practices.

This review, which is a part of the United Nations Development Program (UNDP)/ GEF Medium-Size Project on SLM, describes the current scenario of land degradation in the country, assesses the extent of mainstreaming of SLM in various governmental policies, laws, and plans including those developed under GEF assistance, and offers recommendations to enhance SLM mainstreaming in development policies, plans and programs.

Bhutan’s land cover is dominated by forests, which accounts for 72.5 percent (including 8.1 percent scrub forest) of the country’s total area. Arable agriculture land is limited to less than 8 percent mainly because of the rugged mountain terrain and harsh climatic conditions. The main land uses for agriculture are *kamzhing* (dryland cultivation), *chhuzhing* (wetland cultivation) and mixed cultivation. Barren rocks, snow and glaciers cover 12.5 percent of the country’s area while pastures account for only 3.9 percent.

Overgrazing, forest fires, excessive use of fuelwood and timber, accelerated infrastructure development, unsustainable agriculture, solid waste, urban expansion, and mining are the major land degradation issues in the country. These factors, combined with inherent conditions such as fragile geologic formations, mountainous terrain and high rainfall conditions, make country highly vulnerable to land degradation.

Environmental sustainability occupies a pivotal place in the country’s development philosophy and policies. Gross National Happiness – the country’s overarching development philosophy – espouses that economic, emotional and environmental wellbeing of people are all equally important and need to be balanced for meaningful development. The review has found that mainstreaming of SLM in government policies and plans is taking place and that there are more SLM targeted programs in the Tenth Five Year Plan (FYP) than in the Ninth FYP. However, mainstreaming of SLM remains very much sector-based, with green sectors such as agriculture and forestry having more vigorous SLM mainstreaming elements than the brown sectors especially those concerning infrastructure development and urban development. At the macro-level, cross-sectoral mainstreaming of SLM is lacking and, hence, macro-policy perspective on SLM is found to be diffused. This is a concern because land use and management issues cut across several sectors and land use conflicts between various sectors is a recurrent issue. Existing policy, legal and programmatic frameworks contain adequate SLM elements that can be used as building blocks to develop a national sustainable land management policy that provides for a cross-sectoral and integrated approach. It has been also observed that the increasing emphasis on poverty reduction in development policies and plans present sound rationale to strengthen SLM mainstreaming as poverty and land degradation are inter-connected issues. Finally, the current institutional setting leaves a lacuna as far as macro-level, cross-sectoral mainstreaming of SLM in development policies and plans is concerned.

To strengthen SLM mainstreaming, it has been recommended that a national sustainable land management policy outline be developed, which can be subsequently elaborated into a comprehensive national policy based on additional information and detailed stakeholder consultations. Studies to develop Bhutan-specific evidences of poverty-land degradation linkages and economic valuation of the impacts of land degradation especially on brown sector development programs are recommended to create macro-level policy understanding of the importance of SLM mainstreaming in development polices and programs. Existing institutional setting for land use and management will need to be reviewed and a strategy needs to be formulated to develop an institutional structure that is conducive for macro-level, cross-sectoral mainstreaming of sustainable land management in development policies and plans. The existing environmental impact assessment (EIA) framework needs to be fully enforced as a great deal of SLM mainstreaming at the operational level can be realized through EIAs. Public education programs to raise awareness on the consequences of land degradation and importance of SLM, especially highlighting the benefits of SLM experienced in the field, are recommended to enhance public and policy support for SLM mainstreaming.

# 1 Introduction

## 1.1 Sustainable Land Management – Global Overview and Perspective

Land degradation is a global phenomenon affecting a quarter of the world's total land area. The World Resources Institute has estimated that about two-thirds of the world's agricultural land have been degraded to varying extents over the last 50 years. At a global scale, income loss due to direct consequences of land degradation has been estimated at US\$ 42 billion every year. Indirect social and economic costs, including influx of “environmental refugees” and losses to national food production, may be much greater.

Consensus on land degradation as a major environmental and sustainable development issue at the global level, as well as the need for collective international action to address it, led to the adoption of the United Nations Convention to Combat Desertification (UNCCD). The UNCCD, which was adopted in June 1994, today has 193 countries as party to it<sup>1</sup>. Bhutan acceded to the Convention in August 2003.

The UNCCD is primarily implemented through National Action Programs (NAPs) to combat desertification/ land degradation. As of 2007, 90 countries had developed and adopted NAPs while another eight countries had NAPs in various stages of formulation. The NAPs are developed in the framework of a participative approach involving the local communities and they spell out the practical steps and measures to be taken to combat desertification in specific ecosystems. They are strengthened by Action Programmes at Sub-regional (SRAP) and Regional (RAP) levels.

The Global Environment Facility (GEF), in its Second Assembly in October 2002, designated land degradation as a focal GEF area to support the implementation of UNCCD and conceived “Sustainable Land Management” (SLM) as a GEF Operational Program. This Operational Program provides a framework for development of activities eligible for GEF incremental financing to address the root causes and negative effects of land degradation on ecosystem stability, functions and services as well as on people's livelihoods and economic well-being through SLM practices.

There are no fixed definitions for SLM. It has been defined in various ways; below are some of the definitions that have been used:

*“A knowledge-based procedure that helps integrate land, water, biodiversity and environmental management to meet rising food and fiber demands while sustaining ecosystem services and livelihoods”.* (World Bank, 2006)

*“SLM combines technologies, policies and activities aimed at integrating socio-economic principles with environmental concerns to simultaneously maintain or enhance production and services, reduce the level of production risk, protect the potential of natural resources and prevent degradation of soil and water quality; and be economically viable and socially acceptable”.* (Dumanski, 1993)

*“Land management which maximizes public benefits, is not environmentally damaging and, where possible, contributes to the enhancement of the environment and economy (of rural areas), and is more fully integrated into the communities in which it operates”.* (Natural England, UK Government, 2006)

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<sup>1</sup> As cited on [www.unccd.int](http://www.unccd.int) (dated 4<sup>th</sup> July, 2008)

In the context of this review and for future references for SLM work in Bhutan, SLM may be defined as “*careful use and development of land and natural resources therein so as to effectively meet human development needs without degrading the environment and its ecological processes, and in ways which are economically viable and socially acceptable*”<sup>2</sup>.

## 1.2 Importance of Sustainable Land Management in Bhutan

The Bhutanese economy essentially revolves around how lands and the resources therein are used and managed. Crop agriculture, livestock rearing, and use of forest products are the economic mainstays of the rural Bhutanese, who make up 69 percent of the country’s population. The stability and productivity of arable land, rangeland and forests are therefore critical for the sustenance of rural economy. Hydropower, which is the largest revenue-generating industry and the main engine of socio-economic development, is very much dependent on land use and management practices in the watersheds. The mining industry, which in recent years has reportedly registered the highest growth rate among all sectors, can have severe impacts on the land and surrounding environment (air, water, and biodiversity) if essential environmental safeguards and land management measures are not implemented. Similarly, infrastructure development such as construction of roads and power transmission grids, which are necessary for equitable socio-economic development, can have disastrous consequences if geologic stability considerations and environmental management needs are not incorporated in their design and construction.

SLM is also important because habitable and usable land in Bhutan is severely limited as a result of difficult mountain terrain, vast areas of snow and barren rocks, harsh climatic conditions, and vast forest cover, which by law is to be maintained at no less than 60 percent at all times. This has inadvertently led to increased land use competition between various development sectors often without adequate consideration of land capability and environmental management needs. SLM based on holistic approach, involving inter-sectoral dialogue and coordination, is critical to harmonize competitive land use.

The benefits of SLM in Bhutan are not confined within its boundaries. The protection of watersheds in Bhutan from adverse land use practices is not only crucial to sustain hydropower development and agriculture within Bhutan but also enormously important to the livelihoods of downstream communities in the alluvial plains of India and Bangladesh, who largely subsist on crop agriculture and fishery.

## 1.3 Review Framework

The review of the extent of mainstreaming of SLM in government policies and plans is a part of the UNDP/GEF Medium Sized Project on Sustainable Land Management. It describes the current scenario of land degradation in the country, assesses the extent of mainstreaming of SLM in various governmental policies, laws, and plans including those developed under GEF assistance, and offers recommendations to enhance SLM mainstreaming in development policies, plans and programs. This review also serves as a precursor to the preparation of Bhutan’s NAP.

To carry out the review, the National Soil Services Centre (NSSC) engaged Ugen P. Norbu, an independent consultant who had earlier formulated the Environmental Management Framework and Social Impact Assessment of the World Bank/ GEF-assisted Sustainable Land Management Project (SLMP).

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<sup>2</sup> This definition could be reviewed and fine-tuned during the preparation of Bhutan’s NAP.

Much of the review was desktop study and analysis of a wide range of documents. These included policy documents, various laws, regulations, the Ninth and Tenth FYP documents, GEF documents, project documents and progress reports. To supplement the desktop analysis and elicit additional views and information, meetings were held with a number of people (lists of literature reviewed and people met are provided in Appendices 1 and 2 respectively). NSSC circulated the draft of the review report to its staff and other relevant people for comments (the comments on the draft and consultant's response are provided in Appendix 3). Accordingly, the draft report was revised and presented at a meeting attended by representatives from various agencies (Appendix 4). The comments received at the meeting were incorporated in the finalization of the review report.

## 1.4 General Country Description

Located in the Eastern Himalayas, the country is a landlocked, mountainous country with the Indian states of Arunachal Pradesh to its east, Assam and West Bengal to its south, Sikkim to its west and the Tibetan Autonomous Region of China to its north. With a total area of 38,394 km<sup>2</sup> and a population of 634,982 people, the country is small both in territorial size and population.

