NEPAL

THEMATIC ASSESSMENT REPORT: LAND DEGRADATION
NATIONAL CAPACITY SELF-ASSESSMENT FOR
GLOBAL ENVIRONMENT MANAGEMENT

NEPAL

THEMATIC ASSESSMENT REPORT: LAND DEGRADATION

Government of Nepal
Ministry of Environment, Science and Technology
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<tr>
<th>Acronym</th>
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<tr>
<td>ACOFUN</td>
<td>Association of Collaborative Forest User’s Group</td>
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<td>AEPC</td>
<td>Alternative Energy Promotion Centre</td>
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<tr>
<td>APP</td>
<td>Agricultural Perspective Plan</td>
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<tr>
<td>CBD</td>
<td>Convention on Biological Diversity</td>
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<td>CBO(s)</td>
<td>Community Based Organization(s)</td>
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<td>CBS</td>
<td>Central Bureau of Statistics</td>
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<td>CCD</td>
<td>Convention to Combat Desertification</td>
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<td>CDC</td>
<td>Curriculum Development Centre</td>
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<td>CDI</td>
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<td>CIMMYT</td>
<td>the International Maize and Wheat Improvement Centre</td>
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<td>COP(s)</td>
<td>Conference(s) of the Parties</td>
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<td>CST</td>
<td>Committee on Science and Technology</td>
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<td>CTEVT</td>
<td>Council for Technical Education and Vocational Training</td>
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<td>DDC</td>
<td>District Development Committee</td>
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<td>DFRS</td>
<td>Department of Forest Research and Survey</td>
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<td>DHM</td>
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<td>DMG</td>
<td>Department of Mines and Geology</td>
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<td>Department of National Parks and Wildlife Conservation</td>
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<td>FSP</td>
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<td>IEE</td>
<td>Initial Environmental Examination</td>
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<td>INGO</td>
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<td>IoF</td>
<td>Institute of Forestry</td>
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<td>IP</td>
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<td>IPGRI</td>
<td>International Plant Genetic Resource Institute</td>
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<td>Japan International Cooperation Agency</td>
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<td>KFW</td>
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<td>Nepal Academy of Science and Technology</td>
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<td>National Coordinating Body</td>
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<td>National Capacity Self-Assessment</td>
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<td>National Council for Sustainable Development</td>
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NTCDB  National Tea and Coffee Development Board
NTNC  National Trust for Nature Conservation
NUP  National Urban Policy
NWFP  Non-wood Forest Product
ODA  Overseas Development Administration
PA  Protected Area
PokhU  Pokhara University
PurU  Purbanchal University
PWMTA  Participatory Watershed Management Training in Asia
RECAST  Research Centre for Applied Science and Technology
REP  Rural Energy Policy
RIMS  Resource Identification and Management Society
RS  Remote Sensing
S&T  Science and Technology
SAARC  South Asian Association for Regional Cooperation
SABO  Japanese word literally defense against the earth (i.e. erosion and torrent control)
SAGUN  Strengthening Actions for Governance in Utilization of Natural Resources
SALT  Sloping Agricultural Land Technology
SDAN  Sustainable Development Agenda for Nepal
SDC  Swiss Agency for Development Cooperation
SDF  Sustainable Development Fund
SEEPORT  Socioeconomic and Ethno-Political Research and Training Consultancy (P) Ltd.
SIDs  Small Island Developing States
SNV  the Netherlands Development Organization
SOHAM  Society of Hydrologist and Meteorologist
SSMP  Sustainable Soil Management Program
STDF  South Tibetan Detachment Fault
TU  Tribhuvan University
TWG  Thematic Working Group
TYIP  Three-Year Interim Plans
UN  United Nations
UNCCD  United Nations Conventions to Combat Desertification
UNCED  United Nations Conference on Environment and Development
UNDP  United Nations Development Program
UNEP  United Nations Environment Program
UNFCC  United Nations Framework Convention on Climate Change
UNFPA  United Nations Fund for Population Activities
UNIDO  United Nations Industrial Development Organization
UNITAR  United Nations Institute for Training and Research
USAID  United States Agency for International Development
VDC(s)  Village Development Committee(s)
WECS  Water and Energy Commission Secretariat
WIDMP  Water Induced Disaster Management Policy
WMTUH  Watershed Management in the Tropics and Upper Himalayas
WRS  Water Resource Strategy
WTLPC  Western Terai Landscape Complex Project
WUA  Water Users Association
WWF  World Wildlife Fund
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1.1 Background

Land degradation is the decline in land quality or reduction in its actual or potential productivity of land. According to United Nations Convention to Combat Desertification (UNCCD), desertification/land degradation is the reduction or loss of the biological or economic productivity of the terrestrial bio-productive system that comprises soil, vegetation, or other biota and the ecological and hydrological processes that operate within the system. In other words, it is the loss or reduction of biological or economic productivity of rain-fed cropland, irrigated cropland, range or pastureland, forest and woodlands. Land degradation may occur through different physical, chemical and biological processes which are directly or indirectly induced by human activities. These include soil erosion, compaction, acidification, leaching, salinization, decrease in cation retention capacity, depletion of nutrient, reduction in total biomass carbon and decline in land biodiversity. Soil structure is the important property that affects all forms of degradative processes. Land degradation is caused by complex interactions among physical, biological, political, social, cultural and economic factors. It affects the provision of ecosystem services and hence human well-being creating many social problems such as poverty, poor health and nutritional and demographic dynamics. Human activities are responsible not only for the degradation of land but also important for improvement of land through prevention, rehabilitation and reclamation.

Nepal, a mountainous, landlocked and least developed country with active tectonics, highly concentrated monsoon precipitation and high rate of population growth with subsistence economy, is highly prone to different forms of land degradation such as soil erosion, landslides and sedimentation. Such processes of land degradation have been affecting sustainable development of the country.

1.2 Land Degradation: A Matter of Global Concern

Land degradation is wide spread affecting the agronomic productivity and the environment. Though the exact magnitude and pace of land degradation at global scale is still to be determined, one study shows that land degradation has affected some 1900 million ha of land worldwide and the rate at which arable land is being lost is increasing and is currently 30-35 times higher than the historical rate. Similarly, the loss of potential productivity due to erosion worldwide is estimated to be equivalent to some 20 million tons of grain per year (UNEP, 1999). Land degradation affects two thirds of the world’s agricultural land and livelihoods of over 1.2 billion people are threatened by desertification/land degradation (UNDP/GEF, 2002). Another study shows that about 33% of the global land surface is subject to desertification/land degradation and the productivity of some lands has declined by 50% due to soil erosion and desertification (Eswaran et al., 2001). On a global scale, the annual loss of 75 billion tons of soil costs approximately US$ 70 per person per year (Lal, 1998 cited in Eswaran et al. 2001).

Land degradation is highly linked with food security and environmental balance. The food security and quality of environment and hence human well-being are threatened by the increasing rate of land degradation. It has
become a great concern and challenge for sustainable development. Realizing the urgent need to deal with the problem of land degradation and desertification at global scale, an Intergovernmental Negotiating Committee for the elaboration of an International Convention to Combat Desertification (UNCCD) in those countries experiencing serious drought and/or desertification, particularly in Africa was constituted by UN in 1993.

1.3 Convention to Combat Desertification/Land Degradation

An Intergovernmental Negotiating Committee constituted in 1993 formulated the text of the Convention to Combat Desertification (CCD) and it was adopted in 1994. A total of 179 countries are now Parties to the UNCCD.

The main objective of UNCCD is to combat desertification and mitigate the effects of drought through effective action at all levels in an integrated way supported by international cooperation and partnership arrangement with a view to contributing to the achievement of sustainable development. Its activities are guided by four principles-design and implementation of programmes with participation of population and local communities to create enabling environment; improve cooperation and coordination at sub-regional, regional and international levels focusing on financial, human, organizational and technical resources where they are needed; development of partnership and cooperation among all levels of government, communities, NGOs and landholders to establish a better understanding of nature and value of land and scarce water resources in affected areas and to work towards their sustainable use; and full consideration of the special needs and circumstances of affected developing country Parties, particularly the least developed among them. In order to achieve these objectives the convention has made several provisions of obligations and requirements.

1.3.1 Obligations

The Convention has made three different provisions of obligations – general obligations; obligations of affected country Parties; and obligations of developed country parties. The general obligations of the country Parties include the development of a coherent long-term strategy to combat desertification/land degradation with an integrated approach, establishment of an enabling environment to the promotion of sustainable development, promotion of cooperation at different levels, and determination of institutional mechanism and mobilization of financial resources. Similarly, the main obligations specific to affected country Parties include give due priority to combating desertification and mitigating the effects of drought with adequate resources; establish strategies and priorities within the framework of sustainable development plans and/or policies; address the underlying causes of desertification and pay special attention to the socio-economic factors; promote awareness and facilitate the participation of local population, particularly women and youths, with support of nongovernmental organizations; and provide an enabling environment by establishing long-term policies, programs and legislation. The main obligations of the developed countries are to actively support, as agreed, individually or jointly, the efforts of affected developing country Parties, particularly those in Africa and the least developed countries; provide substantial financial resources and other forms of support to assist affected developing country Parties, particularly those in Africa, effectively to develop and implement their own long-term plans and strategies; promote the mobilization of new and additional funding; encourage the mobilization of funding from the private sector and other non-governmental sources; promote and facilitate access by affected country Parties particularly affected developing country Parties, to appropriate technology, knowledge and know-how.
The Conference of the Parties on its eighth session held in Madrid in 2007 recalling its previous decisions and reviewing the implementation of the Convention invited developing countries to develop an enabling environment for sustainable land management and integrated water management and invited developed country Parties and multilateral organization to mobilize and provide substantial financial resources from all sources in particular for developing countries for the implementation of the objectives of the Convention.

Article 8 of the convention highlights the need of coordination of activities with other relevant international agreements particularly the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention of Biological Diversity (CBD) in order to derive maximum benefit avoiding duplication of efforts. It urges for joint programs particularly in the fields of research, training, systematic observation and information collection, and exchange.

1.3.2 Requirements

The Convention has adopted three different implementation strategies as requirements for all the country Parties in order to achieve its objectives. These include the development and implementation of national action programs, promotion of scientific and technical cooperation and other supporting measures such as capacity building and mobilization of financial resources. Development of early warning system, drought preparedness plan, food security system and alternative livelihood project; and sustainable use of natural resources, irrigation schemes and institutional mechanisms with adequate policy and legislative measures are some of the necessary aspects to be covered in the national action programs as envisaged by the Convention to combat desertification/land degradation and mitigate the effects of drought. Similarly, three major activities required under scientific and technical cooperation include collection, analysis and exchange of information, research and development; and transfer of economically viable, socially acceptable and environmentally sound technology. Capacity building, education and public awareness, and mobilization of financial resources are other supportive measures for successful implementation of national action programs and promotion of scientific and technical cooperation. Nepal has already prepared National Action Programs incorporating these components and it is under implementation.

1.3.3 Capacity Building

Activities for capacity building have been categorized into four types. These include i) institution building, training and development of relevant local and national capacities, ii) interdisciplinary review of available capacity and facilities at the local and national levels, and the potential for strengthening them, iii) promotion of education and public awareness in understanding the causes and impacts of desertification and iv) establishment and/or strengthening of networks of regional education and training centers to combat desertification and mitigation of the effects of drought (details are given in Stocktaking Report).

1.3.4 Opportunities

The Convention aims to help in the promotion of enabling environment for sustainable development and implementation of national action programs with long term strategies in an integrated way through sub-regional, regional and international cooperations. It has also made provision of mobilizing and channelizing substantial financial resources to affected developing country parties particularly those in Africa and the least developed countries in the implementation of the Convention. During and after “Rio
Convention”, capacity building for the global environmental management including land degradation has become a major focus for international assistance and cooperation.

The Conference of the Parties on its eighth session held in Madrid on 3-14 September 2007 invited developed country Parties and international organizations to support capacity building in a sustainable manner in all areas relevant to the implementation of NAPs. It also requested the Global Mechanism (GM) to play a more active role in mobilizing resources and maintaining a geographical balance so that countries with less capacity are also able to benefit from the resources. The Committee on Science and Technology (CST) was also invited to assist in creating international policy environment for the provision and transfer of adequate technology particularly remote sensing technology to affected country Parties for the establishment of effective monitoring and assessment system.

Global Environment Facility (GEF) has provision of funding to support capacity development for global environmental management. GEF has launched Capacity Development Initiatives (CDI) to assist developing countries to improve their capacities. GEF has also launched Global Support Program. It supports for national capacity building self assessment, strengthening capacity building components of GEF project, targeted capacity building projects both within and across focal areas, and country capacity development programs in Least Developed Countries (LDCs) and Small Island Developing States (SIDs).

1.4 Nepal in the UNCCD

Nepal participated in the preparatory processes of the Convention and signed it on 12 October 1995. The Convention was ratified by the House of Representative on 10 September 1996. After the deposition of the instruments of ratification to the UN Secretary General (Convention's depository) in October 1996, it has entered into force in Nepal since 13 January 1997.

In accordance with Article 26 of this convention, Nepal has to share information on measures undertaken to implement the convention. The Ministry of Environment, Science and Technology (MoEST) is the National Focal Point (NFP) for UNCCD in Nepal. The Ministry has prepared and submitted three National Reports including National Action Program (NAP) to the UNCCD Secretariat.

The NAP was prepared through an extensive consultation process. A total of 12 consultative meetings and workshops were organized with active participation of more than 340 individuals representing from different government institutions, local bodies, CBOs/ user groups' federations, media, NGOs, academic institutions and private sectors for the preparation of NAP.

A total of 24 programmes and 88 action plans in 16 areas were identified. The main programme areas included forest management, soil and water conservation, pasture management, special programs for the mountains, food security and poverty reduction, early warning and disaster relief. The supportive programme areas included policy development, legal instrument, institutional strengthening, demonstration, scientific studies and research, indigenous knowledge and its practices, data and information sharing, technology development and its transfer, education and public awareness and capacity building (details in stocktaking report).

The NAP has identified different action programs for capacity development in line with the needs and areas identified by UNCCD. It focuses on education and creation of public awareness on the use of energy efficient technology, rehabilitation and watershed management, conservation techniques, integrated plant nutrient system, cultivation of perennial crops such as tea and coffee, stall feeding through mobilization of community,
user groups, NGOs and local bodies, mass media, training/workshops, and promotion of advanced studies. The main areas identified for development, transfer and adoption of technology are cultivation, harvesting and processing of NWFP, energy efficient stoves, terrace improvement, water diversion and rain water harvesting, bioengineering, ground water extraction, cable cars, micro-hydro, and conservation. Similarly, the main areas identified for training in the NAP are harvesting of wild animal, sustainable use of endemic species, use of improved stoves and bio-gas, sericulture, floriculture, grass raising, germplasm conservation, agro-forestry, disaster preparedness and rehabilitation, conservation of biodiversity and natural habitat, plantation of carbon sinks, monitoring and evaluation system, and establishment of synergy between relevant conventions. In the field of information collection, analysis, and exchange, the NAP focuses database generation on land use, conservation technologies, and indigenous livestock and rare species; identification and mapping of drought prone areas; establishment of demonstration plot for conservation; application of remote sensing and GIS, promotion of Management Information System and exchange visits. For effective early warning system, the NAP focuses on extension of network of weather and flood monitoring stations and promotion of community managed early warning system and flood and drought forecasting. Similarly, research actions focus on NWFP, benefit sharing mechanism from forest management, rangeland, vulnerability and risk assessment and mapping, on farm participatory research, land degradation mapping and conservation techniques. The NAP proposes for strengthening Desertification Cell and local bodies to enhance their capability. It emphasizes over participatory processes in implementation of the NAP and involvement of local bodies, natural resource users, farmers, and women and other institutions such as NGOs, CBOs, media, academia and research institutions (details in stocktaking report).