The Bhutanese population is largely agrarian with 69 percent living in the rural areas. However, the proportion of urban population has been growing rapidly in the recent years. Between 1997 and 2005, the urban population is estimated to have grown from 15 to 31 percent of the country's total population. More than half of the urban population is concentrated in Thimphu, the capital city with some 79,000 people, and Phuentsholing, the main trading center with some 20,000 people<sup>3</sup>.

The people in the rural areas subsist largely on an integrated livelihood system of crop agriculture, livestock rearing and use of forest products – collectively known as the renewable natural resources (RNR) sector. The RNR sector is the largest contributor to the Gross Domestic Product (GDP) in the country. It accounted for 21.4 percent of the GDP in 2006. Other major GDP contributors are construction, electricity, transport, storage and communications, community, social and personal services, and manufacturing.

Bhutan's terrain is almost entirely mountainous with nearly 95 per cent of the country being above 600 meters above sea level (masl). The terrain is rugged and steep, with altitudes declining from above 7,500 masl to under 200 masl within a short north-south distance of 170 km. The country can be divided into three broad physiographic zones: one, the southern belt consisting of the Himalayan foothills adjacent to a narrow belt of flatland (Duars) along the Indian border with altitude ranging from under 200 masl to about 2,000 masl; two, the inner Himalayas made up of the main river valleys and steep mountains with altitude ranging from about 2,000 masl to 4,000 masl; and, three, the great Himalayas in the north along the Tibetan border consisting of snow-capped peaks and alpine meadows above 4,000 masl.

## 1.5 Land Use and Cover of Bhutan

### 1.5.1 Forests

Forest is by far the most dominant land cover, with 72.5 percent (including 8.1 percent scrub forest) of the country under forest cover – one of the highest in the world<sup>4</sup>. Almost all of the forests are natural, with plantation forest being just about 0.2 per cent. The country's forests are

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<sup>3</sup> All population figures cited in this report are from the Population and Housing Census of Bhutan 2005 fact sheet.

<sup>4</sup> Land use and cover figures currently in use are based on data dating back to early 1990s. The Ministry of Agriculture is currently reviewing and updating the land use and cover figures, including more detailed categorization than the previous version.

presently managed as government reserved forests and protected under the legal framework of the Forest and Nature Conservation Act 1995. The Bhutanese society, especially those living in the rural areas, is heavily forest-dependent. Many areas of forests extensively function as *tsamdrol* (grazing land). People also maintain certain tracts of forest as *sokshing*, i.e. woodlot for production of leaf litter used in farmyard manure. These woodlots are usually made up of oak or pine trees. In addition, rural communities extract timber, fuelwood, roofing shingles and many edible, medicinal and aromatic plants from the forests. Broadleaf forests and mixed conifers are the main forest types. Other forest types include fir, broadleaf with conifers, blue pine and chir pine.

### 1.5.2 Agriculture

Agricultural land makes up only 7.7 percent, mostly located in the central valleys and adjoining slopes, and in the southern foothills. The main land uses for agriculture are *kamzhing* (dryland cultivation) and *chhuzhing* (wetland cultivation), and mixed cultivation.

*Kamzhing* is either terraced or unterraced rainfed agricultural land. It is found throughout the country, mainly on mountain slopes. It is the most dominant agricultural land use type. Maize and potato are the main crops grown on *kamzhing*. Besides these crops, other annual crops such as mustard, buckwheat, turnips and vegetables are grown in the temperate areas. In the subtropical areas, millet is grown as a secondary crop. Under *kamzhing*, there also exists the practice of *tseri*, i.e. slash-and-burn agricultural production. *Tseri* areas are cultivated on a rotational basis with an average fallow period of 5 to 6 years, with periods being shorter in the subtropical areas and longer in the temperate areas. The land is left fallow to allow regeneration of vegetative cover and soil nutrients. Common crops are maize, millet, wheat, barley, and buckwheat. Other crops such as chili, beans and leafy vegetables are grown as inter-crops. Since *tseris* are generally located inside or adjacent to forests, crop depredation by wildlife is high. The practice of *tseri* is being discouraged in the country for environmental and economic reasons, and suitable alternatives are being explored and promoted.

*Chhuzhing* is irrigated, bench terraced paddy cultivation. While rice is the primary crop, other crops such as wheat, potatoes and vegetables are also grown as secondary crops in some places. In the subtropical areas, paddy can also be grown twice in a year. *Chhuzhing* is mainly found in the fertile valleys of Paro, Wangdue and Punakha. In other parts of the country such as Trashigang, Mongar, Lhuentse and Trongsa, *chhuzhing* is found scattered on hill slopes. In southern foothills, it can be found in long and extensive stretches.

### 1.5.3 Others

Much of the northern part of the country is snow and glaciers, which account for 7.5 per cent of the country's land cover. Barren rocks cover 5 per cent and pastures 3.9 per cent of the country. Urban area is presently negligible but expanding rapidly especially in Thimphu and Phuentsholing.

**Table 1: Land Use and Cover**

<b>Land Use/ Cover</b>	<b>% of the Total Area</b>
Forests	72.5
<i>Conifer forest</i>	26.5
<i>Broadleaf forest</i>	34.3
<i>Mixed broadleaf and conifer forest</i>	3.4
<i>Plantation forest</i>	0.2
<i>Scrub forest</i>	8.1
Pasture	3.9
Agriculture	7.7
<i>Wetland cultivation</i>	1.0
<i>Dryland cultivation</i>	4.6
<i>Mixed cultivation</i>	2.1
Horticulture	0.1
Settlement	0.1
Others (snow/ glaciers, rock outcrops, water spreads, etc)	15.7

Source: Ministry of Agriculture, 1997

## 1.6 Geology of Bhutan

In Bhutan, three main geo-tectonic units have been recognized: Frontal Belt, making up the foothills and parts of the Lesser or Lower Himalaya; Central Crystalline Belt, occupying portions of the Lesser and Higher Himalaya; and Tethyan Belt, covering the Higher Himalaya and isolated but large portions of the Lesser Himalaya.

Rocks in the southern foothills consist of recent deposits of sand, gravel, and boulders in the foothill terraces of south-western and south-central parts of the country at about 300 masl. The Siwalik group of rocks consists of sedimentary and metasedimentary rocks extending in an east-west direction and dipping north. They are exposed in the south-central part of the country extending from the east of Raidak River (Wang Chhu) to the west of Sarpang town and in the eastern part from the east of Manas River to the eastern boundary with the Indian state of Arunachal Pradesh. The Damuda (Gondwana) and Diuri Formations are exposed in the eastern part of the country. The Damuda rocks of Permian age consist of sandstone, shale, and coal seams; they overlie the Siwalik rocks along the Main Boundary Thrust. The Diuri Formation, at times considered part of the Damuda, comprises grey slate boulders, made up of pebbles of quartzite, phyllite, dolomite, and gneiss in a slaty matrix. The Buxa group of rocks consist consists of dolomite, variegated phyllite, quartzite, and conglomerate. This group of rocks stretches from the western most part of the country to the east along the foothills. The Shumar Formation overlies the Buxa group and consists of metasedimentary phyllite, quartzite, and thin marble bands.

The two main lithological groups of metamorphic thrust sheets of this belt are the Thimphu Gneissic Complex and the Paro Formation. The Thimphu Gneissic Complex is characterized by migmatites and biotite-granite-gneisses with thin beds of quartzite, quartz mica schist, calc-silicate, and marble, and is the major rock type covering the country. The Paro Formation is characterized by quartz mica schist, quartzite, calc-silicate, marble, and a thin bed of graphitic schist, and this is exposed in and around Paro. The Central Crystalline Belt is affected by

intrusion of tourmaline bearing granites and pegmatites in the form of dykes, sills, laccoliths, and larger intrusions. The larger intrusive bodies are concentrated in the northern ranges.

The metamorphic and granitised contact of the Tethyan rocks with the underlying Thimphu Gneissic Complex is gradational. The Tethyan rocks are exposed in the extreme north of the country and the central area of Black Mountains and their surroundings. This rock type basically comprises quartzite, siltstone, sandstone, phyllite, slate, limestone, and conglomerate.

## 1.7 Key Land Degradation Issues and Concerns in Bhutan

### 1.7.1 Overgrazing

Livestock is maintained by the rural Bhutanese mainly for dairy and meat production, draught power and production of dung for farmyard manure. Despite consistent government efforts to reduce livestock population through introduction of improved breeds, artificial insemination and sterilization, livestock population has remained high. In 2005, there were 338,847 cattle and 45,538 yaks in the country<sup>5</sup>. These figures are about 10 percent increase in cattle population and a significant 38 percent increase in yak population since 1995.

Cattle and yak population density based on total land area is 10 animals per km<sup>2</sup>. However, effective density of cattle and yak population based on total area of pasture land is much higher. The Facts and Figures of RNR Sector 2003 show that there is 1,737 km<sup>2</sup> of pasture land in the country. This translates to 121 animals (cattle and yak) per km<sup>2</sup> of pasture land. High livestock population has led to overgrazing in many instances. Over-grazing of pastures and forests, mainly in broadleaf forests, may lead to attrition or loss of species, reduction of land productivity and soil erosion. Forest regeneration is also hampered and change in vegetation is induced where grazing is rampant.