It was approved by the government in 2004 and is under implementation by the concerned institutions, private sector, NGOs and CBOs. The NAP includes the composition of a National Coordinating Body (NCB) to coordinate its implementation under the Chairmanship of the Minister for Environment, Science and Technology. The NAP has also envisaged coordination committee at three levels – district, municipality/village, and locality (NGOs, user groups, local clubs and individual). No further information is available about the functioning of the NCB as well as other coordination committees at local level.

A few studies on state of desertification; traditional knowledge, practices and technologies; capacity building and public awareness; database management; and linkages amongst UNCCD, CBD and UNFCC were carried out by the then MOPE as a part of annual program in 2001. Similarly technical programs and functional project focusing on employment generation, natural resource management through users group mobilization, rehabilitation of degraded lands, management of forest, protected areas, and buffer zones, energy conservation and efficiency, water induced disaster prevention, SALT and SABO technologies, soil conservation and watershed management, and human resource development have been implemented. Emphasis has been given on participatory processes through mobilization of user groups - forest, soil, and water. Academic and research institutions such as NAST, IAAS, IoF, DoF, NARC and sections of the government departments such as DSCWM, DFRS, DPR, DWIDP, and DHM have been actively involved in developing human resources and dissemination of information and transfer of technologies. Institutionalization of EIA and IEE is another initiative to reduce the processes of land degradation.

Though some benchmarks and indicators in order to evaluate the effectiveness of action programme in combating desertification/land degradation in the country were identified in the NAP, assessment of the applicability of those indicators as well as the evaluation of the action programs following these indicators are yet to be done.
1.5 National Capacity Needs Self-Assessment Processes

In the late 1990, the GEF Council launched the Capacity Development Initiatives (CDI) to enhance the capacity of developing countries to participate in global environmental management. As a first step in implementing the CDI recommendations, the GEF Council approved funding for countries wishing to undertake national self-assessment of capacity building needs. More than 150 developing countries and economies in transition are engaged in the NCSA program. The primary goal of NCSA is to determine the national priorities for capacity development to better address environmental issues. A 5-step approach with separate reports - inception, stocktaking, thematic assessment, cross-cutting analysis, and capacity action plan has been recommended as a standard process for undertaking an NCSA.

The National Capacity Needs Self-Assessment (NCSA) Project with regard to multi-lateral environmental agreements focusing on UNCCD, CBD and UNFCC is under implementation by the Ministry of Environment, Science and Technology with financial support from the Global Environment Facility and UNDP.

A fifteen-member Thematic Working Group on Land Degradation (Annex 1.1) headed by the UNCCD focal point at the Ministry of Environment, Science and Technology was formed in order to assess national capacity needs. This working group is represented by the key government institutions and non-government organizations.

1.6 Thematic Assessment: Objectives, Scope and Methodology

The main objectives of the thematic assessment are to:

- Discuss UNCCD, its guiding principles, obligations, requirements and opportunities;
- Review country efforts to address its obligations and take advantage of convention-related opportunities;
- Assess country performance strengths and constraints in addressing convention requirements and benefiting from participation; and
- Identify priority capacity needs, and opportunities for capacity development at the systemic, organizational and individual levels.

This work follows the guiding principles of NCSA such as adoption of a holistic and long term approaches, using of existing coordinating structures and mechanism, ensuring national ownership, building on past capacity development work, paying due attention to provisions and decisions of other two conventions – CBD and UNFCCD focusing on issues that are cross-cutting for the three Rio Conventions, ensuring multi-stakeholders consultation, and paying particular attentions to capacity needs at systemic level as recommended in the Resource Kit developed by GEF Global Support Program (GEF Global Support Program, 2005).

In the process of preparing draft report, relevant literatures so far available were reviewed extensively and series of consultations with concerned stakeholders were made. An extensive discussion on a draft report was held in the Thematic Working Group (TWG) meeting. Prioritization of the identified capacity needs was made in the meeting of TWG. The members of TWG provided valuable inputs and suggestions prior to make it the final.
Section II
Status of Land Degradation and National Initiatives

2.1 Country Background

Nepal with an area of 147,181 km² has diverse biophysical and socio-cultural conditions. The altitudinal variation is very high. The altitude ranges from 60 m in the south to 8,848 m, the summit of Mount Everest, in the north within a short distance of only 160 km (Figure 1). Physiographically, the country is divided into 5 regions— the Terai, the Chure (Siwaliks), the Middle Mountains, the High Mountains and the High Himal (LRMP, 1986) (Figure 2). The Terai plain in the south, representing about 14% of the total area of the country is composed of Quaternary alluvial deposits. The Chure hills (Siwaliks) occupying 12% area, are composed of Tertiary sandstones, shale, and conglomerate. The Middle Mountains, including the Mahabharat lekh, are composed of phyllites, quartzite, limestone, and islands of granite and make up 30% of the total area of Nepal. The High Mountains composed of gneiss, quartzite, and mica schists, represents about 20% of the total area. The High Himal in the north is composed of gneiss, schist, limestone and Tethys sediments. It occupies nearly 24% of the total area.

Nepal lies in Monsoon climatic region with average area-weighted annual precipitation of about 1630 mm. Both temporal and spatial variations in precipitation are pronounced. Nearly 80% of the total annual precipitation occurs during the monsoon season between June and September. Orographic effects are strong on the spatial variation in precipitation. The recorded average annual precipitation ranges from only 163 mm at Lomathang (Mustang Bhot) to 5244 mm at Lumle (near Pokhara). Diurnal rainfalls exceeding 300 mm, which produce simultaneous disturbances of both hill slopes and channel equilibrium on a regional scale, occur frequently in the country (Khanal, 1998).
Nepal has more than 6000 rivers and is considered to be one of the richest countries in terms of water resources. A general characteristic of the river system is that the number of first order streams is comparatively high, they are of very short length and do not exhibit graded profiles, indicating a very high rate of down cutting by them. Rivers in the Terai region are much more unstable. Various forms of channel shift – avulsion, chute cut-off, neck cut-off and meander shifts destroying large area of cultivated land are common (Khanal et al., 2007).

Currently, the country is divided into five development regions (Eastern Development, Central Development, Western Development, Mid-western Development, and Far-western Development), 14 zones and 75 administrative districts (Figure 3). There are 3915 Village Development Committees and 58 municipalities in the country. Village Development Committees, Municipalities and District Development Committees are local bodies. As per the Interim Constitution of Nepal, 2007, the country is going to eliminate the centralized and unitary form of the state and establish inclusive democratic federal governance system with progressive restructuring of federal states. There is also provision for setting up local self governance bodies to ensure the people's exercise of their sovereignty by creating congenial atmosphere and thereby ensuring maximum people's participation in the country's governance based on principle of decentralization and devolution of power. Though the modality of federal system and local self governance bodies has not yet been determined, this existing administrative structure of the country is going to be changed in the near future.
According to the Population Census of 2001, Nepal has 23.1 million populations with annual growth rate of 2.25%. The estimated total population for 2007 is 26.4 million with average life expectancy of 63.7 years. The literacy rate is still low (54.1% in 2001). The preliminary estimate of per capita GDP at current price stands at US $ 383 for the year 2006/07. The annual growth rate of GDP at producer price is 2.50% in the year 2006/07. Nearly one third of the population (31.8%) lives below poverty line as per the Nepal Living Standard Survey 2003/04. Similarly about 40% population falls below the minimum level of dietary energy requirements (CBS, 2007). Nepal is an agricultural country. About 80% people depend on agriculture for their income and employment. Agricultural sector contributes 36% of the GDP. More than 85% of total energy consumption is derived from traditional sources. On the natural energy side, share of fuelwood consumption is 88.68% followed by agricultural residue (4.85%) and animal residue (6.47%). Household consumption shares about 89% of the total energy consumption (MoF, 2007).

According to its estimates, nearly 20% area is under cultivation, followed by forest (37.8%), shrub (4.6%), non-cultivated enclosure within cultivated area (6.5%), pasture (11.8%), snow and ice (3.4%), lake and pond (0.1%), urban area (0.1%) and rocky surface, sand and stones (15.7%) (LRMP, 1986). Common forms of cultivated land are Terai/valley cultivation (58%), hillslope cultivation with level terraces (25%) and sloping terraces (17%).

Out of total cultivable area, 66.8% area is irrigable. However, only 66% of the total irrigable area is irrigated. Surface irrigation represents about 55.4 percent of the total irrigated land. Nearly 20% of the total irrigated land is under ground water irrigation and remaining 24.7% irrigated land is under farmers developed irrigation scheme. Still 33% of total irrigable land (0.5979 million ha) does not have irrigation facility and needs irrigation to enhance its production capability.
Average size of landholding has been decreasing (1.11 ha in 1961/62 to 0.80 ha in 2001/02). Highly skewed distribution of land and increasing fragmentation are other characteristics of landholdings in Nepal. Though the proportion of cropping intensity and percent of farmers using agricultural inputs and equipment is still very low, it is in increasing trend (CBS, 2006a). The area under principal food crops has been increasing slightly (Figure 4) (MoF, 2007). Though the yield of these food crops shows an increasing trend, inter annual variation, particularly in paddy production, is pronounced. Production of principal food crops particularly paddy is still highly dependent on weather and climate variability.

The percentage of area covered with forest and shrub combined has been consistently declining (from 42.7% in 1978/79 to 37.6% in 2005), whereas, the percentage of area covered with shrub land has been increasing (from 4.7% in 1978/79 to 12.9% in 2005). All the rangelands, except in the alpine meadows, have stocking density higher than the carrying capacity. Large part of alpine meadows is inaccessible. Therefore, the accessible pasture land even in the alpine meadows is under heavy grazing pressure. Wetlands occupy just about 5% (743756 Ha) of Nepal’s territory in the form of water bodies. They range from high altitude glacial lakes to lowland ox-bow lakes and marshes. Wetlands are disappearing or degrading in many places particularly in the Terai and the middle hills due to increasing human encroachment and encroachment of macrophytes and alien invasive species.

### 2.2 State of Land Degradation

Because of highly rugged mountainous topography, active tectonics and highly concentrated Monsoon precipitation, the country is naturally highly vulnerable to different forms of mass-movement and soil erosion on mountain slopes and flooding and silting in the low-land area. Moreover, rapid growth in population with subsistence economy and use of traditional sources of energy has been exacerbating the process of land degradation. About 28.24% (3.262 million ha) of the total land is under the process of desertification in one or other. Nearly 36% of forest land, 10% of agriculture lands, 37% of pasture/range land are in degraded condition. About 1% area has been damaged by floods and landslides between 1984 and 2003. Similarly, about 2% forest areas has been destroyed (Table 2.1).

<table>
<thead>
<tr>
<th>SN</th>
<th>Land Use Category</th>
<th>Degraded Area (million ha)</th>
<th>Total land area (million ha)</th>
<th>% of degraded land</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Forest (poorly managed)</td>
<td>2.100</td>
<td>5.828</td>
<td>36.02</td>
</tr>
<tr>
<td>2</td>
<td>Agriculture (poorly managed slopping terraces)</td>
<td>0.290</td>
<td>2.969</td>
<td>10.00</td>
</tr>
<tr>
<td>3</td>
<td>Pasture/rangeland (degraded)</td>
<td>0.647</td>
<td>1.75</td>
<td>37.00</td>
</tr>
<tr>
<td>4</td>
<td>Areas damaged by floods and landslides (1984-2003)</td>
<td>0.106</td>
<td>11.551</td>
<td>0.92</td>
</tr>
<tr>
<td>5</td>
<td>Forest encroachment</td>
<td>0.119</td>
<td>5.828</td>
<td>2.04</td>
</tr>
<tr>
<td></td>
<td>Nepal</td>
<td>3.262</td>
<td>11.551</td>
<td>28.24</td>
</tr>
</tbody>
</table>

*Source: MOPE, 2001; CBS, 2005; DFRS, 1999 and DoF, 2005 cited in MoEST, 2006*

The major processes of land degradation are associated with water erosion. One estimate shows that nearly 45.5% area of the country is seriously affected by water erosion. Similarly, 4% area mostly in higher altitude
and trans-Himalayan region is affected by wind erosion. Land degradation due to chemical and physical processes is less than 2% of the total area of the country.

The rate of soil erosion is highly dependent on land use/land cover and land management practices. Well managed forest and irrigated level terraces used for paddy production have comparatively lower rate of soil erosion. Poorly managed forest and slopping agricultural land have comparatively higher rate of soil erosion (Table 2.2). Open rangeland is seriously affected by intense soil loss. Table 2.9 shows that nearly 1.56 million ha of forest land, 1.12 million ha of agricultural land and 1.75 million ha of rangeland needs effective land management practices to minimize soil erosion and improve its production potential.

In addition to intense soil erosion on the hill slopes, sedimentation/siltation in river valleys and the Terai area, reduced crop yields due to decline in soil nutrients, acidification and increased pollution is another problem associated with land degradation (Chalise and Khanal, 1997; ODA-NARC, 1995; Carver and Nakarmi, 1995; Carver and Shreier, 1995; Shah and Shreier, 1995, Panday et al., 1995; Joshy, 1994; Carson, 1992 and 1985; Joshy et al. 1992; Pradhan et al. 1992 and LRMP, 1986). Majority of the agriculturally induced soil degradation is occurring in marginalized Bari (rain-fed) land since farmers are diverting more fertility resources to Khet land (irrigated) (Carson, 1992). The traditional practices of green manuring and in situ manuring have been declining.

### Table 2.2: Estimated Annual Soil Erosion

<table>
<thead>
<tr>
<th>SN</th>
<th>Land use category</th>
<th>Erosion rate (ton/ha/yr)</th>
<th>Area (million ha)</th>
<th>Approximate soil loss (ton/yr)(1x2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Well managed forest</td>
<td>5-10</td>
<td>2.71</td>
<td>13.55-27.1</td>
</tr>
<tr>
<td>2</td>
<td>Poorly managed forest</td>
<td>25-40</td>
<td>1.559</td>
<td>38.98-62.36</td>
</tr>
<tr>
<td>3</td>
<td>Well managed paddy terrace</td>
<td>5-10</td>
<td>1.50</td>
<td>7.5-15.00</td>
</tr>
<tr>
<td>4</td>
<td>Well managed bari (dry terrace)</td>
<td>5-15</td>
<td>0.83</td>
<td>4.15-12.45</td>
</tr>
<tr>
<td>5</td>
<td>Poorly managed sloppy terraces</td>
<td>20-100</td>
<td>0.29</td>
<td>5.80-29.00</td>
</tr>
<tr>
<td>6</td>
<td>Degraded rangeland/open land</td>
<td>40-200</td>
<td>1.75</td>
<td>112.4-562.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>9.699</td>
<td>182.38-707.91</td>
</tr>
</tbody>
</table>


Not many works have been done to objectively address the issues of chemical degradation. However, a few studies show that there is a net negative plant nutrients balance at the national level (Joshy et al. 1992). The amount of nutrient removal is amongst highest for nitrogen followed by potash and phosphorous. It is also reported that the increasing use of acid producing fertilizers is contributing to solubility problem.

Although the use of chemical fertilizer has increased progressively, it is still at low level to have any adverse effects. However, in specific areas where acidifying fertilizer has been heavy, its adverse effects on soil bodies, plants and water are found (Banskota et al., 1998). Losses of nutrients and organic matters and acidification are other main potential causes of land degradation in Nepal.

De-intensification and abandonment of agricultural fields due to low economic return from rain-fed agricultural crops and increased out migration of labour force are recently observed from many parts of the
country (Khanal and Watanabe, 2006; Gurung, 2004; Khanal, 2002; Jackson et al., 1998; Adhikari, 1996). De-intensification and abandoned agricultural land in the mountain terrain which was previously managed through different runoff control and terracing measures using massive labour force is now facing a serious problem of land degradation particularly landslides and gully formations. Such practice has led to a cycle of out migration-land abandonment - land degradation – food shortage/poverty in many parts of the mountain area (Khanal and Watanabe, 2006).

2.3 National Initiatives to Cope with Land Degradation

A number of initiatives have been carried out for the prevention and/or reduction of land degradation, rehabilitation of partly degraded land and reclamation of desertified land at different levels – systemic, institutional and individual. These initiatives include formulation and implementation of national policies, provision of legal measures, arrangements of institutions, and implementation of different regular and project level activities directly related to the restoration of degraded land and prevention from further degradation.

The Interim Constitution of Nepal, 2007 for the first time recognized the right to live in a clean environment to every individual as fundamental right. It states that it is the responsibility of the State to conserve and manage natural resources, implement scientific land reform programs and effective implementation of multilateral agreements to which Nepal is a Party. It adopts policies of beneficial utilization of natural resources by mobilizing local communities; maintaining clean environment; avoiding adverse effect on environment from physical development activities; protecting environment and rare wildlife; and protecting forest, vegetation and biological diversity and their sustainable use and for equitable distribution of the benefit arising from these resources. Its policy aims to increase agricultural productivity.

2.3.1 National Policies

Though there is no specific policy for combating desertification/land degradation and mitigating effects of drought, many sectoral and cross-sectoral policies and strategies, and periodic development plan have dealt the issues of desertification/land degradation. The main policy provisions are briefly discussed below (For details see stocktaking report)

Periodic Development Plans: Nepal has already implemented 10 periodic development plans between 1956-07 and Three Year Interim Plan (TYIP) (2007-2010) is under implementation. Land degradation has been taken as one of the issues and agriculture has received top priority since the beginning of development plan in Nepal with emphasis on afforestation and erosion control in marginal areas in the earlier periods. The Eighth Plan (1992-97) aimed at achieving sustainable utilization of land resources by strengthening institutional capabilities of the government and mobilizing local people in environment management. The Ninth Plan (1997-02) further emphasized on the institutionalization of EIA and land use planning. Similarly, the Tenth Plan aimed at creating a clean and healthy environment and attaining sustainable development through wise/judicial utilization of natural resources with emphasis on the promotion of new technology and involvement of local bodies in the protection of environment.

The TYIP aims at rational and efficient utilization of natural resources focusing on the increase in production and productivity of agricultural crops, scientific and sustainable management of natural
resources – forest, pasture, soil, water, and watershed by strengthening institutional capabilities of government agencies including local bodies, CBOs, NGOs, User’s Groups and cooperatives; mobilizing local people and resources ensuring participation of all the stakeholder; empowering local bodies through decentralization and devolution of power and local people specially women and disadvantaged groups and user groups through social mobilization; incorporating information technology in planning, monitoring and evaluation; diversifying economic activities for alternative livelihood; promoting technology including conservation and alternative energy technologies, research, awareness, extension services, early warning system and coordination; removing dual ownership right and insecure tenancy right and promoting land consolidation; conserving traditional knowledge, skills, technology and practices; institutionalizing EIA and integrated land use planning; creating different development and environment management Funds, and good governance.

These periodic plans have given top priority in the development of agriculture, management of natural resources by building capacity. However, the growth of agriculture is slow and in some sector it is stagnant or decreasing. At the same time incidence of natural hazards – soil erosion, landslides and floods and loses / damages from those hazards have been increasing. It clearly indicates that the achievement in terms of the impact of these plans is still poor. Therefore, Nepal has to put a lot of effort into capacity building.

Agriculture Perspective Plan, 1995 and National Agricultural Policy, 2004 assume rapid agricultural growth and its multiplier effects with emphasis on market development, investment in small number of inputs (fertilizer, roads and power, irrigation, and technology system of research and extension), and production packages. It emphasizes on participatory approach, regional balance, specialization by ecological regions, market orientation, public-private partnership in investment, and technology system of research and extension.

In forestry sector, Master Plan for Forestry Sector, 1989 and Forestry Sector Policy, 2000 emphasized on basic needs fulfillment and sustainable use of forest with different management modalities. These policies adopt a holistic approach to the multiple use of land with emphasis on local level participation in management, research and training. In the sector of water resources, wetlands and watersheds, there are 6 policy documents – Water Resource Strategy 2002; National Water Plan, 2005; Irrigation Policy 2003; Irrigation Development Vision 2006; Water Induced Disaster Management Policy, 2005; and National Wetland Policy 2003.

Water Resource Strategy 2002 and National Water Plan 2005 emphasized on sustainable management of watershed and aquatic ecosystem; appropriate and efficient irrigation; and prevention and mitigation of water induced disasters including drought. It adopts a holistic approach relying on IWRM with emphasis on participation of all the stakeholders; integration with social development, equitable sharing of benefits; and wider use of existing as well as innovative technologies, conservation of resources and protection of environment. It envisages new institutional arrangements – a Sub-basin Committee; District Water Resource Committee and Major River Basin Authority which are responsible to prepare data base, assess water needs, develop and implement water related development programmes, raise financial resources, inform and educate the general public in the benefit of integrated water management.
It proposes activities such as preparation of land use maps at watershed level, erosion hazard maps, training programmes on soil and water conservation, rehabilitation programs on degraded watersheds and promotion of SALT model for erosion control.

Irrigation Policy, 2003 and Irrigation Development Vision, 2006 emphasize on the utilization of water resources through participatory management system with due priority to the multipurpose projects; increase the roles and responsibilities of local bodies; extension of irrigation services even to marginal farms; introduction of new and non-conventional irrigation systems such as rain water harvesting, ponds, sprinklers, drips, paddle pumps, etc.; development of storage type irrigation systems; use of ground water; trans-basin water transfer; improvement in institutional capacity of water users and strengthening working capability of technical human resources.

Water Induced Disaster Management Policy, 2005 has provision for the reduction in loss of life, properties and infrastructure through conservation of river, watershed area and wetlands; rehabilitation of land degraded from water induced disasters such as flood, landslide, debris flow etc; establishment of early warning system; awareness creation; participation of local bodies, establishment of relief and storage centres; and preparation of risk maps.

National Wetland Policy, 2003 has made provision for the management of wetlands through local participation with different modalities – leasehold, community, private, joint, religious and state in different ownership and management regimes – protected, government/public and private.


Sustainable Development Agenda for Nepal, 2003 has emphasized on the growth and reorientation of agriculture through investment in fertilizer, irrigation, research and extension, high value-low volume crops, expedite land reform, land use management and security of contractual farming; environmental redress by creating economic incentives to use clean energy sources; extension services through social mobilization with assistance of NGO/Groups and local bodies; management of natural forest and protected areas by promoting people’s participation; conservation of ecosystem and genetic resources by implementing National Biodiversity Strategies; conservation of biodiversity at landscape level; protection of land against degradation by conducting activities to minimize losses from soil erosion, flood, landslides, desertification and other effects of ecological imbalance through the enforcement of locally prepared land use plans and more effective interaction between forestry and farming practices; promotion of sustainable harvest and management of non-timber forest products; ensuring agricultural biodiversity; conservation of range land by developing comprehensive range conservation strategies; good governance through effective decentralization, civil service reform and legislative provisions; set up a system of early warning in every village and weather prediction system; and building decentralized response capacity. SDAN is a vision document guiding till 2017 and compatible with Millennium Development Goals.
emphasizing sustainable development approach involving different stakeholder with good governance and decentralization.

Ensuring environmental sustainability is one of the Millennium Development Goals (MDGs), 2000. Nepal’s strategy is to reverse loss of environmental resources. It emphasizes on human resource development with specified targets well integrated with periodic development plans and periodic assessment of the achievements. However, environmental sustainability has been treated as crosscutting issues without specific programmes. Similarly, the indicators used for ensuring sustainability are based on the land cover change in terms of area (depletion) not in terms of quality or degradation.

Nepal Environment Policy and Action Plan, 1993 has provision for sustainable management of agricultural land with proper soil fertility management through optimal utilization of locally available biomass, rehabilitation of degraded agricultural land and improved management of livestock and rangeland. It emphasizes forest management through adoption of a national land use plan, formulation of a national energy policy, greater participation of local communities in management; and water management through protection of watershed with low-cost vegetative and cultural measures. It has also provisions for mitigation adverse environmental impacts from urban and industrial development and infrastructure development through EIA processes; safeguarding national heritage; and capacity building (legislation, institutions, and education and public resources). It adopts a multi-sectoral framework with defined immediate, short-term and long term actions focusing on participatory approach, enhancement of local level institutions, NGOs, and environmental education.

Land Use Policy and Strategy prepared in 2005 has been approved by Land Use Council of the government. It emphasizes on the use of land as per its capability and maintaining environmental balance and conservation of environment through formulation and implementation of land use plan from central to district level. It has identified some of the criteria for land use zoning and mapping and focused on the use of RS/GIS tools in mapping and monitoring.

Nepal Biodiversity Strategy, 2002 and Nepal Biodiversity Strategy Implementation Plan, 2006 have provisions for the conservation of biodiversity in protected areas, forests, rangelands, agro-biodiversity, wetlands, and mountain areas with focus on strengthening management practices, sustainable harvesting, ecosystem networking and species conservation. It adopts landscape planning approach with focus on participatory integrated with livelihood improvement; use of indigenous knowledge in biodiversity conservation; conservation of natural habitat through rehabilitation and restoration of degraded ecosystem; and promotion of conservation awareness.

Herbs and Non-Timber Forest Products Development Policy, 2004 has provisions for the participatory conservation and sustainable harvesting without any adverse impact on regeneration and reproduction; delineation of pocket area; value addition by promoting storage, processing, packaging and extraction activities; promotion in employment; and increase in national income. It emphasizes on enhancing productivity of unproductive marginal land; intercropping; encouragement for the poor, landless and marginal family to cultivate in marginal areas; development of infrastructure and technology; promotion of knowledge, skills, public awareness and education.
Rural Energy Policy, 2006 has emphasized on the development and transfer of environment friendly technologies of renewable sources of energy such as micro-hydropower, biogas, solar energy, wind energy, improved stoves and improved water mills in rural areas to contribute in environment conservation, poverty reduction and improvement in livelihood. It has also emphasized on strengthening capacity of local bodies, skill development and training, promotion of awareness and demonstration on the use and management of technology.

Terai Arc Landscape Strategy, 2004 is a guiding document for biodiversity conservation and sustainable development with focus on the management of forest, grazing land; and conservation of Churia watershed, species and ecosystem in central and western Terai. It adopts a holistic approach shifting from site based to landscape-level conservation with focus on ensuring sustainability and equitability, promotion of public awareness, empowering the women, poor and disadvantaged group, and strong partnership among stakeholders. It is compatible with Nepal Biodiversity Strategy, Millennium Development Goals and Sustainable Development Agenda for Nepal.

National Urban Policy, 2007 emphasizes on conservation and sustainable use of agricultural land, forest, water and watershed in urban areas through implementation of appropriate land use and management plan. It has provisions for the protection of productive land from the use other than agriculture with focus on participatory approach and awareness promotion.

In conclusion, the issue of land degradation and its implication on sustainable development has been recognized. All the periodic development plans after 1975 and other relevant sectoral and cross-sectoral policies and strategies have highlighted the issues of land degradation and made different provisions for the prevention/reduction of land degradation on the one hand and restoration of degraded land on the other.

2.3.2 Legislative Provisions

There is no separate specific law to deal with matters relating to land degradation. However, a number of acts, regulations and circulars are enforced to achieve overall objectives of conservation, management and sustainable use of natural resources. Legislative provisions which are directly or indirectly related to combat land degradation are briefly discussed below.

Forest Act, 1993 and Forest Regulations 1995 have made provisions for the management and conservation of forest through different modalities (national forest, government managed forests, protected forests, community forests, leasehold forests, religious forests and private forests); forest boundary delineation; users group mobilization; handing over forest; use and ownership rights; and monitoring and evaluation, etc.

National Parks and Wildlife Conservation Act, 1973; National Parks and Wildlife Conservation Regulations, 1974 and the Buffer Zone Management Regulations, 1996 have made provisions for the conservation and management of wildlife habitat and areas with high aesthetic values declaring National Parks, Reserves and Conservation Area and its Buffer Zone. Provisions have been made for the management of buffer zone through users group.
Pasture Land Nationalization Act, 1974 and Rules, 1976 have made provision for handing over of nationalized pasture land to VDCs. It empowers VDC to prohibit the use of pasture land other than animal grazing, fix grazing tax and conserve pasture land.

Water Resource Act, 1992 and Water Resource Regulation 1993 have recognized the State as the owner of water resources available in the country and made management provision through water user’s association. It has also made provision for handing over water related projects to users and environmental impact assessment mandatory for water related projects.

Soil and Watershed Conservation Act, 1982 has made provisions for the conservation of soil and watershed through control of soil erosion, floods and landslides and introduction of appropriate land utilization practices. It empowers the government to declare Protected Watershed Area and carryout different structural and non-structural protective activities and provide financial and technical support.

Environment Protection Act, 1996 and Environment Protection Regulation, 1997 have made provisions for the protection of environment and mitigation of adverse impacts of development projects through EIA and IEE processes. It empowers the government to declare Environment Protection Areas.


Land (Survey and Measurement) Act, 1961; Land Revenue Act, 1977; Land Related Act, 1964; and Land Acquisition Act, 1977 have made provisions for land survey and ownership fixation, fixation of land ceiling, acquisition of land more than the ceiling, judicial distribution of land; tenancy right, control of land fragmentation and land consolidation, and land use planning.