While in general the impacts of grazing are said to be negative, it must be recognized that livestock rearing is integral to rural livelihood and forms a part of the fabric that links other elements of the socio-economic structure of individual households and communities. Cattle are owned by almost all of the rural households in the country and it dominates the temperate and subtropical regions of the country. In the alpine region of the country, such as Laya and Lingshi, yak-herding is predominant and the economy is to a great extent based on yak products<sup>6</sup>. It is important to recognize that grazing is an environmental problem when it is excessive and not managed but when it occurs at low or moderate level and is managed it can have environmental benefits, e.g. dispersal of seeds aiding natural regeneration.

### 1.7.2 Forest Fire

Depending on the local site conditions, the negative impact of forest fires may be immediate or on a longer term. In steep areas the negative impact may be immediate, especially if heavy rains follow forest fire. The rainwater washes away topsoil and ash, depriving the exposed area of nutrient to support natural regeneration. If such a process is repeated several times, a succession process starts whereby the site completely degenerates into a barren area. Some species such as chir pine *Pinus roxburghii* can withstand few forest fires. However, there is gradual degeneration of the site, and the associate species would be completely destroyed rendering the site to soil erosion and degradation of the ecosystem. This may also result in a change of the ecosystem if the area is repeatedly subjected to forest fires.

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<sup>5</sup> Ministry of Agriculture (Statistical Yearbook of Bhutan 2007)

<sup>6</sup> With the legalization of collection of *Cordecyps*, an alpine insect-fungi highly valued for its medicinal properties, in the last 2-3 years, yak-herding is not any more the sole major economic activity in the alpine areas.

Forest and Nature Conservation Act 1995 prohibits setting of forest on fires and imposes fines and penalties including imprisonment. In spite of such stringent legislation, forest fires are a recurrent and widespread phenomenon. The Department of Forests (DoF) has recorded 526 incidents of forest fire, affecting nearly 70,000 hectares of forest, between 1999/2000 and 2007/08. There was a down-ward trend in both the number of forest fire incidents and area burnt from 1999-2000 until 2003/04 before rising again from 2004/05. Forest fire occurrence was particularly drastic in 2006/07. One particular fire incident that occurred in Athang, Wangduephodrang *dzongkhag*, in May 2007 razed more than 15,000 hectares of forest and killed a number of wildlife including a few of the critically endangered white-bellied herons. All forest fires in the country are man-made; either set deliberately to invigorate the growth of pastures or commercially valuable grasses such as lemon grass, or occur due to general public carelessness.

### 1.7.3 Excessive Forest Utilization

A report of the Forest Resources Development Division (FRDD) mentions that the annual total consumption of timber at 190,000 m<sup>3</sup> in the recent years exceeded the total annual allowable cut (AAC) of about 149,000 m<sup>3</sup> from all Forest Management Units (FMUs). The excess demand was met from ad hoc sources, which is a cause for concern as these sources are not operated based on sustainable forest management planning. Fuelwood consumption is even higher at 1.27 tonnes or 1.8 m<sup>3</sup> per person per annum. This works out to nearly 1.2 million m<sup>3</sup> per annum. Although collection of dry fuelwood in the form of fallen twigs and driftwood is common, bulk of the fuelwood needs is met from natural forests. According to the Department of Energy, in 2005, fuel wood alone accounted for 57.7 percent of the total primary energy supply. As a result of excessive forest use, localized deforestation has occurred in several places especially where population density is high, for example in eastern and southern Bhutan.

During the Ninth Five Year Plan period (July 2002 – June 2007), a total of 214,267 hectares of forests had been earmarked for logging operations, primarily to harvest timber. An AAC of 208,088 m<sup>3</sup> had been projected from these forest areas, nearly 40 per cent increase over the previous AAC. This translates to increased forest harvesting activities, involving construction of logging roads and laying of machinery such as cable cranes in new forest areas. These will have concomitant environmental consequences, the degree of which will depend on the quality and design of road construction and logging operations. Environmental monitoring of FMUs is critical but this has been hitherto far from adequate and is likely to remain so in the future too due to lack of trained personnel, funds and equipment.

Apart from timber and fuel wood, there is a long list of non-timber forest products that the rural Bhutanese use. These include medicinal and aromatic plants, forest foods such as mushrooms, ferns and wild greens, bamboo and cane for local handicrafts, plant barks and pulps for traditional paper-making, wood for agricultural and household implements, animal fodder, and leaf litter for farmyard manure. There are several examples from across the country of biodiversity resources becoming scarce due to unsustainable harvesting. For instance, in Bumdeling *geog*, excessive collection and unsound harvesting techniques have depleted *Daphne* plants to the extent that several families traditionally involved in paper-making had to give up the activity<sup>7</sup>. Similarly, bamboo and cane in the Monpa area of Jigme Singye Wangchuck National Park, which were once abundantly available in the immediate vicinity of the villages, now have to be collected from three to four hours of walking distance<sup>8</sup>.

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<sup>7</sup> Norbu UP, 2003

<sup>8</sup> Norbu UP, 2002

#### 1.7.4 Infrastructure Development

Concomitant with modernization, the need for infrastructure development has grown. Socio-economic development objectives necessitate construction of roads and electrification among other things. The road network has increased from 4,007 km in 2003 to 4,545 km in 2006<sup>9</sup>. According to the Tenth Five Year Plan (FYP) Programme Profiles (2008-2013), more than 480 km of new roads, including farm roads will be constructed to improve access and connectivity to remote areas. In addition, during the same period, 468 km of existing roads will be upgraded and 40 km will be widened<sup>10</sup>.

Another key infrastructure development activity is the construction of power transmission grids and distribution lines. In the Tenth FYP, the Royal Government of Bhutan (RGoB) plans to undertake inter-regional power transmission and distribution works to provide stable and adequate power supply for regionally balanced socio-economic development. In addition, rural electrification distribution lines will be constructed with the target to electrify 84 percent of the rural households by the end of the Tenth FYP period. The construction of roads and power transmission/ distribution line has proven to be environmentally challenging as a result of the rugged terrain and fragile geologic conditions of the country. Where adequate environmental safeguards and mitigation measures are not employed, development of these infrastructure would almost inevitably cause problems such as slope instability, deforestation, disturbance to wildlife habitats, and sedimentation of water bodies.

#### 1.7.5 Unsustainable Agricultural Practices

Agriculture is the primary occupation in the rural areas, which holds 69 percent of the country's population. However, there are various instances of unsustainable agricultural practices that are leading to land degradation. For instance, in Radhi *geog*, Trashigang, irrigation of increased areas of agricultural land and inadequate management of irrigation water have increased the percolation of water into the subsoils and beneath. This has caused the weight of the soils and underlying rock, which is mainly phyllite, to increase and become slippery, and consequently reducing their strength to withstand sliding. Another example pertains to *tseri*, which is a dominant agricultural practice in several *dzongkhags* in the east and east-central parts of the country. Shortening of fallow cycles of *tseri* has triggered land degradation in numerous places and when such practices occur on steep slopes the results are all the more devastating.

#### 1.7.6 Solid Waste Generation

Over the recent years, generation of solid waste has increased significantly in urban centers. Urban population growth, growing affluence, wasteful consumption habits, low level of public awareness and poor civic sense have led to increased solid waste. The enormity of the problem is most explicit in Thimphu and Phuentsholing. According to data collected by the Royal Society for the Protection of Nature, Thimphu's solid waste generation had increased from eight metric tons (MT) a day in 1994 to 22 MT in 2003-04, and to 37 MT in 2005.

Exacerbated generation of solid waste combined with absence of waste segregation system and lack of application of proper landfill management practices have resulted in the overfilling of the existing landfills. This renders the landfill sites unusable for other purposes, devalues adjacent lands, and mars the visual of the landscape.

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<sup>9</sup> Department of Roads, Ministry of Works and Human Settlements, cited in Statistical Yearbook of Bhutan 2007

<sup>10</sup> Tenth Five Year Plan (2008-2013): Programme Profiles

### 1.7.7 Rapid Urbanization

During the Eighth FYP (July 1997-June 2002), the urban population was estimated to be only 15 percent of the country's total. By the onset of the Ninth Five Year Plan (July 2002-June 2007), it had grown to 21 percent. The Population and Housing Census of Bhutan 2005 revealed that the urban population had grown to 31 percent. These figures indicate a very rapid growth of the urban population. What is even more alarming is that more than half of the urban population is concentrated in just two towns – Thimphu and Phuentsholing. Thimphu alone has more than 40 percent of the total urban population while Phuentsholing has more than 10 percent. In order to accommodate surplus population, these urban centers have consumed prime agricultural lands in the valleys and encroached on hill slopes which were once forested. Extraction of sand and stones from the river banks and harvesting of timber from adjacent forests have increased in frequency and volume in the recent years to cater to the growing construction demands in the urban centers.

### 1.7.8 Mining and Quarrying

As of 2006, there were 39 mines in the country<sup>11</sup>. The mines are mostly concentrated in the southwestern and southeastern parts of the country, specifically in Samtse, Samdrup Jongkhar and Pemagatshel *dzongkhags*. Overall mineral production has increased over the years. In particular, the production of gypsum and talc has increased enormously – almost by 100 percent – between 2002-2006. Mining operations have direct physical impact on the landscape. The primary environmental impact is through the removal of surface features during the extraction of materials, thus altering or destroying natural landscapes. Secondary effects such as noise, dust, pollution and waste generation also impinge on the natural environment. According to the “Report on the Mining Operations in Bhutan” prepared by the Royal Audit Authority in 2007, almost all the mines lacked proper system for environmental management of mined areas and their surroundings. As a consequence, several forms of environmental degradation such as air pollution, water sedimentation and land degradation have been reported to be occurring in and around almost all the mines in the country.

## 2 Assessment of Policies and Plans with Reference to Sustainable Land Management

### 2.1 Macro Level

#### 2.1.1 Bhutan 2020

Bhutan's development process is guided by the home-grown philosophy of “Gross National Happiness” (GNH). Like human development, GNH recognizes that there are other non-material aspects of development which are equally, if not more, important than gross national product. In the sphere of public policy to operationalize GNH, Bhutan has designed its vision document **Bhutan 2020**, providing development goals, objectives and priorities with a twenty-year perspective and outlining key principles to guide the development process. The document articulates the following four elements as pillars to maximize GNH:

- Equitable socio-economic development, ensuring equity between individuals and communities as well as regions to promote social harmony, stability and unity and to contribute to development of a just and compassionate society

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<sup>11</sup> Report on the Mining Operations in Bhutan, Royal Audit Authority, 2007.

- Conservation of the environment, ensuring development pursuits are within the limits of environmental sustainability and are carried out without impairing the biological productivity and diversity of the natural environment
- Preservation and promotion of culture, instilling appreciation of the cultural heritage and preserving spiritual and emotional values that contribute to happiness and cushion the people from the negative impacts of modernization
- Promotion of good governance, developing the country's institutions, human resources and systems of governance and enlarging opportunities for people at all levels to fully participate and effectively make development choices that are true to the circumstances and needs of their families, communities and the nation as a whole

Bhutan 2020 is presented in two parts. The first part analyses past development performance and key development challenges concerning social development, economy, environment, and development governance. The second part discusses the rationale and framework of key development objectives focusing on human development, culture and heritage, equitable and balanced socio-economic development, governance, and environmental sustainability. It then describes priority areas and milestones for each of the development objectives and, finally, presents the country scenario envisioned in 2020 in terms of human development, economy, environment, and institutions.

Within the sphere of environmental sustainability as a key GNH element, the document contains two key strategic components that provide very good basis for sustainable land management. One is the institutionalization of environmental impact assessment (EIA) so that development projects, especially those concerning physical infrastructure, are systematically assessed for their impacts on the environment, including local communities and their livelihoods, and measures are designed to mitigate these impacts whilst optimizing project benefits. The other element pertains to effective management of watersheds to conserve biodiversity, maintain soil fertility, combat land degradation, and sustain biological productivity of natural systems.

### 2.1.2 Tenth Five Year Plan

Bhutan's development programs and activities are implemented through FYPs. The country has so far implemented nine FYPs, starting from 1961. The Tenth FYP covers the period from July 2008 to June 2013<sup>12</sup>. The strategic framework of the Tenth FYP is based on the core objective of poverty reduction. It, therefore, stresses on pro-poor social and economic development approaches such as expanding infrastructure and road connectivity in rural areas where majority of the country's poor live and strengthening of agricultural production and productivity that will help raise rural incomes and improve food security. With the target to reduce population living below poverty line from the 2007 baseline of 23.2 percent to below 15 percent by the end of 2013, the Tenth FYP intends to maintain Gross Domestic Product (GDP) growth rate of around nine percent.

The Tenth FYP Main Document addresses environment as a cross-cutting theme. It recognizes that protecting and conserving the environment will require greater attention than before as accelerated pace of socio-economic development accompanied by increased infrastructure development, urbanization, industrialization, and consumption patterns is expected to create additional stress on the natural environment. At the same time, it emphasizes the need to use the country's environmental resources as a development asset for economic growth and poverty reduction within the limits of sustainability.

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<sup>12</sup> The commencement of the Tenth Five Year Plan was postponed from 2007 to 2008 to coincide with the advent of parliamentary democracy in the country and the accession to the throne of the Fifth King His Majesty Jigme Khesar Namgyal Wangchuck.

In terms of relevance to sustainable land management (SLM), the Tenth FYP lays emphasis on environment-friendly road construction methods to minimize long-term environmental and socio-economic costs. It recognizes overgrazing, forest degradation as a result of inefficient use of forest resources and high level of fuelwood consumption, loss of prime agricultural lands to urbanization and infrastructure development, and the country's high vulnerability to natural disasters as key environmental degradation concerns.

The Tenth FYP Main Document articulates policy and strategic measures for environment in very broad terms, such as: "mainstream environment issues in development policies, plans and programs; develop appropriate environmental legislation; and develop environmental standards". The strategic framework for the Tenth FYP in the area of environmental conservation focuses largely on environmental legislation, institutionalization of decentralized EIA process, strengthening the management of protected areas and biological corridors, integrated conservation and development to enhance livelihoods of people living in protected areas, ex-situ conservation of plant and animal genetic resources, bioprospecting, and institutional development for forestry and environmental education, training and research. In the area of agriculture and livestock development, the focus is basically on enhancing production, commercialization of products, sustainable utilization of renewable natural resources including arable agriculture and pasture land resources, and development of rural economic infrastructure such as farm roads, local markets, and irrigation schemes.

Sustainable land management has been mainstreamed in the Tenth FYP but in a sectoral manner. The table below shows the status of SLM in the strategic framework of various sectors/sector groups as featured in the Tenth FYP Main Document:

**Table 2: Status of SLM in the Strategic Framework of Various Sectors/ Sector Groups in Tenth FYP**

<b>Sector/ Sector Group</b>	<b>Status of SLM in the Strategic Framework</b>
Renewable Natural Resources	The sector policy objectives relevant to SLM include conservation and sustainable commercial utilization of forest and water resources, and sustainable utilization of arable agriculture and pasture land resources
Trade, Industry, Tourism, Geology and Mines	The strategic objectives for the geology and mines sector relevant to SLM include geological mapping, mapping of selected areas for site suitability, hazards and risks, GLOF mitigation in potentially dangerous glacial lakes, and environment-friendly utilization of mineral resources.
Roads and Bridges	Consolidation of environment friendly road construction techniques to minimize negative environmental impacts has been outlined as a policy objective of the roads sector.
Urban Development	The strategic framework of this sector does not feature any measures relevant to SLM

Several sector-based program profiles of the Tenth FYP feature SLM related components. These include:

- Construction and Improvement of National Highways (Roads sector, Ministry of Works and Human Settlements): Promotion of environment-friendly road construction techniques in the construction of roads is outlined as a key strategic intervention within this program;
- Construction and Improvement of Roads Connecting Hydropower Projects (Roads sector, Ministry of Works and Human Settlements): Similar to the aforesaid program, this program also features promotion of environment-friendly road construction techniques in the construction of roads features as a key strategic intervention;

- Soil Fertility and Land Management (Agriculture sector, Ministry of Agriculture): This program seeks to create and strengthen data and information for SLM decision-making and mainstreaming into development policies and plans, develop and implement SLM practices in the field, and develop the capacity of local communities for SLM;
- Feed and Fodder Development (Livestock sector, Ministry of Agriculture): Within this program, the Department of Livestock among other things intends to promote pasture development on both government and private lands, and finalize and implement national *tsamdro* and grazing management policy and strategies;
- Renewable Natural Resources Research (Ministry of Agriculture): Soil fertility management is included as one of the activities of the Renewable Natural Resources Program, mainly to be carried out through the Regional Renewable Natural Resources Research Centers;
- Capacity Enhancement in Geo-scientific Investigations and Mineral Development (Geology and Mines, Ministry of Economic Affairs): This program includes several activities that could aid SLM. Systematic mapping and creation of digital database on the geology, geomorphology, hydrogeology, and lithology of the country, studies on slope stability, foundation and site suitability, geo-hazard assessment of new urban centers, and landslide mapping and geo-hazard zonation feature as some of the key strategic inventions within this program. In addition, the Department of Geology and Mines intend to review mines and Minerals Management Act 1995 and develop relevant regulations and guidelines for sustainable use of mineral resources;
- Assessment and Monitoring of Climate Change Induced Geological Hazards (Geology and Mines, Ministry of Economic Affairs): This program focuses on time-series monitoring of glaciers and glacial lakes, implementation of mitigation measures against glacial lake outburst floods, seismic risk assessments, and geotechnical investigations of national infrastructure development projects;
- Development and Sustainable Management of Forests through Community Participation (Forestry sector, Ministry of Agriculture): Community forest management, private forest management, watershed management and soil conservation, and creation of forest plantation and nurseries are the activities under this program;
- Forest Resources Development and Management (Forestry sector, Ministry of Agriculture): Creation of FMUs, forest inventories of the FMUs, and development of management plans for sustainable use of timber and other forest resources and restocking of harvested forests in the FMUs are the principal activities within this program;
- Forest Protection and Utilization (Forestry sector, Ministry of Agriculture): This program is geared towards the protection of forests from human encroachment and illegal use, and promoting the utilization of forest resources for socio-economic development based on sustainable practices;
- Nature Conservation (Forestry sector, Ministry of Agriculture): This program basically consists of establishment and management of protected areas, biological corridors and other conservation areas for the conservation of wild fauna and flora;
- Conservation of Environment (National Environment Commission): The focus of this program is on mainstreaming environmental conservation needs in development plans, programs and projects primarily through EIA and strategic environmental assessment (SEA)

processes, developing environmental legislations, guidelines and standards, and strengthening environmental information, monitoring and reporting systems.

The Tenth FYP comparatively has stronger SLM content than the Ninth FYP in terms of targeted programs. However, it is felt that sector-based mainstreaming of SLM in the Tenth FYP should have been supported with cross-sectoral mainstreaming of SLM to facilitate a holistic and integrated approach to address land use and management issues. For instance, country-wide land capability classification would be a useful inter-sectoral strategy to guide land use and management according to land capability and, thereby, reduce inappropriate land use and land use conflicts between various sectors.