Local Self Governance Act, 1999 and Regulations, 1999 empower local bodies – VDC/Municipality, and DDC for the conservation and management of all the public natural resources within their areas.

Natural Calamities (Relief) Act, 1982 has made provision for the protection of life and properties from natural disasters. It has made provision for relief/ rescue activities.

2.3.3 Institution Building

There is no single institution to deal with the problem of land degradation. However, many institutions are directly or indirectly involved in addressing the issues of land degradation. These institutions have been classified into 8 categories – advisory/policy formulation bodies of the government, implementing government departments/agencies, local bodies, research institutions, training institutions, education, communication, NGOs/Associations, and professional societies. A brief description of these institutions is given below.

Policy Formulation Bodies

The ministries and high level commission are responsible in formulating policies, plans and programmes and their implementation, monitoring and evaluation. Such policy formulation bodies for combating
desertification/land degradation and mitigating the effects of drought are National Planning Commission, Water and Energy Commission, MoEST, MFSC, MoAC, MoLRM, MoWR, MoES, MoHA, MLD, MoICS, MoIC, and MoPPW.

National Planning Commission is responsible to formulate, implement, and monitor periodic development policies and plans in coordinated way covering all sectors. It has the mandate to build the planning, monitoring and evaluation capacity of all the line agencies including local bodies. It also has mandate to assess and coordinate national sectoral and cross sectoral policies, and data standardization.

MoEST is the focal point for UNCCD. It has formulated the NAP and it is active in regular reporting and awareness creation at central level. It is responsible to formulate and implement policies related to environment, science and technology including EIA and IEE processes. National Coordinating Body (NCB), District Level Coordination Committee, Municipality/Village Level Coordination Committee, and Desertification Unit in the Ministry are some of the institutions envisaged in the NAP for its effective implementation. But these are not yet instituted.

MFSC is responsible for the formulation and implementation of policies and plans in forestry sector. It has wider institutional network and adopted participatory approach involving local community in resource management. MoAC is responsible for the formulation and implementation of policies and plans in agricultural sector. It has wider institutional network with strong extension services.

MoLRM is responsible for the formulation and implementation of policies and plans for the management of land including surveying. It has also wider institutional network. MoWR/ WECS are responsible for the formulation and implementation of policies and plans for the management of water/wetlands and watersheds. Institutional network at watershed level and Himalayan Climate Change Study and Research Centre are some of the institutions proposed for effective implementation of the water plan. These institutions are yet to be developed.

MoES is responsible for the formulation and implementation of policies and plans for education and sports; MoHA for disaster prevention and management; MLD for local development; MoICS for industry including mining activities and supply; MoIC for mass communication; and MoPPW for infrastructure development including urban area management. All these ministries do have wider institutional network, however, the issue of land degradation has not yet received adequate attention in their policies, plans and programmes.

**Implementing GoN Departments/Agencies**

Department of Forest, Department of Soil Conservation and Watershed Management, Department of Plant Resources, Department of National Park and Wildlife Conservation, Department of Agriculture, Department of Livestock Services, Department of Irrigation, Department of Water Induced Disaster Prevention, Department of Land Reform and Management, Department of Land Information and Archives, Department of Survey, Department of Local Infrastructure Development and Agricultural Roads, Department of Hydrology and Meteorology, Alternative Energy Promotion Centre, Central Natural Disaster Relief Committee, Central Bureau of Statistics, Department of Mines and Geology, and
Tea and Coffee Board are the main implementing government departments/agencies dealing directly or indirectly with the issues of land degradation.

Except a few departments/agencies such as Department of Plant Resources, Department of Water Induced Disaster Prevention, Department of Hydrology and Meteorology, Alternative Energy Promotion Centre, Central Bureau of Statistics, Department of Mines and Geology and Tea and Coffee Board, all these departments/agencies have wider institutional network.

Some of the Departments have proposed to reorient its institutional structure. For example, the Department of Soil Conservation and Watershed Management has proposed 4 basin level and 34 sub-basin level offices for effective implementation of watershed management programmes. Currently, there are 56 district level offices out of which 11 are still temporary.

Many institutions, as proposed by different periodic plans, sectoral and cross sectoral policies, are yet to be established. TYIP has proposed for the establishment of Food Security Division and Information Centre, Traditional Knowledge Digital Library, Appropriate Technology Centre and Accidental Natural Hazard Management Fund. Similarly, SDAN has proposed for the establishment of National Disaster Preparedness Agency. It has been realized that there is a need of separate Leasehold Forestry Division under the Department of Forest.

Local Bodies

District Development Committees, Municipalities, Village Development Committees are the local bodies responsible to manage natural resources in their respective areas. Several committees/units in DDC such as Energy and Environment Unit, Land Use Committee, Irrigation and River Training Committee, Soil and Watershed Conservation Committee, Biodiversity Conservation Committee, Mining Development Committee have been proposed. These committees/units are yet to be instituted.

Though these local bodies are empowered to formulate, implement, monitor and evaluate policies, plans and programmes for the sustainable utilization and conservation of natural resources, their capacity in terms of availability of resources – human, financial and equipments is inadequate.

Training Institutions

There are 5 regional level training centres and one central level training section under the MFSC, one central level and 5 regional level training centres under the MoAC, one land management training centre under the MoLRM, Nepal Administrative Training Staff College for training government employees under the MoGA, Local Development Training Academy for training to the staffs of local bodies including NGOs and CBOs under MLD. They carry out regular training programmes. Some other government departments such as DWIDP and Irrigation conduct training programmes regularly. For government civil servants, a Scholarship Allocation Committee is provisioned in the Civil Service Regulation, 1993. The Committee allocates study, training and study tour programmes to different civil services received in the name of the National Planning Commission and other government bodies.
Research Institutions

There are a few institutions involved in research on natural resource management. These include National Agricultural Research Council (NARC), Department of Forest Research and Survey, Geodetic Survey Branch, National Trust for Nature Conservation, Nepal Academy of Science and Technology; Research Centre for Applied Science and Technology (RECAST), TU.

NARC is involved in agricultural research with fairly dense network of field research centres and quite a large number of professional staffs. However, inadequate financial resources, laboratory facilities have constrained its research activities. Moreover, the increasing shortage of professional staffs (currently 200 approved posts are vacant) is another problem. Department of Forest Research and Survey focuses research activities on forest and soil. It is well equipped with experts and remote sensing and photogrametry laboratory. However, the laboratory is rarely used at present due to lack of resources and technical staffs. Communication/coordination with other institutions in generating data base and generalization of research results is rather weak. The NAST and RECAST are focusing their research activities in technology development whereas Geodetic Survey Branch is involved in monitoring crustal movement.

Education

Tribhuvan University with its own 60 campuses and 349 affiliated campuses; Kathmandu University with its own 6 campuses and 11 affiliated campuses, Purbanchal University with its own 3 campuses and 73 affiliated campuses, and Pokhara University with its own 2 campuses and 23 affiliated campuses have been providing higher education in the country. There are three campuses with academic programmes in agriculture under TU and one campus under Purbanchal University. Similarly, there are three campuses with academic programmes in forestry under TU and one under Kathmandu University. There are 3 campuses offering courses on environmental science. In addition there are Central Departments of different subject such as environmental science, botany, geology, geography, hydrology and meteorology in TU offering masters level courses in their respective subject incorporating components of environment management. They also offer Ph. D programme in their respective discipline.

The number of campuses offering higher education on agriculture, forest, environment and natural resource management are quite low on the one hand and they offer only introductory courses on land degradation on the other. Moreover, research activity focusing on land degradation is very low. TYIP has proposed to establish Agriculture and Forestry University in the country. Its establishment is under way. Similarly, NARC has also proposed to establish one deemed agricultural university within their premises.

The Curriculum Development Centre under MoES is responsible to develop, implement, supervise and monitor school curricula, text books and education materials and conduct orientation and training programmes. The Higher Secondary Education Board is responsible to develop and implement policies and plans for higher secondary education. Similarly, Council for Technical Education and Vocational Training under MoES develops basic and middle level human resource through technical education and vocational training and facilitates the private technical schools.
Communication

Radio Nepal, many FMs, Nepal Television and many private televisions are active in raising public awareness.

Associations/Federations

Association of DDCs, Association of Municipalities, and Association of VDCs are actively involved in advocacy, networking and capacity building activities of local bodies. Similarly, FECOFUN, NEFFUG, ACOFUN, NFIWUAN, Nepal Forum of Environmental Journalists (NEFEJ) are actively involved in policy advocacy, lobbying, social mobilization, capacity building and empowerment of natural resource users groups. However, their activities are limited due to inadequate resources – staffs, finance and equipment.

Professional Societies

Many professional societies – Nepal Forester’s Association, Nepal Ranger’s Association, Nepal Society of Agricultural Engineers, Nepal Agriculture Association, Ecological Society of Nepal, Nepal Geographical Society, Nepal Geological Society, Nepal Landslide Society, Society of Hydrologists and Meteorologists, Soil and Water Conservation Society etc. are actively involved in research and dissemination of research results in the country through publication of journals and bulletins. However, such research and dissemination activities are constrained due to inadequate financial resources.

2.3.4 Programmes/Projects

The government is implementing regular programmes focusing on capacity building through education, training, research and extension services in natural resource management. It emphasizes on development and transfer of technologies for conservation, irrigation development and adoption of alternative sources of energy. It has adopted participatory approach in conservation and natural resource management activities. In addition, there are several donor supported programmes on conservation and natural resource management with component of capacity building. Those programmes and projects are Sustainable Soil Management Programme, Community Development and Forest Watershed Conservation Project, Churia Watershed Management Project, Sustainable Community Development Programme, Strengthen Actions for Governance in Utilization of Natural Resources, Natural Resource Management Sector Assistance Programme, Landscape Level Conservation Projects, Nepal Swiss Community Forestry Project, Leasehold Forestry and Livestock Program, Crop Diversification Project, Irrigation Water Resource Management Programme, Capacity Enhancement of Backward Water User Groups, Rural Energy Development Programme, Rural Water Resource Management Programme and the Strengthening Environmental Management Programme at Local Level. Beside these, there are many other programme/projects which also have component of capacity building for natural resources management (list of donor supported programmes/projects is given in Annex 2.1)

Many of these donor supported programs have components of group mobilization, networking, awareness creation, training and skill development, and technology development and transfer in the field of natural
resource management. These donor supported programmes/projects are very successful in achieving their objectives by mobilizing local user's group/NGOs/CBOs with strong components of networking, awareness creation, training and skill development. However, these activities are confined in limited areas within stipulated time. There is need to incorporate the successful strategies and activities followed by these donor supported programmes into periodic plan and regular activities of the government.

Land improvement programmes developed involving local people linking with livelihood improvement and local infrastructure development are found very successful in achieving their goals. So, attention should be given for developing such programmes to prevent land degradation and improve degraded land.

2.3.5 Financial Mechanism

The government had spent nearly 101 million rupees in fiscal year 2005/06 on training activities in which 23% was in agricultural sector followed by administration (25%), land reform and management (19%), local bodies (13%), irrigation (12%), and forest and soil conservation sector (8%). Similarly, 547.7 million rupees was spent on research activities in which 45% was in agriculture followed by science, technology and environment (31%), land reform and management (13%), irrigation (8%) and forest and soil conservation (4%). Nearly 506.9 million rupees was spent on data/information generation, dissemination and extension activities in agriculture (99%), land reform and management, and forest and soil conservation. Nearly similar amount (504.3 million rupees) was spent on technology transfer, skill development, alternative energy, early warning system and networking in which 45% was in alternative energy, 18% in hydroelectricity, 13% in irrigation, 8% in forest and soil conservation, 6% in water induced disaster prevention and mitigation and 2% in weather and flood forecasting. Nearly 7137.9 million rupees was spent in mass education through the Ministry of Education and Sports, 177.2 million rupees in strategic policy planning and intuitional strengthening through NPC and MoEST and 3729.5 million rupees in empowering local bodies and disadvantaged groups through MLD.

2.3.6 Early Warning and Advanced Planning

Sustainable Development Agenda and the Tenth Plan have emphasized on the development of early warning system. A few activities for early warning system such as daily weather forecast, flood forecast for some selected rivers, community based early warning system for flood in few places, and early warning system for Tsho Rolpa Glacial Lake Outburst Flood have been established in the country. The NAP has also proposed for initiating flood and drought forecasting system and community based early warning system. Similarly, the TYIP has also proposed for the establishment of early warning system for drought and crop production in order to improve food security in the country. However, early warning system for drought and crop production has not yet been introduced.

2.3.7 Technology Development and Transfer

The NAP has identified several areas for technology development, transfer and adaptation. These include cultivation, harvesting and processing of NWFP; energy efficient stoves; terrace improvement, water diversion and water harvesting; bioengineering, ground water extraction and shallow tube-well, cable
cars, micro-hydro and other conservation technologies such as SALT and SABO. Similarly, the TYIP has emphasized on the development and adoption of technology on food processing and storage, cultivation and harvesting of NWFP, conservation technologies, non-conventional irrigation (drip, sprinkle and pond), rain water harvesting and alternative energy technologies.

Many line agencies are involved in rain water harvesting (DDWS, DoI, DoA, DSCWM) and non conventional irrigation (DoI, DoA), alternative energy technologies (AEPC), conservation technologies (DSCWM, DoA, DWIDP), bioengineering (DoR, DSCWM, DWIDP), food processing and storage (MoAC), cultivation, harvesting and processing of NWFP (MFSC).

2.3.8 Collection, Analysis and Exchange of Information/Data

Time series data on land use and land cover for the country have been generated and available from different sources- LRMP for 1978/79 (published in 1986), National Remote Sensing Centre for 1984, Master Plan for Forestry Sector for 1985/86, National Level Forest Inventory for 1994, Japan Forest Technology Association for 2000, CBS (decennial Census of Agriculture since 1961/62), Cadastral Survey Branch of the Survey Department (in different periods) and FAO for 1990, 2000 and 2005. Because of methodological differences in generating such database in terms of definition of land use and land cover type, sources of information (aerial photo, satellite images, household survey, expert estimates etc) and coverage, it is difficult to compare these data directly and determine the pathways, magnitude and pace of change in land use and land cover type in detail and accurately over time. Such inconsistencies and in some cases the contradictory sets of data on land use and land cover type have also created problems in measuring the extent, trend and causes of land degradation.

There is also a dearth of database on traditional/improved conservation technologies, their suitability in different ecological regions and effectiveness; frequency, magnitude and consequences of drought; updated data on watershed condition; quality of forest, pasture, and wetlands; and drought resistance species, etc., which are very essential for designing effective measures to combat desertification/land degradation and mitigate the effects of drought. Though NARC has carried out soil survey in 53 districts in different period, those information have yet to be compiled and analyzed. Moreover, such soil survey has to be carried out in remaining 22 districts.

The need of data database, data standardization and updating, establishment of central data pooling system have been realized and the NAP has also proposed for such activities, no concrete effort has yet been made in these aspects.