Furthermore, SLM mainstreaming is lacking in some key sector-based programs that have considerable bearing on how lands are used and managed. This is especially evident in programs that are infrastructure-based such as hydropower development, power transmission, rural access, and rural electrification programs.

### 2.1.3 National Environment Strategy

The National Environment Strategy (NES) titled “The Middle Path” – launched in 1998 – was derived through an inter-sectoral, consultative process. The Strategy, which is equivalent to a National Sustainable Development Strategy in essence, enshrines the concept of sustainable development and identifies three main avenues for such development. Two of these avenues are relevant to SLM. One is hydropower development based on integrated watershed management, involving a wide range of activities such as afforestation, community-based forest management, and EIAs. The other avenue that is relevant to SLM is agricultural development based on sustainable practices, including the application of soil fertility management and conservation techniques.

The NES also examines a number of areas of special importance for environmentally and culturally responsive economic development. These include roads, urbanization, natural resource management, EIAs, and population. Finally, it goes on to outline five key cross-sectoral needs that the country must effectively address to integrate environmental considerations into economic development planning and policy-making. These needs pertain to information systems and research, institutional development and popular participation, policies and legislation, training and education, and monitoring, evaluation and enforcement.

Having been published ten years ago, there are talks to review and revise the NES to take into account current development realities and new environmental management needs, for instance those emerging as a result of climate change and increasing solid waste.

### 2.1.4 Bhutan Water Policy

Water resources management and SLM are closely linked. The Bhutan Water Policy has been drawn under the aegis of Bhutan Water Partnership, a collaborative entity made up of stakeholder agencies related to water resources use and management. The Policy covers all forms of water resources including snow, glaciers, rivers, lakes, streams, springs, wetlands, rainwater, soil moisture and groundwater. The Policy establishes Bhutan’s water vision which states that “water will continue to be available in abundance to pursue socio-economic development in Bhutan. Present and future generations of Bhutanese people will have assured access to adequate, safe and affordable water to maintain and enhance the quality of their lives”. It views water resources from a broad, multi-sectoral perspective while recognising the responsibility of the sub-sectors to play their part in meeting the policy objectives.

Recognizing that land use has direct impact on water resources, the Policy calls for land use planning at the river basin level. It also identifies surface water protection, watershed management, soil erosion control, and bioengineering as special areas of attention for applied research in water resources development and management.

### 2.1.5 Environmental Assessment Act 2000

The Environmental Assessment (EA) Act 2000 is overarching in that it relates to environment in a holistic manner and applies to a wide range of activities across a number of sectors. The Act establishes procedures for the assessment of potential effects of strategic plans, policies, programs, and projects on the environment, and for the determination of policies and measures to reduce potential adverse effects and to promote environmental benefits. The Act requires the RGoB to ensure that environmental concerns are fully taken into account when formulating, renewing, modifying and implementing any policy, plan or program as per regulations that may be adopted within the appropriate provision of the Act. It makes environmental clearance (EC)<sup>13</sup> mandatory for any project or activity that may have adverse impact on the environment, and is especially applicable in infrastructure and natural resource use projects such as roads, hydropower, mines and industries, where land degradation and pollution concerns are generally considerable.

To implement the EA Act 2000, regulations were promulgated in 2002 for the environmental clearance of projects and for strategic environmental assessment. **The Regulation for the Environmental Clearance of Projects 2002** defines responsibilities and procedures for the implementation of the EA Act 2000 concerning the issuance and enforcement of EC for individual projects and to:

- provide meaningful opportunities for public review of potential environmental impacts of projects;
- ensure that all projects are implemented in line with the sustainable development policy of the RGoB;
- ensure that all foreseeable impacts on the environment, including cumulative effects are fully considered prior to any irrevocable commitments of resources or funds;
- ensure that all feasible alternatives are fully considered;
- ensure that all feasible means to avoid or mitigate damage to the environment are implemented;
- encourage the use of renewable resources, clean technologies and methods;
- ensure that concerned people benefit from projects in terms of social facilities;
- help strengthen local institutions in environmental decision making; and
- help create a uniform, comprehensive data base on the environmental and cultural conditions and assets in the country.

To support the implementation of the EA Act and Regulation, sectoral EC application guidelines have been prepared for highways and roads, forestry, hydropower, industrial projects, mines, power transmission and distribution lines, urban development, and tourism projects. In addition, environmental codes of practice (ECOP) have been formulated for storm water drainage system, installation of underground and overhead utilities, tourism activities, and roads, and environmental discharge standards have been set to control pollution.

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<sup>13</sup> Article 6.11 of the EAA defines Environmental Clearance as the decision, issued in writing by the NECS or the relevant Competent Authority, to let a project proceed, which includes terms (and conditions) to ensure that the project is managed in an environmentally sound and sustainable way.

The other regulation supporting the EA Act is the **Regulation for Strategic Environmental Assessment 2002**, which was promulgated with the specific purpose to:

- ensure that environmental concerns are fully taken into account by all government agencies when formulating, renewing, modifying or implementing any policy, plan or programme, including FYPs;
- ensure that the cumulative and large scale environmental effects are taken into consideration while formulating, renewing, modifying or implementing any policy, plan or programme;
- complement project-specific environmental reviews as per RECOP and to encourage early identification of environmental objectives and impacts of all government proposals at appropriate planning levels;
- promote the design of environmentally sustainable proposals that encourage the use of renewable resources and clean technologies and practices; and
- promote and encourage the development of comprehensive natural resource and land use plans at the local, dzongkhag and national levels.

#### 2.1.6 National Environmental Protection Act 2007

The National Environmental Protection Act 2007 has been enacted as an umbrella legislation. All other laws and regulations governing the use of land, water, forests, minerals and other natural resources are required to be consistent with this Act. It specifically lays down principles and directives for the protection of environmental quality and the maintenance of forest, biodiversity and ecosystem integrity. Salient features include the right to environmental information and citizen participation in environmental management, and provision for establishment of an Environmental Tribunal as a quasi-judicial authority with the power to hear, investigate and pass decisions on environmental disputes.

Element of SLM can be found in the following sections of the Act:

- Section 7: In order to achieve sustainable, natural resources such as forest, water, air, biodiversity, soil, minerals and the overall integrity of the environment shall not be degraded. In line with the Government's Middle Path Strategy, economic development and environmental conservation shall receive equal priority;
- Section 9: A developmental activity shall be strategically planned and executed in harmony with the carrying capacity of the country's sensitive ecological settings and geographical terrains;
- Section 10: A person taking natural resources from the environment or deriving economic benefits is responsible to ensure sustainable use and management of those resources and their ecology;
- Section 68: The National Environment Commission shall ensure that, in order to conserve the country's natural resources and to prevent degradation of the fragile mountain ecosystem, a minimum of sixty percent of Bhutan's total land shall be maintained under forest cover for all time. Any changes in the present national forest cover and protected areas shall be made only by the Parliament;

- Section 69: In order to ensure sixty percent forest cover in perpetuity, the National Environment Commission (NEC) shall constitute a high-level committee comprising of relevant stakeholder agencies to: (a) periodically review existing policies, plans and programs and recommend necessary changes in policies, plans and programs, including implementation and enforcement mechanisms; (b) initiate afforestation and reforestation programs in degraded and barren land to enhance forest cover; (c) review policies and programs on forest fire management and measures to curb forest fire in the country;
- Section 71: The National Environment Commission, in consultation with other relevant agencies, shall ensure conservation and protection of wetlands, alpine regions, watersheds, and other vulnerable ecosystems in addition to the existing protected areas.

### 2.1.7 Land Act of Bhutan 2007

The Land Act of Bhutan 2007 came into force on 1<sup>st</sup> January, 2008, superseding the Land Act 1979<sup>14</sup>. The new legislation provides for the establishment of a National Land Commission (NLC) as an independent authority and highest decision-making body in matters related to the implementation of the provisions of the Land Act of Bhutan 2007 through policy and regulatory work, inter-agency coordination, cadastral survey and land registration, and management of national land records among other things. It spells out rights, responsibilities and legal conditions for the management, regulation and administration of the ownership and use of land.

To support the implementation of the Land Act of Bhutan 2007, the NLC has formulated **Land Rules and Regulations for the Kingdom of Bhutan 2007**. The rules and regulations define in detail the institutional functions, procedural requirements and regulatory provisions for management of national land records, land ownership entitlements and land rights, land registration, land conveyance, land acquisition and compensation, land grants, allotment of government land, cadastral survey, documentation and mapping, land conversion, land lease, easement, and annulment of land.

In relation to SLM, the Act provides for grazing management and pasture development on *tsamdros* based on a *tsamdros* management plan and for vegetative and land improvement on *sokshings* based on a *sokshing* management plan. Barring these two elements, the Act and supporting rules and regulations have no specific provisions related to SLM.

## 2.2 Sectoral Level

### 2.2.1 National Forest Policy

The National Forest Policy was first formulated in 1974, and revised in 1979 and 1991. The policy places priority on conservation of forests and associated resources for their ecological values. Economic benefit from forest resources is considered secondary and is to be derived within sustainable limits.

SLM is placed strongly in the National Forest Policy with one of the four guiding principles being: “protection of the land, its forest, soil, water resources and biological diversity against degradation, such as loss of soil fertility, soil erosion, landslides, floods and other ecological devastation and the improvement of all degraded forest land areas, through proper management systems and practices”. The other guiding principles are: contribution to the production of food, water, energy and other commodities by effectively coordinating the interaction between forestry and farming systems; meeting the long-term needs of Bhutanese people for wood and other forest products by placing all production forest resources under sustainable management;

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<sup>14</sup> Excepting provisions pertaining to water channel and embankments, and compensation on crop damage by cattle.

and contribution to the growth of national and local economies, including exploitation of export opportunities, through fully developed forest based industries, and to contribute to balanced human resources development through training and creation of employment opportunities.

Currently, the National Forest Policy is under review and is expected to be revised to address new and emerging issues, and forest conservation needs.

## 2.2.2 Forest and Nature Conservation Act 1995

Bhutan Forest Act 1969 was the first modern legislation to be enacted in the country. Its enactment brought all forest resources under government custody with the intent to regulate forest utilization and control excessive forest exploitation. This law was repealed with the enactment of the Forest and Nature Conservation Act 1995 to address evolving conservation needs including community stewardship of forest resources. The objective of the 1995 Act is to “provide for the protection and sustainable use of forests, wildlife and related natural resources of Bhutan for the benefit of present and future generations”.

Elements of SLM are entrenched in the Act. Chapter VIII of the Act is dedicated to soil and water conservation matters. In addition, the Act covers sustainable forest management, protection of government reserved forests against illegal use, social and community forestry, and establishment and management of protected areas, all of which can contribute to SLM.

To support the implementation of the Forest and Nature Conservation Act 1995 and in accordance with the powers and duties conferred under that Act, the Ministry of Agriculture (MoA) promulgated the **Forest and Nature Conservation Rules** in 2000, which underwent some revision in 2006. The Rules establishes regulations for forest management, private and community forestry, establishment and management of protected areas, wildlife protection, prevention of forest fires, land clearance, and other activities potentially impacting soil, water and wildlife resources, among other things.

## 2.2.3 Mines and Mineral Management Act 1995

The Act recognizes the preservation, protection and setting of environmental standards and conservation of natural resources consistent with the provision of the Act and other environmental legislation as a critical feature of mining practices. It requires that restoration of areas that are mined is carried out in a proper manner with the objective of creating a suitable and acceptable environment as approved by the NEC. Prior to granting a mining lease, a final mine feasibility study based on an assessment of technical, financial, environmental and social parameters, is required. Among other things, the feasibility study needs to contain a Mine Plan, Environment Management Plan and Mine Restoration Plan. These plans put together are to ensure that adverse environmental impacts, including those on land, from mining are minimal to the extent possible.

In exercise of the powers conferred by Article 50 of the Mines and Mineral Management Act 1995, the Ministry of Trade and Industry (now Ministry of Economic Affairs) promulgated the **Mines and Mineral Management Regulations 2002**. The Regulations stipulate the requirement of environmental clearance (Articles 32-34), conditions for environmental restoration bond (Articles 56-61), maintenance of records on mining operation including environmental protection measures (Article 86 clause 86.8), compliance with all emission limits and ambient air quality standards adopted by the NEC (Article 154 and 155), water, dust and noise pollution management needs (Articles 159-170), monitoring of environmental quality in and around the mine lease area, and reporting of the area’s environmental state (Articles 182-184).

#### 2.2.4 Livestock Act 2001

The purpose of this Act is to regulate livestock breeding, health and production with the aim to enhance livestock productivity and prevent diseases so as to improve rural income and livelihood. The Act does not deal with grazing and pasture development issues that have bearing on SLM. Although livestock rearing and grazing form an important activity in the Bhutanese rural economy, legislation specifically addressing grazing and pasture development issues has been long overdue. The Land Act of Bhutan 2007 does partially address this need by specifying provisions for use of *tsamdro*. These, however, are silent on the environmental aspects of the use and management of *tsamdro*.

#### 2.2.5 Biodiversity Act of Bhutan 2003

This Act asserts the sovereignty of the country over its genetic resources, the need to promote conservation and sustainable use of biodiversity resources as well as equitable sharing of benefits arising from sustainable use, and the need to protect local people's knowledge and interests related to biodiversity. It lays down the conditions for the grant of access, benefit sharing, and protection, and describes various rights, offences and penalties. Formulation of rules and regulations for implementation of the Act is presently underway. The Act has very little to do with SLM in specific terms.

#### 2.2.6 Road Act 2004

The Road Act 2004 establishes powers and responsibilities of various agencies for road planning, design, construction and maintenance at the central, dzongkhag, geog and municipal levels. The Act also provides the framework for setting technical standards and requirements. Relevant to SLM are sections 4(1)(h) and 7(2). Section 4(1)(h) gives the Department of Roads (DoR) the mandate to adopt and promote environment friendly techniques in the implementation of road activities. Section 7(2) requires that all road construction and maintenance works conform to environmental considerations, geological stability considerations and preservation of agricultural land. The DoR has formulated environmental codes of practice for road projects in keeping with its objective to promote environment-friendly road construction. These codes require that road projects fully assess all potential adverse environmental impacts right from design and planning phase through construction phase to operation and maintenance phase and implement measures to mitigate these impacts.

### 2.3 Local Level

#### 2.3.1 Dzongkhag Yargye Tshogdu Chathrim 2002

With main aim to bolster the national decentralization policy, the *Dzongkhag Yargye Tshogdu Chathrim* 2002 was enacted. The *Chathrim* empowers the *Dzongkhag Yargye Tshogdu* (District Development Committee) with the authority and responsibility to decide, plan and implement development programs and activities, including those concerning environmental management, at the *dzongkhag* level. Relevant to SLM are the following provisions:

- Article 8 section 13 gives the DYT the power and function to make recommendations on activities with major environmental impacts such as construction of roads, extraction and conservation of forests, mining and quarrying;
- Article 9 section 2 gives the DYT the power and function to adopt and enforce regulations with respect to designation and protection of areas of special scenic beauty or biodiversity as *dzongkhag* parks and sanctuaries;

- Article 9 section 9 gives the DYT the power and function to adopt and enforce regulations with respect to establishment of quarries and mines in accordance with Mines and Mineral Management Act 1995;
- Article 10 section 8 gives the DYT broad administrative power and function to give direction and approval on forest management plan including extraction, conservation and forest road construction in accordance with the Forest and Nature Conservation Act 1995;
- Article 10 section 19 gives the DYT broad administrative power and function to give direction and approval on protection of forests, *tsamdro* and all types of government and community lands from illegal use and encroachments.
- Article 13 section 5 gives the *Dzongkhag* Administration the powers and functions to construct farm and feeder roads, in conjunction with the NEC.

### 2.3.2 Geog Yargye Tshogchung Chathrim 2002

Taking the national decentralization policy to the lowest administrative unit, i.e. the *geog* (block) level, the *Geog Yargye Tshogchung Chathrim 2002* empowers the *Geog Yargye Tshogchung* (Block Development Committee) with the authority and responsibility to decide, plan and implement development programmes and activities, including those concerning environmental management, at the *geog* level.

There are two provisions in the *GYT Chathrim 2002* that are relevant to SLM. One is article 8 section 3, which gives the GYT the power and function to adopt and enforce regulations at the *geog* level with respect to control and prevention of pollution of air, soil and water. The other is article 9 section 8, which gives the GYT broad administrative power and function at the *geog* level with respect to custody and care of communal lands, community forests, including *sokshing* and *tsamdro*, medicinal herbs, and accordingly prevention of illegal construction and all other types of encroachments on land and forests.

## 2.4 GEF-related Plans and Programs

### 2.4.1 Bhutan's National Capacity Self Assessment for Global Environmental Management and Action Plan

Bhutan is a party to several international environmental treaties and agreements, including the three major United Nations conventions on environment namely the Convention on Biological Diversity (CBD), United Nations Framework Convention on Climate Change (UNFCCC) and United Nations Convention to Combat Desertification (UNCCD). However, the country's efforts to pursue national obligations contained in these conventions are impeded by the lack of capacity at various levels. It is in this context that the National Capacity Self Assessment for Global Environmental Management (NCSA) was undertaken in Bhutan in 2005. The NCSA examined capacity issues and capacity development needs at three levels, i.e. systemic, institutional and individual, to carry out the obligations of CBD, UNFCCC and UNCCD. The assessment was carried out using a broad-based consultative and participatory process involving all key stakeholders. It ended up with the development of an action plan to address the capacity development needs in a prioritized and time-framed manner.

The mainstreaming of SLM in NCSA is inherent given that the main objective of the whole exercise and the resultant document was to assess capacity issues and capacity development needs mainly pertaining to the global environmental concerns of biodiversity loss, climate change and desertification/ land degradation.

Specific to land degradation/ SLM, the NCSA identified the following capacity development needs:

1. NAP to combat land degradation in a holistic and inter-disciplinary manner;
2. SLM policy that provides for coordinated and integrated approach to land use and management;
3. Grazing Act, supported grazing management rules and guidelines, to reduce grazing conflicts and promote sustainable grazing practices;
4. Land use management regulations and guidelines based on land capability classification;
5. Streamlining of legal provisions related to quarrying to clearly delineate administrative powers between the Department of Forests and the Department of Geology and Mines;
6. Strengthening of central and regional facilities for production of national, regional and *dzongkhag* soil maps and database;
7. Research and information on grazing, with particular reference to carrying capacity and environmental impacts in various bio-physical and socio-economic scenarios, to aid grazing management decisions;
8. Strengthening of the National Soil Services Center for UNCCD related tasks;
9. Monitoring and evaluation of FMUs to assess the effectiveness of these units and compliance with the approved management plans.