2.3.9 Training

As discussed earlier, there are a few training centres established by the government and these training centres conduct training programmes for different target groups such as government employees, leaders and staffs of local bodies including NGOs, farmers, natural resource users (forest user, irrigation water user). Besides government institutions, different training programmes are organized by academic institutions, NGOs, Professional Societies and Federations/Associations of local bodies and users groups. Many donor supported natural resources management projects/programmes do have training component for the local bodies, local NGOs, CBOs and user’s groups.
The NAP has proposed for training on different aspects such as harvesting of wild animals; sustainable use of endemic species; use of improved stoves and biogas; sericulture, floriculture, and grass raising; germplasm conservation; agroforestry; agro and forest based industries; disaster preparedness and rehabilitation; conservation of biodiversity and natural habitat, plantation for carbon sinks; decision makers for establishing synergies between relevant convention; monitoring and evaluation system.

**2.3.10 Diversification of Economic Activities for Alternative Livelihood**

Promotion of commercial farming and sustainable harvesting of NTFP and wild animals, high value commodities such as tea, coffee, fruits and cardamom; sericulture; floriculture; apiculture; plantation for carbon sinks, agroforestry, small scale processing industry and tourism are some of the areas identified for diversification of economic activities for alternative livelihood which also help in reducing the process of land degradation. Though commercial farming of NTFP and wild animals, cultivation of high value commodities, development of agro-forestry are well integrated with dairy farming, and sericulture and apiculture have been initiated, the progress is very slow. Effective programmes on skill development, transfer of technology, group formation and mobilization, and some sorts of financial support at the initial stage would help to speed up the progress.

**2.3.11 Research and Development**

Two sorts of research activities – applied and adaptive research activities from government institutions such as DFRS, NARC and NAST and academic research by the faculties and students in different universities and campuses have been carried out. The DFRS focuses its research on forest inventory, yield and growth, use and management, key forest species, agro-forestry, land use and soil and social issues related to forest management, whereas NARC focuses its research activities on cropping system, variety development/improvement of agricultural crops, horticulture, off-season vegetables, vegetable seeds, sericulture and apiculture, agro-forestry, natural resource management, soil conservation, water management, technology development, socio-economic and gender issues. Similarly, NAST focuses its research activities on indigenous technology. The NAP has also proposed research activities focusing on NWFP, range land, vulnerability and risk assessment, land degradation mapping, conservation techniques, and endemic species.

TYIP has emphasized on mapping activities – land use, land resources, poverty, social mobilization, disadvantaged group, flood risk mapping, natural hazard, vulnerability and risk mapping, etc., both at central and local level using GIS and Remote Sensing (RS) technologies. Some of the DDCs and municipalities have already established GIS/RS facilities. However, these facilities are not used adequately for preparing such maps as expected because of shortage of financial and human resources (skilled manpower to use GIS/RS).

**2.3.12 Education and Awareness**

Basic, primary, lower secondary and higher secondary education is provided through public and private schools under the guidance and supervision of the Department of Education. In addition, the government has been implementing non-formal education programmes. It develops school curricula and text books through Curriculum Development Centre (CDC). Council for Technical Education and Vocational Training (CTEVT) provides diploma level technical education in different fields including agriculture.
There are four universities with their own 71 campuses/collages, 455 affiliated campuses/collages with more than 250000 students. Among them only a few campuses/collages (13) offer courses on agriculture, forest, environmental sciences and natural resources management at different levels. Every year nearly 1600 students are getting higher education in agriculture, forest, environmental sciences and natural resource management. Each year, number of graduates and post-graduate students studying agriculture in the country is about 600 and 100 respectively. Similarly, about 200 graduate students and 23 post graduate students are admitted in forestry and 300 post graduate students in environmental sciences and natural resource management.

The NAP has emphasized on public awareness creation programmes in the fields of harvesting medicinal and aromatic plants, development of tea and coffee plantation; use of energy efficient stoves; biogas; plantation of nutritious and fast growing plants with high water retention capacity; importance of integrated plant nutrient system; block plantation of fruit, fodder and forage; rehabilitation and watershed management techniques; stall feeding; conservation techniques; land management education at all levels through seminars, mass media including community radios and mobilization of local NGOs and CBOs. The TYIP has also emphasized on promotion of community awareness in all these fields.

2.3.13 Participatory Processes and Empowerment

Participation and empowerment of the economically, socially, culturally, and geographically disadvantaged people is the key for the successful implementation of natural resource management program. It requires skill and leadership development.

The government has emphasized on participatory management of all the natural resources involving local bodies, NGOs, CBOs, and user’s groups with management skill and leadership development. More than 14300 Community Forest User Groups have been instituted which are responsible to manage 1.2 million ha of forest. Similarly, more than 3400 leasehold forest user’s groups have been instituted to manage 17242 ha degraded forests and barren land. More than 3454 user’s groups have been instituted to manage buffer zones. Similarly, there are more than 2200 water user’s groups to manage irrigation system. Associations such as FECOFUN, NEFFUG, ACOFUN and NFIWUAN are actively involved in empowering local users through institution building, training, networking, lobbying and advocacy. In line with the decentralization and good governance policy of the government, Association of District Development Committee, Association of Municipalities, and Association of Village Development Committee are committed to empower local bodies through networking and training.

Though these associations are very active in networking and lobbying, they are less effective in aspects such as training on natural resources management in a holistic approach, technology development and transfer, skill development with options of alternative livelihoods. It is in this context that their capacity be enhanced.

2.3.14 Technical and Scientific Cooperation

Nepal has already developed the NAP, but its implementation is constrained basically due to inadequate institutional capacity. So, capacity building is the prime concern for Nepal to implement the NAP.
Though Nepal is implementing programmes with support from GEF, the funding allocated under GEF Small Grant Programme is inadequate to enhance the institutional capability and implement all the programmes so far developed in the NAP.

2.3.15 Joint Research Programmes

NARC which has the mandate of conducting applied and adaptive research work in the field of agriculture development, is working in collaboration with various international agricultural research centres such as CIMMYT, IRRI, ICRISAT, IPGRI, to develop relevant technologies for ensuring food security and reducing poverty. In addition, government departments, universities, CBO, NGOs, INGOs, private laboratories and enterprises within the country are also involved in its research and development activities whenever necessary. Substantial funds are also obtained through national and overseas collaborators. Similarly, DFRS, NAST, and universities also carry out collaborative research works. Since, most of the collaborative research activities are supported by overseas collaborators, continuation of such research activities is constrained due to financial limitation after its completion.

2.3.16 Food Security

Food security has been taken as basic component of human rights in the TYIP. Its objectives are to increase self sufficiency in basic food items, improve nutritional situation, strengthen food insecurity management capability during the period of disasters such as drought, flood, landslides and fire, and improve access of people/group at risk to food security. The main strategies are to increase production and productivity of food crops; develop storage technology and system; establish and strengthen mechanism for crop production and food supply early warning system; enhance the capacity of national and local bodies on risk management with food security storage management system. It proposes activities such as research on production potentials of food items in different ecological zones, development and transfer of appropriate technology, food risk mapping and training, human resource development, strengthening Nepal Food Corporation, and establishment of food security division and information centre in the Ministry of Local Development/Ministry of Agriculture and Cooperative. No concrete action has yet been taken in implementing those strategies and programmes.

2.4 Management Outcomes

The government is aware of the problem of land degradation and has initiated several measures – formulation and implementation of policies and programmes with legal provisions, institutional strengthening, awareness creation, social mobilization and empowerment, technology transfer, diversification of livelihood options, etc. A substantial number of natural resource user's groups such as community forest user’s groups, leasehold forest user’s groups, water user’s groups and farmer’s groups have been mobilized for sustainable use of land resources (Annex 2.2). However, the outcomes in terms of the rehabilitation of degraded land are not adequate enough keeping in view the extent of area under intense soil erosion. Annually, nearly 5000 ha of cropland, 900 ha of rangeland and 13000 ha of forest land are being rehabilitated whereas 0.290 million ha of cropland, 0.647 million ha of rangeland and 2.1 million ha of forest land are under degradation (MoEST, 2006). It is in this context that there is urgent need to strengthen its capacity to deal with the problem of land degradation. The gaps and constraints in its capacity and capacity needs are discussed in the next chapter.
3.1 Issues

As discussed earlier, the extent of land degradation is very high. Nearly 10% of cropland, 36% of forest and 37% of range land are in degraded condition. Moreover, nearly 1% of the total land of the country has been damaged by the landslide and flood events which occurred between 1984 and 2003. Conversion of forest land into agriculture and infrastructure development is still high in the country. The main process of land degradation in the country is associated with water erosion. The current rate of rehabilitation of degraded land is very low. The increasing problem of food insecurity, increasing scarcity of water, fuel-wood and fodder, and increasing frequency and magnitude of flood and landslide disasters are some of the observed impacts of land degradation in the country. The pace of land degradation is likely to increase in the future in the context of increasing risk of landslides and floods due to global climate change (increasing number of extreme precipitation events and retreat of glaciers and formation of glacial lakes), high rate of population growth with subsistence economy, mass poverty and low level of human development, rapid urbanization and increasing infrastructure development such as roads. It is in this context, there is urgent need to strengthen national capacity to cope with the problem of land degradation.

This chapter focuses on the analysis of national capacity building initiatives in terms of their strengths, gaps, and constraints, identification of future capacity building needs, and opportunities from those activities.

3.2 Policies

The strengths, gaps and constraints have been discussed based on the coverage (thematic, temporal and spatial), conceptualization, policy formulation and implementation processes, implementation tools including acts and regulations, coordination, integration, monitoring and evaluation, and reporting and revisiting. A brief review of individual policy relevant to combat land degradation is given in Annex 3.1.

3.2.1 Strengths

Government is fully aware of the issue of land degradation and is committed to create enabling environment for sustainable utilization and management of natural resources by formulating and implementing several sectoral, cross-sectoral and periodic development plans. The Interim Constitution of Nepal, 2007, states that it is the responsibility of the State to conserve and manage natural resources, implement scientific land reform programmes and effective implementation of multilateral environmental agreements to which Nepal is a Party. The TYIP (2007-10) has covered all the sectors of natural resource management and emphasized on the need of capacity building for effective implementation of programmes. Sectoral policies such as Agriculture Perspective Plan and National Agricultural Policy, Master Plan for Forestry
Sector and Forestry Sector Policy, Water Resources Strategy and National Water Plan, Irrigation Policy and Irrigation Development Vision, Water Induced Disaster Management Policy, National Wetland Policy have been formulated and implemented. Similarly, cross-sectoral policies such as Sustainable Development Agenda for Nepal, Millennium Development Goals, Nepal Environment Policy and Action Plan, Land Use Policy and Strategy, Nepal Biodiversity Strategy, Nepal Biodiversity Strategy Implementation Plan, Herbs and Non-Timber Forest Products Development Policy, Rural Energy Policy, Terai Arc Landscape Strategy, and National Urban Policy have also been formulated and implemented. The thrust of all these policies is to increase the productivity of land – cropland, forest, range land water/wetlands through sustainable utilization of natural resources and rehabilitation of degraded land. Many of these policies emphasize on local level participation in management, public-private partnership in investment, technology development and transfer, extension services through social mobilization, land use management, public awareness creation, skill development and employment generation, maintaining ecological balance, good governance, decentralization and devolution of power, capacity enhancement of institutions at different levels – central to local bodies, CBOs and NGOs; and empowering disadvantaged groups. These policies have adopted different management modalities (ecological for croplands, and ownership and use right for forests and wetlands). The policy provisions, strength and weakness of each policy mentioned above are summarized in Annex 3.1.

3.2.2 Gaps

There is no separate policy to combat desertification/land degradation and mitigate the effects of drought. Similarly, national policy on food security does not exist. The need of a comprehensive land use and land management policy, rangeland management policy, soil and watershed management policy has been highlighted by many policies mentioned above. However, they are not yet formulated. Though land use policy and strategy approved by the Land Use Council does exist, it is not comprehensive and participatory. The wetland policy is not yet backed by Act and management responsibility outside park and protected areas is not clearly defined. Similarly, implementation of collaborative forest management model is based only on directives published by the Ministry of Forest and Soil Conservation which is not backed by the Act. Though Herbs and Non-Timber Forest Product Development policy does exist, it is not yet supported by the Master Plan.

3.2.3 Constraints

Weak integration and coordination: Since the causes of land degradation are varied and its implications are wider covering many sectors, it needs well integrated and coordinated efforts from different sectors. However, some sectoral policies have thematic biases. It was mainly due to poor understanding and inadequate attention to the nexuses among environment/development/humanitarian, household/community/local bodies, plot/landscape/watershed, highland/lowland linkages, environmental processes/environmental services, access/ownership/investment/benefit sharing, scaling up/down/bottom/up approaches, and mountain specificities (fragility, diversity, inaccessibility, low economies of scale, etc). It has led to the contradiction in implementation of the policies. For example, NEPAP has recommended protective management system for Chure hills as a whole, whereas APP insisted for low intensity use
and development of high value tree crops. On the other hand, local bodies have been developing rural infrastructure such as drinking water, schools and health posts in the Chure area where the conflict of land ownership even in cultivated land is a burning issue. In the absence of guaranteed land ownership right, people are not much interested to invest in land management. Similarly, APP and LSGA have their emphasis on empowering local bodies, whereas Irrigation and Forestry policies emphasize on users groups. There is no adequate mechanism for establishing their linkages and coordination among their activities.

*Too idealistic assumptions:* Too idealistic assumptions while formulating policies have created problem in effective implementation within the stipulated time. For example, too idealistic assumption of rapid growth in agriculture and its multiplier effects, distribution of land, tenurial and ownership right and management of land through land market, and emphasis on the use of inputs such as irrigation and chemical fertilizer without considering environmental services including environmental impacts have created problems in achieving the targets of Agriculture Perspective Plan. Similarly, new institutional arrangement – a Sub-basin Committee, District Water Resource Committee and Major River Basin Authority which are responsible to prepare data base, assess water needs, develop and implement water related development programme, raise financial resources, inform and educate the general public of the benefit of integrated water management as envisaged in the Water Resource Strategy and National Water Plan do not coincide with the prevailing administrative structure. So, these institutions have not yet been instituted.

*Inadequate consultative process:* It is necessary to have wider consultative processes covering different geo-ecological regions with varied socio-economic settings and involvement of all stakeholders in order to develop widely accepted effective policy. In the absence of wider consultative processes and involvement of all stakeholders, the policy can not be implemented as envisaged. For example, the community forest management modality which is considered to be highly successful in the middle hills did not work well in the Terai and High Mountain regions. This management modality did not pay adequate attention to traditional rights of poor, disadvantaged groups, distant and seasonal users. A new management modality of collaborative forest has to be adopted later for the Terai region. Similarly, provision of marginal forest areas to marginal people without reasonable incentives and guarantee of ownership under the leasehold forest management modality has also created problem in achieving sustainable management objective as envisaged in the policy.