In addition to the above, the NCSA has identified several cross-cutting capacity development needs that have relevance to SLM. These include institutionalization and decentralization of EIA process and development of a national forest fire management strategy.

#### 2.4.2 Bhutan National Adaptation Program of Action for Climate Change

The National Adaptation Program of Action for Climate Change (NAPA) is a tool under the UNFCCC that provides a process for Least Developed Countries to assess their climate change issues and identify priority activities that respond to their urgent and immediate needs with regard to adaptation to climate change. The Bhutan NAPA was prepared in 2006 by the NEC in consultation with a wide range of stakeholders through a series of national and regional level workshops. It consists of nine priority projects, short-listed from an initial list of 55 project ideas based on an agreed set of criteria, to address urgent and immediate climate change adaptation needs. Of these, the following projects are expected to directly contribute to SLM:

- Landslide Management and Flood Prevention, involving pilot schemes in critical areas such as Chaskhar in Mongar *dzongkhag*, Ramjar in Trashiyangtse *dzongkhag*, and landslide prone sections of Thimphu-Phuentsholing highway and Riju-Rangjung road.
- Flood Protection of Downstream Industrial and Agricultural Areas, employing among other things SLM practices and erosion control measures in Pasakha industrial area and Taklai river basin.
- Community-based Forest Fire Management and Prevention, primarily by means of institutionalization of village-level forest fire management, community awareness programs, and capacity development of local forest officials.

The other NAPA projects pertain to disaster relief, mitigation of the effects of glacial lake outburst floods, and weather forecasting system. Although these projects do not have any specific SLM element, most of them are expected to indirectly contribute to SLM in varying degrees.

### 3 Ongoing and Recent Sustainable Land Management Initiatives

#### 3.1 Land Management Campaign

The Land Management Campaign (LMC) was launched in July 2005 by Lyonpo Sangay Ngedup, former Agriculture Minister, in response to the need to proactively address land degradation problems which had become increasingly visible and profound in terms of impacts on the local people and their livelihoods, especially in many parts of eastern Bhutan. The monsoon in the summer of 2004 had caused heavy floods and land slides in eastern Bhutan, resulting in the loss of human lives and livestock, destruction of homes, degradation of farm lands, and damage to rural socio-economic infrastructure. During the visit to the affected areas, the former Agriculture Minister observed that one of the key factors leading to land degradation was the lack of proper land management practices.

The LMC is not a one-off activity but a continuous programme of the MoA to instill in people the awareness and understanding of various land management techniques based on site-specific land degradation problems. It focuses on field demonstrations of SLM practices and techniques using a broad-based participatory approach bringing together local communities, *dzongkhag* staff as well as professionals from various disciplines in the rural sector.

The Department of Agriculture (DoA) is responsible for overall coordination and organization of the Campaign. To facilitate inter-agency coordination in planning and implementation, an organizing committee with representation from various departments and agencies has been formed. In addition, a technical team led by the NSSC has been formed to provide core technical advisory services and backstopping to the Campaign.

In its first year, i.e. 2005, the Campaign was implemented in Trashigang *dzongkhag*. The technical team selected eight locations in eight *geogs* after having conducted an intensive field survey covering 42 locations in 13 *geogs* in Trashigang. The selection was based on a set of criteria such as impact of land degradation, demonstration value and geographic distribution. In 2006, the Campaign covered two additional sites – Tsakaling in Mongar *dzongkhag* and Samcholing in Trongsa *dzongkhag*.

#### 3.2 Sustainable Land Management Project

The RGoB embarked on this project in 2006 with grant from the GEF through its Operational Programme 15 and co-financing from Danish International Development Agency (DANIDA). Financial and technical support for project development was provided by the World Bank. The project has been conceived with the development objective to strengthen institutional and community capacity in terms of human resource, policies, incentives, technologies and knowledge for anticipating and managing land degradation in the country. The SLMP, as the project is known in short, is made up of the following four complementary, mutually-reinforcing components:

- Pilot projects to demonstrate effective application of land degradation prevention approaches. For the first three years, the pilot sites are Nangkor in Zhemgang *dzongkhag*, Phuentsholing in Chhukha *dzongkhag* and Radhi in Trashigang *dzongkhag*;

- Mainstreaming of practices for protection against land degradation. This component will support the scaling up of the pilots to additional sites based on the lessons learned from first component. In addition, it will facilitate coordinated and participatory planning at the *dzongkhag* level which integrates the cross-sectoral impacts of development (e.g. infrastructure, roads, irrigation, power, agriculture and industrial development). Under this component, the project will support on-the-ground investments, technical assistance, community cross-site visits, training, research and awareness programmes, new analytical tools, GIS and databases.
- Policy support and guidance for mainstreaming land degradation prevention practices. This component will bring lessons from the first and second components to inform national legislation and policy pertaining to watershed management, upland agriculture and livestock production, forestry, urban planning and infrastructure. It will provide technical assistance to develop guidelines for mainstreaming SLM principles into RGoB's Five Year Plans, and geog and dzongkhag five-year and annual plans.
- National level support for coordination of implementation of land degradation prevention practices. This component would further support RGoB's support to strengthen and build capacity within the Ministry of Agriculture to systematically and effectively coordinate a programme of activities in order to help anticipate and manage land degradation in the country.

### 3.3 UNDP/ GEF Medium Sized Project on Sustainable Land Management

This medium-sized project funded by GEF through the UNDP is a three-year project. It is expected to result in: (i) formulation of NAP; (ii) capacity development for SLM; and (iii) mainstreaming of SLM in national development policy and planning framework.

The formulation of the NAP will include extensive stakeholder consultations and validation of priorities and needs using a multi-disciplinary approach and linking knowledge, perceptions and insights at central, *dzongkhag* and *geog* levels. Capacity development for SLM will be pursued through human resources capacity assessment and development, strengthening of institutional capacity for assessment, documentation and dissemination of SLM practices, development of project proposals including those identified through NAP, and establishment of linkages with UNCCD-related organizations such as the Global Mechanism. The mainstreaming of SLM in the national development policy and planning framework will be pursued through incorporation of SLM strategies in the 10<sup>th</sup> Five-Year Plan, preparation of policy and legal reform recommendations related to SLM, and incorporation of SLM in other environmental policies.

### 3.4 Other SLM Related Projects/ Programs

In addition to the above initiatives, there are a number of projects and programs (ongoing and recently completed) contributing to sustainable land management. These include the following (next page):

**Table 3: SLM Related Projects/ Programs**

Project Title	Timeframe	Agencies Involved	Overall Budget
Wang Watershed Management Project	2001-2007	European Community, various RNR sector agencies, <i>Dzongkhag</i> Administrations	Euro 13.3 million
Environment and Urban Sector Support Programme (This includes the Decentralized Natural Resources Management Project)	2004-2008-?	DANIDA, NEC, various RNR sector agencies, City Corporations, MoEA	DKK 110 million
East Central Region Agriculture Development Programme	2002-2007	Helvetas, various RNR sector agencies	CHF 2.5 million
Participatory Forest Management Project	Phase I (2002-2007) Phase II (2007-2012)	Swiss Development Cooperation, Department of Forest, <i>Dzongkhag</i> Administrations	CHF 4.5 million (Phase I) CHF 3.23 million (Phase II)
Community-based Biodiversity Conservation and Ecosystem Management	2004-2008	Sustainable Development Secretariat, Department of Forest, <i>Dzongkhag</i> Administrations	Nu. 102 million
Conservation Management Planning for Sakten Wildlife Sanctuary	2003-2006	MacArthur Foundation, Department of Forest, <i>Dzongkhag</i> Administrations	Nu. 26.3 million
Linking and Enhancing Protected Areas in the Temperate Broadleaf Forest Ecoregion of Bhutan	2003-2007	UNDP, WWF, GEF, Department of Forest, <i>Dzongkhag</i> Administrations	US\$ 1.855 million

## 4 Key Findings

The main findings of this review are described below:

- The Tenth FYP consists of more targeted programs for SLM compared to the Ninth FYP. While the broad policy perspective for SLM is almost similar between the Tenth FYP and Ninth FYP, there are more targeted programs for SLM in the Tenth FYP than in the Ninth FYP. This can be attributed mainly to a couple of factors. One is the increasing incidents of natural disasters as a result of land degradation over the recent years. In particular, the flash floods and land slides in eastern Bhutan in 2004 brought to the public consciousness the severity of the impacts of land degradation as a result of deforestation, overgrazing and unsustainable agricultural practices. Two is the country's accession to UNCCD in 2003, which has led to increased access to international financing for SLM.
- Mainstreaming of SLM in the Tenth FYP is largely sector-based. While it is appreciated that there are more targeted programs for SLM in the Tenth FYP than in the Ninth FYP, the mainstreaming of SLM in the Tenth FYP remains largely sector-based. This gives an impression of compartmentalistic approach to SLM.
- Macro-level policy perspective of sustainable land management is lacking. At the macro-level and as a cross-sectoral issue, the policy and planning perspective on SLM is not clear. As a result, the mainstreaming of SLM is inconsistent. Land degradation impacts several sectors and land use conflict between various sectors is a recurrent issue. Urban expansion has led to loss of prime agricultural lands, road construction in geologically fragile areas have exacerbated land slides, unsustainable agricultural practices have led to land degradation, and several mining operations have reportedly caused health and environmental hazards. For land degradation issues to be addressed effectively, a holistic and cross-sectoral approach to mainstreaming of SLM supported by a macro-level policy is crucial. This is,

however, not to say that there is absolutely no cross-sectoral approach to SLM. The SLMP has a central-level Multi-Disciplinary Technical Advisory Committee (MTAC) and *dzongkhag*-level SLM Committees for decisions and guidance on project implementation and coordination of project activities and inter-sectoral issues. However, MTAC is a project-tied arrangement and is likely to become defunct once the project is concluded. The *dzongkhag*-level SLM Committees, on the other hand, are the same as what has been instituted as *Dzongkhag* Environmental Committees. The effectiveness of these committees *vis a vis* mainstreaming of SLM may need to be assessed and this could perhaps be done as a part of the NAP process.