*Poor understanding of the consequences:* It is necessary to make full assessment of the impact of the policy before its implementation. It is reported that the implementation of community forestry management modality has increased the pressure on the government forests located nearby community forests and hence the forests at the margin of the community forests are being degraded. It is also reported that the poor and marginal farmers are affected most since they do not access to private trees and crop residues. APP assumes the rapid development in the network of agricultural road without giving adequate attention to land degradation due to increased surface runoff, soil erosion, and landslides.
Vague definition of the resources and space: Definition of forest or forestland is still vague (tree diameter, height, crown density and land ownership type) and not applicable equally in all the ecological regions (Terai, Hills and High Mountain) and there is no uniform understanding among the professionals. For example, the definition of forestland defined by the Land Resource Mapping Project and the Department of Forest is not uniform. This has created problem in determining the magnitude and pace of land degradation. Similarly, the spatial scale of landscape unit is not clearly defined and the classification of areas for biodiversity conservation is not mutually exclusive (mixing of land use/land cover and landforms i.e. mountain) in Biodiversity Strategy.

Inadequate attention for lands other than forests, croplands and water/wetlands: There are policy and legislative gaps for the management of land located outside the forests, croplands and water/wetlands such as flood plain, bare ground, grassland, abandoned agricultural fields, and land along the infrastructure corridor - roads, irrigation canals.

Less focus on slow (high frequency) degradation processes and restorative measures: Emphasis has been given to low frequency-high magnitude off-site degradation processes such as landslide and flood damages in many of the policies such as SDAN, Water Induced Disaster Management Policy, and Water Resource Strategy and National Water Plan rather than high frequency on-site but wide spread degradation processes such as soil loss, rills, gullies, crusting, compaction, depletion of nutrient, leaching, acidification, desertification, decline in cation retention capacity and contamination of ground water. Similarly, forestry sector policy assumes natural regeneration after protection and guided management practices with less focus on plantation and other restorative measures. The Interim Constitution of Nepal, 2007 has recognized only the right to live in clean environment as fundamental right without recognizing the right to live in healthy (productive) environment.

Overlapping of programmes/activities: Some of the activities such as preparation of land use map, hazard maps, rehabilitation of degraded areas and promotion of conservation technologies such as SALT are proposed in different policies such as Agriculture Perspective Plan, Forestry Sector Policy, Water Resource Strategy and National Water Plan, Water Induced Disaster Management Plan, and Land Use Policy and Strategy, which are implemented by different line agencies. There is likely to have duplication on the one hand and it is hindering specialization in work and hence improvement in conservation technology and its transfer on the other.

Poor in translating policy into practice: Because of ambiguity in the conceptualization of policy, lack of uniform understanding of the concepts and implementing methods and tools among stakeholders, weak integration, communication and coordination, overlapping in programme activities, poor capacity of implementing institutions, involvement of one line agencies in the formulation of policy and programmes and another line agency in implementation (for example, Water Resource Strategy and National Water Plan were formulated by WECS and implementation responsibility for watershed management has been given to the Department of Soil Conservation and Watershed Management under the Ministry of Forests and Soil Conservation. Similarly, the Ministry of Environment, Science and Technology has prepared National Action Programme to combat land degradation and mitigate the effect of drought,
but the implementing agencies are different ministries and departments), gaps in legislative provision and undefined management authority (National Wetland Policy), the achievement is generally remained far below than the targeted one.

Poor in monitoring, evaluation and revisiting: The monitoring and evaluation is not frequently done and benchmarks and indicators for evaluation are not well defined in many policy documents. Though benchmarks and indicators are defined in some of the policy documents, they are rarely evaluated. For example, the National Action Programme (NAP) to combat land degradation and mitigate the effect of drought approved by the government in 2004 has mentioned some benchmarks and indicators but the monitoring evaluation of the NAP following those indicators has not yet been done. A few revisions have been made in Agriculture Perspective Plan, Master Plan in Forestry Sector and Irrigation Policy after a long period. These are revised by the concerned line Ministries without giving due consideration for integration and coordination.

3.2.4 Needs
- National policy to combat land degradation and mitigate the effects of drought
- Evaluation and revisiting of the National Action Programme (NAP) to combat land degradation and mitigate the effects of drought
- Comprehensive national land use and land management policy based on comparative advantages of different geo-ecological regions
- National soil conservation and watershed management policy considering strong linkages among crop-forest-livestock on the one hand and highland-lowland linkages on the other
- National policy on pasture/grazing land management
- Long term national policy on food security
- Master Plan to support Herbs and Non-Timber Forest Product Development Policy
- Revision of MPFS, APP and Local Self Governance Policy (Act) in order to make them compatible enhancing integration and coordination with clear ownership right and management responsibility
- Revision of Irrigation Policy in line with Irrigation Development Vision
- Formulation of appropriate forest management modalities specific to different geo-ecological regions based on socio-economic and ecological impact assessment of the already existing modalities and extensive consultative processes with all the stakeholders
- Regular monitoring, evaluation and revisit of all the relevant policies

3.3 Legislations

3.3.1 Strength
A number of acts, regulations and circulars are enforced which are directly or indirectly related to combat land degradation. Those are forest act and regulations, national parks and wildlife conservation act and regulations, buffer zone management regulations, pasture land nationalization act
and rules, water resource act and regulation, soil and water conservation act, environment protection act and regulations, mines and mineral act and regulations, land survey (survey and measurement) act, land revenue act, land related act, land acquisition act, local self governance act and regulations, natural calamities (relief) act (Annex 3.2).

3.3.2 Gaps

There is no separate policy to deal with the matters related to land degradation. No legal provisions exist to guide land use and land management in the country. Similarly, there is no legal provision to ensure food security. Though national wetland policy has been formulated and implemented, there is no legal provision to back the policy.

3.3.3 Constraints

Inadequate provisions: Pasture land nationalization act and rules do not clearly spell out ownership right, management responsibility. Provisions of soil and watershed conservation act are primarily focused on the management of protected watershed area declared by the government. Unfortunately, not a single watershed has been declared as protected watershed. So, the legal provisions of this act are not adequate enough to conserve soil and water resources. The forest act does not have legal provisions for managing collaborative forest and the provisions are not adequate enough to deal with the conservation cost and benefit.

Acts without comprehensive policy framework: Many acts have been enforced without having comprehensive national policy. Those are soil and watershed conservation act, mines and mineral act and regulation, pasture land nationalization act, local self governance act and regulations and natural calamities (relief) act. In the absence of policy framework with clearly defined objectives, goals, strategies and programmes, these acts are enforced on ad hoc basis.

Conflicting provisions of ownership right, management responsibility and benefit sharing: Some of the provisions in forest act contradict with other 8 existing acts in the country. Similarly, the provisions in local self-governance act contradict with other 16 existing acts. Mines and mineral act contradicts with forest act, national parks and wildlife conservation act and soil and watershed conservation act. Water resource act contradicts with national parks and wildlife conservation act.

Incompatible management strategies: The guidelines for community forest management and buffer management are not compatible. Similarly, protected areas under forest act, protected watershed area under soil and watershed conservation act and environment protected area under environmental protection act are not mutually exclusive on the one hand and the management strategies are not compatible on the other.

Weak in enforcement: The enforcement of these acts, regulations and guidelines is rather weak. Weak enforcement capacity of the concerned implementing agencies and inadequate public pressure and public institutions to enforce the law is some of the reasons for weak enforcement.
3.3.4 Needs

- Enact laws to combat land degradation, guide land use and land management and ensure food security and back for effective implementation of wetland policy
- Streamline acts which have conflicting and incompatible provisions as mentioned above
- Amendment of pasture land nationalization act with clear use and ownership right and management responsibility, forest act incorporating collaborative forest management strategy, soil and water conservation act focusing on soil conservation and watershed management even outside the protected watershed area
- Enhance law enforcement capability of the concerned implementing agency as well as public forum
- Food Sovereignty Act

3.4 Institution Building

3.4.1 Strength

There is a widespread network of variety of institutions working in the field of natural resources management in the country at different levels from centre to the local (Annex 3.3). There are many advisory bodies responsible for formulation, implementation, monitoring and revision of policies and programmes including legal provisions in a coordinated way for sustainable utilization and management of natural resources and maintain environmental balance at different levels of decision making processes - parliament, line ministries, high level commissions and councils (NPC, WEC, EPC, NCSD). Government departments are responsible to implement policies and programmes approved by the government. There are four tiers of administrative structure of the government. Ministries and departments are at the centre, and regional directorate, district offices and illaka (sub-centre) offices at regional to local. Local bodies – DDCs, Municipalities and VDCs are responsible to formulate and implement natural resource management plans and programmes in their respective area. There are quite a number universities, research centres and training institutions. Similarly, there are many (about 18000) non-government organizations located in different parts of the country. There are several federations of natural resource user groups, associations of local bodies - DDC, Municipalities and VDCs mainly involved in advocacy, networking, capacity building and empowerment. There are different types of communication media – radio, television, print media run by the government and private sector and these are active in raising public awareness. Similarly, there are many professional societies active in research and dissemination of research results.

3.4.2 Gaps

Quite a few institutions which are proposed by the plans, policies and legislation have not yet been constituted. For example, the National Coordinating Body, District Level Coordination Committee and Municipality/Village Level Coordination Committee, Desertification Cell within MoEST for effective implementation and coordination envisaged by the National Action Programmes to combat land
degradation are not yet constituted. Similarly, National Resources Conservation Commission envisaged by soil and watershed conservation act and National Disaster Preparedness Agency envisaged by SDAN are not yet constituted. Food Security Division and Information Centre and Himalayan Climate Change Study and Research Centre are yet to be established. There is no authorized institution responsible for managing pasture land (currently the management responsibility is partly within the MoAC and partly with MFSC) and also for wetlands located outside the protected areas. Sub-basin Committee and Major River Basin Authority as envisaged by National Water Plan are yet to be constituted.

3.4.3 Constraints

Inadequate number of academic institution: Though there are a number of campuses offering courses on agriculture, engineering, forestry, environmental science and other environment related subjects such as botany, geology, hydrology and meteorology, geography but they are not adequate enough to provide higher education and research activities on land degradation. There is a need of separate campuses/departments with specialized courses on land degradation. Establishment of an Agriculture and Forestry University is under way.

Inadequate attention for issue based structural arrangement: Many of the line ministries and departments have been following three tiered structure of its organization – central, regional and district which does not fit for all the sectors. Following the same modality, the Department of Soil Conservation and Watershed Management also has district level offices. Since, the administrative boundary of the district does not follow watershed boundary, the district offices have faced difficulties in formulation plans and programmes in a holistic approach covering all the areas within one watershed. Realizing this problem, the department has proposed to reorganize it into 34 sub-basins level offices and 4 basins level offices. This proposed arrangement is consistent with the institutional arrangement envisaged by water resource strategy and water plan.

Loosely defined roles and responsibility: The roles and responsibilities are not defined clearly. They are not mutually exclusive. Though the department of the line ministry is supposed to implement all the programmes/projects of the ministry, often the donor supported programmes/projects are directly implemented from the ministry bypassing the department.

Overlapping roles and responsibilities of government agencies: Overlapping in the roles and responsibilities has been observed. For example both the Department of Soil Conservation and Watershed Management and the Department of Agriculture are involved to deal with the problem of land degradation in cultivated land. Similarly, the Department of Soil Conservation and Watershed Management, the Department of Water Induced Disaster Prevention and the Department of Mines and Geology are involved in hazard and risk mapping independently.

Poor in communication and weak in integration and coordination: The communication and coordination both at vertical structure (central, regional and district) and horizontal structure (among government sectoral line ministries and departments, academic institutions, independent professionals and other NGOs/ Federations/Associations) are rather poor and weak. At vertical level, regional directorates are
often bypassed through direct contact between the centre and the district. So these are not functioning well. Keeping in view the contradictory policy provisions and overlapping roles and responsibility on the one hand and complementarities in programmes and activities on the other (for example irrigation and agriculture; and agriculture, land reform and land management and forest), it is necessary to have adequate communication and coordination. But currently, communication is poor and coordination is weak.

**Poor/Not functioning of high level coordinating bodies:** High level commissions under the chairmanship of the Prime Minister such as EPC and NCSD have been commissioned to coordinate national level activities, but they are not functioning well. The National Planning Commission is another body responsible to monitor, evaluate, integrate and coordinate all the development activities, but it is not effective enough to do so.

**Less autonomy among research institutions:** Research institutions often take long time to get approval to their own research proposal and to develop and carry out collaborative research with other NGOs/INGOs/donors agencies/academic institutions and also to get clearance of research results for dissemination. So, they should have full autonomy.

**Under staffing:** Some of the institutions are under staffed. For example, in NARC 200 approved professional posts are currently vacant. There is increasing shortage of professional staffs.

**Insecurity in job:** In some institutions many staffs are temporary for a longer period. Staffs are in leave for longer duration and their drop out is high.

**Inadequate attention in assigning duties and weak in implementation of human resource development plan:** Adequate attention is not given while assigning duties among the government institutions and among staffs within the institution. For example, the Ministry of Land Reform and Management only has expertise on land survey and mapping without having experts in agriculture, forestry, pasture, wetland, but National Land Use Project is assigned to this ministry. Similarly, human resource development plan is not effectively implemented. As a result, even the technicians are assigned administrative work.

**Inadequate attention for human resource development:** Grass root level technical staffs are not well trained.

**Inadequate attention for capacity building of National Focal Point for UNCCD (MoEST), local bodies and its associations, federations of natural resource users group, and the Department of Hydrology and Meteorology:** Currently, the National Focal Point is not so active in coordinating, monitoring and evaluating the implementation of National Action Programmes on the one hand and communicating UNCCD activities to other concerned authorities because of the limitation of financial resources and professional staffs. Similarly, many policies have recognized the role of local bodies and users groups in the implementation of programmes. However, capacity of these local bodies and their associations and federations of users groups in terms of human and financial resources is rather poor. DHM has already started flood forecasting programme. But drought forecasting programme is not yet started.
Inadequacy in research activities of academic institutions: Universities and campuses affiliated with them are mainly engaged in teaching. Research work is rather limited. It is mainly due to shortage of financial resource.

3.4.4 Needs

- Constitution and vitalization of National Coordinating Body and establishment of Desertification Unit under MoEST with support for capacity building
- Establishment of Food Security Division and Information Centre and strengthen its capacity
- Introduction of land degradation subject in higher education
- Basin-wise institutional arrangement of field offices of the Department of Soil Conservation and Watershed Management and enhancement of their capacity
- Constitution of a new institution for management of range land (highland pasture and lowland grazing land)
- Constitute or assign management authority for the management of wetlands outside the protected area
- Review, define and enact the roles and responsibility of government organization to avoid overlapping based on in-depth assessment of the structure and processes of relevant government organization from different perspectives – vertical, horizontal and geographical)
- Improvement in communication, integration and coordination system within and among organization
- Revitalization of high level coordinating body i.e. NCSD by strengthening its secretariat
- Autonomy to research institutions – DFRS and NARC and strengthen their research capability
- Emphasis on human resource development and strict adoption of human resource development plan
- Capacity building of National Focal Point, i.e., MoEST
- Capacity building of local bodies – DDCs, Municipalities and VDCs and their associations
- Capacity building of federations of natural resource users groups
- Capacity building of DHM for drought forecasting
- Provision of research grant to the academic institutions to carry out research and incorporation of research results in planning

3.5 Programmes/Projects

3.5.1 Strength

Many programmes/projects of natural resource management with component of capacity building at local (natural resource user groups, communities, civic societies, municipalities, VDCs), district and central level organizations. The thematic areas of capacity building range from management of community forests, leasehold forests, biodiversity, wetlands, soil, water, landscape and watershed to disaster preparedness, use of alternative sources of energy and good governance in natural resource management.
The main components are awareness creation, group formation, training, and management (planning, implementation, monitoring and evaluation). One of the common characteristics of the successful programmes is that conservation activities are strongly linked to the livelihood of local people with focus on the issue of marginalized and disadvantaged people ensuring their participation. The outcomes of these programmes are the development of fairly good network of user groups, methodology for group/community mobilization, training manuals, resource use/management guidelines and establishment of natural resource use and management fund. Therefore, the basic social infrastructure to carry out programmes to combat land degradation is already developed in many parts of the country.

3.5.2 Constraints

Inadequate attention for a holistic approach: Many of the programmes/projects are sectoral, they cover only one sector (forest or agriculture or soil or water or wetland or pasture). Since, there is strong link between cropland-forestland-pasture/grazing (food-wood-fodder), effective management of one resource may lead degradation of another resource.

Inadequate attention for communication and coordination among different institutions: Two different approaches have been adopted in developing institutional capacity at local level. One is for user groups, communities, civic societies and another is for Local Bodies i.e municipalities and VDCs and their wards. The communication and coordination among these two types of institutions one the one hand and users group formed by different sector on the other hand are rather poor which may lead to conflict in management and cost-benefit sharing.

Inadequate attention in achieving synergies between regular government programmes and donor supported programmes: In many cases, the concerned programme implementing organization of government is bypassed by the donor supported programmes and the communication between them remains poor.

Inadequate coverage of donor supported programme in space and time: Donor supported programmes/projects are found successful in achieving their objectives by mobilizing local users/groups/NGOs/CBOs with strong components of networking, awareness creation, training and skill development. But the spatial coverage of these programmes/project is small and most of them last for only 2-6 years. The activities are stopped after the end of the project mainly due to financial shortage. In many cases, the duration of project period (2-6 years) seems too short to have visual impact in the form of fully restored land which was previously degraded.

3.5.3 Needs

- An integrated land management programme with components of alternative livelihood options and capacity building ensuring the participation of all the stakeholders
- Achieve synergies between regular programmes and donor supported programs by involving concerned implementing government organizations
- Establish good working relation and coordination among users groups and local bodies
• Training to social mobilizers about integrated land management strategies and planning methodologies

• Continuation of successful donor supported land management activities even after the end of the project incorporating in regular programme

3.6 Financial Mechanism

3.6.1 Strength

The government has realized the need of capacity building and has been allocating funds for training, research, data/information collection/generation, dissemination of data and research results, extension services, technology transfer, skill development, promotion of alternative energy and early warning system, strategic policy planning and institutional strengthening and empowering local bodies and disadvantaged groups.

3.6.2 Constraints

Inadequacy of fund: Fund provided by the government annually as regular programme is inadequate to complete activities proposed in the programme with the fixed goals and targets.

Inadequate attention for priority fixing of activities and allocation of fund among different sectors: Fund for training to the personnel in local bodies and the forests and soil conservation sector is comparatively low. Similarly, fund allocated for research, data/information collection, extension services, technology transfer, strategic policy planning and institutional strengthening are skewed.

3.6.3 Needs

• Increased funding for capacity building

• Funding by fixing the priority after assessing the justification of needs and past performance

3.7 Early Warning and Advanced Planning

3.7.1 Strength

The need for an early warning system for drought and crop production has been realized and mentioned in TYIP. A few activities for early warning system such as daily weather forecast, flood forecast for some selected rivers and early warning system for Tso Rolpa Glacial Lake Outburst Flood have been carried out in the country.

3.7.2 Gaps

Early warning system for drought and crop production has not yet been introduced. Though TYIP has recommended for a division of food security and information centre for advanced planning either in MoAC or MLD, it has not yet been established.
3.7.3 Constraints

Inadequate resources for drought forecasting: The department of hydrology and meteorology has already started programmes for daily weather forecasting, and flood forecasting. Because of the lack of financial resources for purchasing computers with high processing capacity, software and hiring experts programme for drought forecasting and early warning is not yet started.

3.7.4 Needs

- Strengthen the institutional capacity of the Department of Hydrology and Meteorology
- Establishment of division of food security and information centre and its strengthening.
- Formulate strategy for establishing coordination among key stakeholders (drought forecasting agency, DoA, NARC, agencies involved in food security)
- Formulate strategies for communicating drought information to local bodies, and general public
- Training for trainers and social mobilizers on the use of climate and weather information and mitigation measures to reduce the effect of drought

3.8 Technology Development and Transfer

3.8.1 Strength

The NAP has already identified several areas for technology development, transfer and adaptation to combat land degradation and mitigate the effects of drought. Many institutions have already engaged in developing technologies for rain water harvesting, irrigation, alternative energy use, soil and water conservation, bioengineering, food processing and storage, farming, harvesting and processing of herbs and other non-timber forest products.

3.8.2 Constraint

Inadequate attention to the assessment of indigenous land management and conservation technologies and their improvement: There are many indigenous land management and conservation technologies. They are poorly documented and their efficiency and improvement potentiality are not well assessed.

Inadequate attention to the assessment of already adapted technologies and their further improvement/ or replacement: The appropriateness of some technologies changes with the change in socio-economic condition and environmental condition.

Weak in dissemination of conservation technology: SABO and SALT technologies are found very effective to control soil erosion, but its adaptation is still not widespread.

Limited capacity of people to adapt technology: Some technologies are very expensive and the poor people can not afford it.

Inadequate capacity of institutions: The technology development and transfer activities are limited due to inadequate resources (financial, material and human) of the institutions (DoI, DoA, DSCWM, AEPC, DWIDP, DoR, DoPR, NAST, NARC)
3.8.3 **Needs**

- Formulate strategies for documentation, assessment, improvement and transfer of land management and conservation technologies including water harvesting, irrigation
- Expedite transfer of technologies – soil conservation technologies such as SALT, SABO and bioengineering; non-conventional irrigation technologies such as sprinkle and alternative renewable energy technologies such as improved cooking stoves, bio-gas, solar pans, etc
- Create conducive environment for participation of private sector in the development of technology and adoption of technology in rural areas
- Strengthen capacity of institutions involved in the development and transfer of technology
- Strengthen capacity of research institutions for documentation and efficiency and impact assessment of technology
- Training on use and maintenance of technology

3.9 **Collection, Analysis and Exchange of Information/Data**

3.9.1 **Strength**

Policies and laws are conducive for the collection, analysis and exchange of information. Statistics act, 1958 and land (survey and measurement) act, 1977 have made different provisions for the collection of socio-economic data, land survey, mapping and measurement. Every government department has separate section of information/statistics and regularly collects, compiles and analyses data/information related with its work. Data along with maps on land use, land system, land capability, watershed condition are available. Efforts have been made to prepare and compile cadastral survey maps. GIS/RS systems are in use. Local bodies - DDCs, Municipalities and VDCs and their associations are also involved in collection, analysis and exchange of data.

3.9.2 **Gaps**

Though Central Bureau of Statistics collects socio-economic data and compiles environmental data generated by the concerned government department and publishes it periodically, there is absolute lack of a centrally data pooling system with regular updating.

3.9.3 **Constraints**

*Inconsistencies in the concept (definition) of natural resources and weak in methodological rigorousness:* The criteria (tree diameter, tree height, and crown density) for defining forest are not uniform among different department. For example, the criteria used to define forest in LRMP are different from the criteria used by the Department of Forest. Topographical Survey Branch while preparing toposheet did not use any quantitative criterion in mapping forest and shrub-land. The Forest Act defines forest differently on the basis of ownership of land rather than land cover. Similarly, the definition of degraded forest and
well managed forest which are used frequently is not based on any quantitative criterion. Similarly, the quality of land in cadastral survey is fixed roughly as abal, doyam, sim and chahar without giving due consideration of biophysical and chemical properties of soil. CBS estimates different types of land use and land cover based on sampled household survey. FAO (2006) has published forest statistics at national level for the year 2005 based expert estimate. Similarly, JAFTA has made estimates analyzing satellite images. Because of such inconsistencies in the concept and methodological approach, these data are not comparable and are not useful to draw a logical trend in land use and land cover change and also measuring the extent and trend of land degradation and inferring its causes.

Inadequate attention to updating land use and land capability map/information: LRMP based on aerial photographs taken in 1978/79 had prepared land system, land utilization and land capability maps covering the whole country. No attempt has been made to update those maps.

Inadequate attention to the development of watershed information system: Usually administrative units (development region, district, municipality and VDC) are taken into consideration while collecting data. Since, the boundary of administrative unit does not follow the boundary of watershed, watershed level information is poor.

Inadequate attention to systematic observation of land degradation and watershed condition: Monitoring of land degradation and watershed condition at national level is rather poor.

Inadequate attention to soil database and mapping: Database/mapping of soil for the whole country is not yet available. Though soil surveys for quite a large area were carried out in different time, they are not yet compiled and analyzed.

Incomplete hazard and risk mapping at watershed level: Landslide and flood hazard and risk maps at national level do not exist.

Inadequate capacity of institutions: Activities for the collection, standardization, analysis and exchange of information/data are limited due to inadequate resources (financial, material and human) of the institutions involved (CBS, DSCWM, DWIDP, DFRS, Topographical Survey Branch, DoA, DDCs, Municipalities and VDCs and the Associations of local body).

3.9.4 Needs

- Strategy for generating comparable and consistent information/data on land use, land management and land degradation
- Strategy for completing on going database generation/mapping activities
- Strategy for systematic observation of land degradation and watershed condition
- Strategy for timely monitoring, evaluation and assessment system
- Strategy for developing database (information) management system at different scales integrating attribute and spatial data
- Strategy for the use of modern tools and technologies in the collection, processing, analysis and exchange of information/data
• Strategy for coordination and cooperation among data generators
• Establishment of centrally data pooling centre and strengthening its capacity
• Strengthening institutional capacity of the institution involved in data collection
• Training to planner and decision makers on the issues of data standardization

3.10 Training

3.10.1 Strength

There are many training centres of the government at national and regional levels with regular training programmes for government staffs, personnel of local bodies, NGOs, CBOs, farmers and natural resource users (forest, water). Similarly, there are many technical education and vocational training institute located in different parts of the country. Besides, academic institutions, NGOs, professional societies, federations of natural resource users group, association of local bodies organize training programme frequently. There are quite a few intuitions involved in organizing GIS/RS training for professionals, decision maker, government officers and students. Training to decision makers, personnel in local bodies on development planning processes is carried out by the National Planning Commission. Similarly, Land Management Training Centre provides training to survey and mapping professionals.

3.10.2 Constraints

Inadequate attention to land degradation: Special training programme focusing on issues of land degradation is rarely organized.

Inadequate attention to land use and land management with a holistic approach: Many of the training programmes on natural resource management are carried out in sectoral basis (forest, agriculture, water, wetlands) without integrating them.

Inadequate attention to land use and land management planning at local level: Land use and land management plan could be successful to achieve its goal only if the local bodies/people are involved in planning processes- planning, monitoring and evaluation.

Inadequate attention to land management and conservation skill: Skill development trainings (sericulture, floriculture, herbs, agroforestry, germplasm conservation, agro-processing, rehabilitation of degraded land, water conservation) are not adequate.

Inadequate training on use and maintenance of technology: Training on the use and maintenance of technology is limitedly conducted.

Inadequate attention to UNCCD: Many institutions working in the field of combating land degradation and mitigating the effects of drought are not adequately familiar with the requirements and opportunities of UNCCD and other Multilateral Environmental Agreements and do not have enough information about the processes of developing and implementing collaborative programmes and getting international cooperation.
Inadequate capacity of institutions: Training activities are limited due to inadequate resources (financial, material and human) of the training institutions.

3.10.3 Needs
- Special training programmes on the issues of land degradation to planners, decision makers, trainers and natural resource users
- Training to social mobilizers in DDC on integrated land use and land management
- Training to personnel of local bodies on land use and land management planning processes
- Training on land management and conservation skills
- Training on use and maintenance of technology
- Training to planners and decision makers about Multilateral Environmental Agreements
- Training to engineers and contractors on environmental friendly techniques including bioengineering
- Training for farmer groups on soil conservation, fertility management and land management techniques including SABO and SALT
- Strengthening the capability of training institutions

3.11 Diversification of Economic Activities for Alternative Livelihood

3.11.1 Strength
Efforts have already been made to diversify economic activities for alternative livelihood through promotion of commercial farming with emphasis on high value crops, multipurpose tree plantation, sustainable harvesting of NTFP, agro-forestry well integrated with dairy farming, sericulture, apiculture, tourism and traditional cottage industries with development of skills, technology, entrepreneurship and provision of rural credit and micro-finance.

3.11.2 Constraints
Inadequate attention to the investment-friendly and worker-friendly legal and institutional reform: The existing legal provisions and institution are not investment-friendly and worker-friendly for the development of industries in the country.

Inadequate attention to diversify tourism development: Tourism in Nepal is still highly concentrated in space and time.

Inadequate attention to promote access of women marginalized people and disadvantaged groups: Participation of women, marginalized people and disadvantaged group is still very poor.

Inadequacy in skill development and industrial and business entrepreneurship development: One of the main problems associated with the diversification of economic activities for alternative livelihood is lack of skill and entrepreneurship among large number of people in the country.

Inadequate attention for integrated development of skills-capital-market: Skill development is not always
linked with capital and market. It is in this context, many people receiving skill development training are not able to use their skill in the absence of capital and market.

_Inadequate institutional capacity:_ Though skill development and industrial and business entrepreneurship development trainings are regularly provided by different institutes (CTEVT, Trade Schools, Industrial Enterprise Development Institute, Cottage and Small Industry Training Centre) but their capacity is not adequate.

Inadequate attention for training to trainers: Training to trainers is not frequently organized.

### 3.11.3 Needs

- Legal and institutional reform to ensure investment-friendly and worker-friendly condition
- Strategy for diversification of tourism development
- Policy and legal provisions to promote participation of women, marginalized people and disadvantaged groups
- Trainings for skill development and industrial and business entrepreneurship development
- Strategy for the integration of skill development with capital and market
- Strengthening institutional capacity

### 3.12 Research and Development

#### 3.12.1 Strength

There are many research institutions within the government and within the universities. They are actively engaged in carrying out applied, adaptive as well as academic research.

#### 3.12.2 Constraints

_Inadequate research on land degradation:_ Research activities on land degradation in a holistic way are very limited. They are mainly focused on agriculture, forest and science and technology. There is no separate institute for research in water, wetlands, and watershed as in agriculture and forest.

_Inadequate demand driven research:_ Research works are rarely designed by considering the demand of the people and their area. Similarly, research on technology development and transfer is limited on the one hand and research on indigenous land use and land management/conservation is extremely poor on the other hand.