- The mainstreaming of SLM is more prominent in the green sectors but less prominent in the brown sectors. Green sectors such as agriculture and forestry feature SLM more strongly in their policies and programs whereas brown sectors, especially those concerning infrastructure development and urban development, have only fleeting or no reference to SLM in their policy and programmatic framework. This suggests the tendency to relate SLM closely as an environmental issue rather than a development issue. There is a need for a broader perspective of SLM as an integrated environment and development strategy.
- Existing policy, legal and programmatic frameworks provide substantial basis to develop national SLM policy. The national forest policy, mining law and regulations, social forestry and afforestation programs, land management campaign, EIA, and EFRC are some of the existing policy, legal and programmatic elements that can be used as building blocks for development of a national SLM policy. In addition, the SLMP is expected to generate field-based information to aid policy-making for SLM.
- Current institutional set-up is not adequate for macro-level, cross-sectoral mainstreaming of SLM. At the present, there is a lacuna in the institutional setting as far as macro-level, cross-sectoral mainstreaming of SLM is concerned. There are two relevant non-ministerial, inter-agency bodies – NEC and NLC – that can potentially function as the coordinating agency for SLM. However, the NEC currently does neither have the institutional structure nor the professional capacity to deal with land use and management effectively while NLC's current mandate is restricted to the administration of Land Act of Bhutan 2007 and has very little to do with the technical aspect of land use and management. The current institutional scenario is that the NSSC is the focal agency for the UNCCD and the main implementing agency for the SLMP, the largest project specifically dedicated to sustainable land management. The NSSC is also technically the lead agency for the LMC. In addition, NSSC is perhaps technically the most well-equipped agency in terms of personnel, information and experience to deal with SLM. These factors notwithstanding, the institutional makeup of NSSC as a soil management referral and research facility within the MoA make it difficult for the agency to have influence on other agencies, especially those outside the MoA, for macro-level mainstreaming of SLM with a cross-sectoral perspective.
- The emphasis on poverty reduction in the Tenth FYP can be harnessed to strengthen mainstreaming of SLM. It was in the Ninth FYP that poverty was recognized as a critical development issue. The emphasis on poverty reduction has become even stronger in the Tenth FYP so much so that it features as a central development objective. Global trends show that poverty and land degradation are inter-connected. In circumstances of land degradation, the poor become the most vulnerable as their livelihoods are often highly dependent on land stability and productivity. They also inherently have the least resources to adapt to the impacts of land degradation, such as flash floods and land slides. Furthermore, land degradation generally translates into less food, income and time for people to engage in productive activities, consequently impoverishing local communities. The poverty-land degradation linkage provides sound rationale to strengthen mainstreaming of SLM in development policies, plans and programs aimed at reducing poverty.

## 5 Recommendations

Based on this review, the following recommendations are being made:

- Develop a national SLM policy based on rationalized consolidation of relevant SLM elements that currently exist in various policies, laws, plans, and programs, and assessment of additional SLM policy issues and needs. The development of NAP, which is impending, will be an opportune process to at least formulate a national policy outline for SLM based on which a comprehensive national SLM policy can be formulated in the future.
- Review existing institutional setting for land use and management, and develop a strategy to develop an institutional structure that is conducive for macro-level, cross-sectoral mainstreaming of SLM in development policies, plans and programs.
- Strengthen the enforcement of EA Act and supporting regulations. A great deal of SLM mainstreaming can be realized at the operational level if EIAs are fully enforced on development projects with potential adverse impacts on the environment, including local communities and their livelihoods. NEC and competent authorities who have been delegated environmental clearance responsibility will have to ensure that EIA process is being thoroughly carried out on projects and recommended measures to mitigate potential adverse environmental impacts are being duly implemented.
- Conduct studies to develop Bhutan-specific evidences of poverty-land degradation linkages to raise macro-level policy understanding of the importance of SLM and strengthen its mainstreaming in development policies, plans and programs. Such studies should generate quantitative data correlating poverty incidences and land degradation since quantitative analyses are usually more convincing in influencing decisions.
- Carry out economic valuation of the various impacts of land degradation to develop economic rationale for SLM mainstreaming in development policies, plans and programs. There is especially the need to first focus on the impacts in the brown sector development programs.
- Develop and implement public education programs to raise awareness on the consequences of land degradation and importance of SLM. Field experiences from SLMP and LMC sites highlighting the benefits of SLM can be documented into TV programs that will not only create general public awareness but also have the potential to influence policy-makers to consider SLM with greater importance within the overall socio-economic development perspective.

## Appendix 1: List of Literature Reviewed

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## Appendix 2: List of People Met

1. Mr. Chencho Norbu, Director, Department of Agriculture
2. Ms. Karma Dema Dorji, Offtg Program Director, NSSC, Department of Agriculture
3. Mr. Tshering Dorji, Project Manager, Sustainable Land Management Project
4. Mr. Hans van Noord, Land Management Specialist, Sustainable Land Management Project
5. Mr. Chado Tshering, Chief Forestry Officer, Social Forestry Division, Department of Forest
6. Mr. K.B. Samal, Chief Forestry Officer, Trashigang Forest Division
7. Mr. Nedup Peljor, Senior Planning Officer, Policy and Planning Division, Ministry of Agriculture

### Appendix 3: Comments on the Draft Report and Consultant's Response

Comments	Consultant's Response
Definition of SLM seems to be rather narrow (define SLM – please indicate how you define SLM as this affects all your subsequent interpretations of the extent to which it is mainstreamed and reflected in other documents).	Agreed. The portion pertaining to the definition of SLM has been redone. (Page 1, paras 4 and 5).
There seems to always be a tendency to slip back to SLM being very closely related to soil, land degradation, etc. Which it is, eventually, but there are many ways and systems which contribute to SLM (eg income generation; fallow; lemon grass etc.) and through which land can be managed sustainably before one needs to think of the soil as such. So please think more broadly; and also for NAP preparation on what the scope of the NAP can be – rather, what the scope of the interventions in NAP can be.	Agreed. One of the chapters that the NAP will have to work on is a SLM conceptual framework that is relevant to the Bhutanese situation.
And to give Forestry and the environment due attention but <u>due</u> attention – not excessive (in relation to other sectors) attention.	Agreed. This is exactly one of the findings of the review. There is a tendency to associate SLM more closely associated with the green sectors than the brown sectors. (Page 23, para 2)
You are already very well informed about these issues because of previous consultations with people for previous assignments so you did not need to consult with people again... but from his People Met list, you have talked with very few for this assignment. For the NAP you would have to talk to many (as you have done for other assignments such as the SLMP social and environmental frameworks)	Agreed.
As you say, it is the (lack of) application of what exists as a major impediment. So a general comment is what new policies, laws acts etc are needed vs. getting the existing ones to work and slight amendments if they are deficient.	A national SLM policy has been recommended to provide macro-level perspective and aid cross-sectoral mainstreaming of SLM. At the sector level, there are strong elements of SLM in various policies and plans. These elements could be used as building blocks for formulation of the national SLM policy. One persistent gap is policy and legal framework for grazing and pasture management. The NCSA points out this gap, which is also reflected in this report (page 19, para 2, point # 3).
Minor points of detail, there were Land Management Campaigns since 2005 – not mentioned. The SLMP Dzongkhag bodies that the project plans to use, the DECs, are not a project structure and will survive post-project (even if they do not yet have much clue about their SLM function).	The draft does mention that LMC started in 2005. The description of the <i>dzongkhag</i> -level SLM committees has been revised based on the comment. (Page 23, para 1)

## Appendix 4: Participants at the Presentation of Review Report

1. Mr. B.N. Bhattarai, Deputy Chief Agriculture Officer, Department of Agriculture
2. Ms. Doma Sithar, Ministry of Economic Affairs
3. Mr. Dorji Tshering, Chief Survey Engineer National Land Commission
4. Mr. G.S. Chhetri, Manager (Afforestation), Natural Resources Development Corporation Limited
5. Dr. Hans van Noord, Land Management Specialist, Sustainable Land Management Project, National Soil Services Center
6. Mr. Jamyang, Chief Chemist, National Soil Service Center
7. Ms. Karma Dema Dorji, Offtg Program Director, National Soil Service Center
8. Mr. Khampa Tshering, Senior Human Resources Officer, National Environment Commission
9. Mr. Koinchok Wangdi, Chief Livestock Officer, Department of Livestock
10. Mr. Tashi Dorji, Poverty-Environment Initiative Officer, UNDP Bhutan
11. Mr. Ugen P Norbu, Consultant, Norbu Samyul Consulting
12. Mr. Ugyen Norbu, Senior Program Officer, Department of Public Accounts, Ministry of Finance
13. Ms. Yeshey Dema, Senior Soil Fertility Officer, National Soil Service Center
14. Ms. Yuden Dorji, Deputy Chief Horticulture Officer, Department of Agriculture