_Inadequate research on policy matter:_ Focuses are mainly on applied and adaptive research and assessment of plan and policies is rarely done. For example, ecological and socio-economic impacts of different forest management modalities in different ecological region are not rigorously assessed.

_Less priority to research:_ Research activities are not in priority and the budget allocation for research activities is inadequate.

_Limited research activities in the universities:_ Because of the problem of financial resources, universities do have very few number of research works.
Inadequate attention to methodology for research and monitoring: Standardized parameters for land degradation mapping, watershed condition mapping, flood, landslide hazard mapping and indicators for assessing the change have not yet been determined.

Poor in compilation and documentation: Research documents are scattered and documentation is rather poor.

Poor mechanism of coordination: The mechanism of coordinating research activities and sharing results does not exist. Similarly, the coordination with the research institutions and the government line agencies is weak.

Poor mechanism of incorporating research results in planning processes: Research results are not timely incorporated in planning and development.

Poor in the use of modern tools and technology in research and development planning: GIS/RS technology is rarely used in research and planning.

Inadequate capacity of research institutions: Because of limited resources (financial, modern research tools and technologies and experts), the capacity of research institutions is not adequate.

Inadequate capacity of local bodies for development planning: As per LSGA, local bodies – DDCs, Municipalities, and VDCs are responsible for preparation, implementation, monitoring and evaluation of development activities including natural resource management. Their planning capacity in terms of financial resources, materials and expertise is rather poor.

3.12.3 Needs

- Research on land degradation
- Demand driven research
- Research on technology development and transfer
- Research on policy matter
- Determination of parameters for mapping and indicators for monitoring
- Sufficient budget for research
- Sufficient fund for research in the university
- Compilation and documentation of research documents
- Mechanism for coordination of research activities
- Timely incorporation of research results in development planning
- Use of modern tools and technology in research and development
- Strengthening capacity of research institutions
- Strengthening capacity of local bodies for development planning
3.13 Education and Awareness

3.13.1 Strength

Government has been providing formal (basic to higher secondary level) and informal education. Universities have been providing higher education with Ph. D. programme in many subjects. There is quite dense network of schools and campuses. Establishment of one Agriculture and Forestry University is underway. It has also been proposed to establish another deemed Agriculture University in the country. Awareness promotion activities are carried out through mobilization of NGOs/CBOs/Federations of natural resource user’s groups/Association of local bodies and mass media.

3.13.2 Constraints

Inadequate attention for the development of specialized course in the university: There is no single university institute, campus and department offering specialized course on land degradation with a holistic approach.

Inadequate attention to field based observation in the course module: Courses are designed focusing on desk study and indoor laboratory with class lecture.

Inadequate attention to incorporate global issues and efforts in the course module: None of the institute, campus and department offers course incorporating Multi Lateral Environmental Agreements, their requirements and opportunities.

No inter-departmental education provision: One has to study courses offered by single department. There is no opportunity to take courses offered by other departments.

Very low level of human resource development: Despite immense government efforts for educating people through formal and informal education, the level of literacy is still low i.e. 54.1%.

Inadequate attention to establish field demonstration in promoting awareness: Demonstration site for watershed management is not yet established.

Inadequate attention to develop materials for awareness promotion: Farmer-field school manual does not exist.

3.13.3 Needs

• Development and incorporation of specialized course on land degradation with provision of field study in university curricula
• Incorporation of MEAs in university curricula
• Strategy for developing education materials such as development and dissemination of farmer-field school literature
• Strategy for developing demonstration site at different scales from plot to landscape and watershed
• Strategy of utilizing both the electronic and print media in awareness creation
• Establishment of a department to offer land degradation course and strengthening its capacity
• Establishment of a large scale demonstration centre for soil conservation and management and strengthening its capacity
• Strengthening the institutional capacity of training institutions and federations of natural resource user’s group
• Training for trainers i.e member of federations of natural resource user’s group
• Field visits to the demonstration site for planners, decision makers and other key stakeholders

3.14 Participatory Processes and Empowerment

3.14.1 Strength

Government has realized the importance of participatory processes and the need of empowering local bodies, marginalized people, and disadvantaged groups in programme planning, implementation, monitoring, evaluation and benefit sharing. In TYIP an approach of inclusive development ensuring rightful sharing of power and resources for their active participation has been adopted. Participatory approach has been adopted almost in all natural resource management activities. NGOs, CBOs, Federations of natural resource user’s groups, Associations of local bodies are active to empower natural resource users and local bodies through advocacy and public awareness.

3.14.2 Constraints

Unclear mechanism of inclusion: It is reported that traditional use rights of indigenous, poor and socially disadvantaged groups are affected the most from the guided land management and conservation programme, i.e. community forest management programme. However, the mechanism of making them inclusive is not yet clarified and legalized.

Low level of human resource development: The level of human resource development is very low

Inadequate institutional capacity of Federations of user’s group and Associations of local bodies: Their activities are limited due to shortage of resources (financial and materials)

3.14.3 Needs

• Explore mechanism of participation and empowerment
• Improvement in human resource development
• Strengthening the capacity of Federations of user’s group and Associations of local bodies
• Micro-business entrepreneurship and skill development training with provision of micro-credit
3.15 Technical and Scientific Cooperation

3.15.1 Strength

Nepal has prepared NAP and other two National Reports and submitted to the UNCCD Secretariat. It has been implementing more than 10 programmes for preventing land degradation with financial support of GEF.

3.15.2 Constraints

*Inadequate attention to prepare technical cooperation plan:* Nepal has not yet prepared a plan of technical cooperation on UNCCD.

*Inadequate capacity of National Focal Point for UNCCD:* The capacity of National Focal Point in terms of professional staffs and financial resources is not adequate enough to prepare plan of technical cooperation on UNCCD.

3.15.3 Needs

- A plan of technical cooperation on UNCCD
- Strengthen capacity of National Focal Point
- Organize a group of experts to prepare a plan of technical cooperation

3.16 Joint Research Programmes

3.16.1 Strength

A few research institutions have carried out joint research programme with research institutes and universities outside the country.

3.16.2 Constraints

*Inadequacy of joint research programme:* Though many research programme have been carried out jointly with foreign research institutes and universities, joint research programme among the research institutes, universities and NGOs within the country are very limited.

3.16.3 Needs

- Encourage to carry out joint research programme for the development of improved affordable technologies
- Organize meetings, seminars, workshops for improved communication and interactions among professionals of different institutions
- Enhance the capability of research institute to develop research proposal jointly with other research institutes inside and outside the country
3.17 Food security

3.17.1 Strength

Food security has been taken as the basic component of human rights in the TYIP. Several strategies have been formulated to deal with the issue of food security.

3.17.2 Gaps

Long term plan for food security and legislative measures have yet to be formulated. Similarly, proposed government organization responsible to deal with the issues of food security has not yet been constituted.

3.17.3 Constraints

*Inadequate institutional capacity for crisis management:* The capacity of national and local bodies (DDC) is not adequate enough for crisis management.

*Inadequate planning and management knowledge among planners and decision makers both at central and district levels:* Knowledge on planning and management of food crisis among planners and decision makers is inadequate.

*Inadequate infrastructure:* Food security storage system at district level is not adequate.

3.17.4 Needs:

- A long term national plan for food security
- Food Sovereignty Act
- Establishment of a Food Security Division and Information Centre and strengthening its capacity
- Training to planners and decision makers both at the centre and district level
- Strengthen capacity of national and local body (DDC), Nepal Red Cross Society and NGOs for crisis management
- Strengthen capacity of Nepal Food Corporation to establish, expand and operate food security storage at district level.

3.18 Cross-cutting Thematic Areas

There are a few common needs addressing requirements across two or three themes (UNCCD, UNFCC and CBD) and there is possibility of achieving synergies between them. These common needs are as follows.

- Strengthening National Focal Point (MoEST)
- Assessment and integration of policies and streamline legislative provisions
- Early warning and advanced planning
- Land use planning and monitoring of land use change and natural disaster risks (landslides and flood disaster risks)
- Development of parameters for disaster mapping and monitoring indicators
- Training for disaster risk mapping
- Development of alternative renewable technology and training for its adoption
- Training for food crisis management due to natural disasters
- Training to policy makers and decision makers on MEAs provisions and opportunities.
- Incorporation of MEAs in higher education curricula
- Strengthening capacity of local bodies, its associations and federations of natural resource user’s group
- Strengthening capacity of research institutions
- Development and use of GIS/RS facilities for research, development planning and monitoring
- Coordination of research activities, compilation and documentation of research results
- Establishment of central data pooling system

3.19 Limitation and Risk

Present capacity needs assessment is based on the prevailing political situation and administrative structure of centralized and unitary form of the state. Nepal is going to be restructured with inclusive and democratic federal states in the near future. So, some of the capacity needs identified here may require to be revised.
Chapter IV

Prioritization of National Capacity Needs for Effective Implementation of UNCCD

4.1 Policy and Legislation

Systemic Level

- Evaluation and revisiting of the National Action Programme (NAP) to combat land degradation and mitigate the effects of drought
- Review and formulate effective strategies/mechanism for the integration and coordination of all the land and environment management activities
- Formulation of strategies for integration, coordination and cooperation among national focal points of MEAs
- Streamline acts which have conflicting and incompatible provisions
- Review, define and enact the roles and responsibility of government organization to avoid overlapping based on in-depth assessment of the structure and processes of relevant government organization from different perspectives – vertical, horizontal and geographical) and restructure organizational structure based on the types of the roles and responsibility
- Formulation of strategies for achieving synergies between regular programmes and donor supported programs
- Review human resource development plan and develop mechanism for its strict translation into practice
- Formulation of strategies for participation of key stakeholders in planning processes and build their capacity
- Comprehensive national land use and land management policy based on comparative advantages of different geo-ecological regions
- National policy to combat land degradation and mitigate the effects of drought
- National soil conservation and watershed management policy considering strong linkages among crop-forest-livestock on the one hand and highland-lowland linkages on the other
- National policy on pasture/grazing land management
- Formulation of appropriate forest management modalities specific to different geo-ecological regions based on socio-economic and ecological impact assessment of the already existing modalities and extensive consultative processes with all the stakeholders.
- Revision of MPFS, APP and Local Self Governance Policy (Act) in order to make them compatible enhancing integration and coordination with clear ownership right and management responsibility.
• Amendment of pasture land nationalization act with clear use and ownership right and management responsibility, forest act incorporating collaborative forest management strategy, soil and water conservation act focusing on soil conservation and watershed management even outside the protected watershed area
• Policy and legal provisions to promote participation of women, marginalized people and disadvantaged groups in natural resource management
• Enact laws to combat land degradation, guide land use and land management and ensure food security and back for effective implementation of wetland policy
• Long term national plan for food security
• Food Sovereignty Act
• Strategy for diversification of tourism development
• Master Plan to support Herbs and Non-Timber Forest Product Development Policy
• Legal and institutional reform to ensure investment-friendly and worker-friendly condition
• Formulation strategies for coordination of research activities and incorporation of research findings in development planning ensuring adequate funding for research
• Revision of Irrigation Policy in line with Irrigation Development Vision
• Revisiting of all the relevant policies

Institutional Level
• Capacity building of National Focal Point i.e MoEST
• Constitution and vitalization of National Coordinating Body and establishment of Desertification Unit under MoEST with support for capacity building
• Revitalization of high level coordinating body i.e. NCSD by strengthening its secretariat
• Strengthening policy formulation capability of concerned agency (NPC, and Ministries)
• Strengthening law enforcement capability of the concerned implementing agency as well as public forum.
• Basin-wise institutional arrangement of field offices of the Department of Soil Conservation and Watershed Management and enhancement of their capacity
• Establishment of Food Security Division and Information Centre and strengthening its capacity
• Capacity building of local bodies – DDCs, Municipalities and VDCs and their associations
• Constitution of a new institution for management of range land (highland pasture and lowland grazing land) and strengthening its capacity
• Constitution or assignment of management authority for the management of wetlands
• Autonomy to research institutions – DFRS and NARC and strengthen their research capability
• Capacity building of federations of natural resource users group
• Strengthen capacity of research institutions for policy assessment
• Strengthen capacity of training institutions
**Individual Level**

- Training for decision makers both at central and local level on planning processes
- Training for policy makers and decision makers in the issues of land degradation including MEAs (its requirement and opportunities)
- Training for members of civic society, public forum, Federations of natural resource user’s group, Association of local bodies, NGOs, CBOs on the issues of environmental deterioration and management benefit

**4.2 Early Warning and Advanced Planning**

**Systematic Level**

- Strategy for establishing coordination among key organizations (drought forecasting agency, DoA, NARC, agencies involved in food security)
- Strategies for communicating drought (climate and weather) information to local bodies and general public
- Strategies for research on key plant species for climate and weather variability and indigenous knowledge, skills, technologies and practices of reducing risk from climate and weather variability

**Institutional Level**

- Strengthening the institutional capacity to develop drought warning system (DHM)
- Strengthening capacity of institutions involved in extension services, and research institutions

**Individual Level**

- Training for trainers and social mobilizers on the use of climate and weather information and mitigation measures to reduce the effect of drought

**4.3 Food Security**

**Systemic Level**

- Strategy for establishing coordination among key organizations (drought forecasting agency, DoA, NARC, agencies involved in Food Security Division and Information Centre)
- A long term national plan for food security
- Food Sovereignty Act

**Institutional Level**

- Establishment of a Food Security Division and Information Centre and strengthening its capacity
- Strengthen capacity of national and local body (DDC), Nepal Red Cross Society and NGOs for crisis management
- Strengthen capacity of Nepal Food Corporation to establish, expand and operate food security storage at district level.

**Individual Level**

- Training to planners and decision makers both at the centre and district level
4.4 Technology Development and Transfer

**Systemic Level**
- Formulate strategies for documentation, assessment, improvement and transfer of land management and conservation technologies including water harvesting, irrigation.
- Expedite transfer of technologies –soil conservation technologies such as SALT, SABO and bioengineering; non-conventional irrigation technologies such as sprinkle and alternative renewable energy technologies such as improved cooking stoves, biogas, solar pans etc.
- Create conducive environment for participation of private sector in the development of technology and adoption of technology in rural areas

**Institutional Level**
- Strengthen capacity of institutions involved in the development and transfer of technology
- Strengthen capacity of research institutions for documentation and efficiency and impact assessment of technology
- Strengthen capacity of training institutions

**Individual Level**
- Training on use and maintenance of technology
- Training to engineers and contractors on environmental friendly techniques including bioengineering

4.5 Collection, Analysis and Exchange of Information/Data

**Systemic Level**
- Strategy for generating comparable and consistent information/data on land use, land management and land degradation
- Strategy for completing ongoing database generation/mapping activities
- Strategy for systematic observation of land degradation and watershed condition
- Strategy for timely monitoring, evaluation and assessment system
- Strategy for developing database (information) management system at different scales integrating attribute and spatial data
- Strategy for coordination and cooperation among data generators
- Strategy for the use of modern tools and technologies in the collection, processing, analysis and exchange of information/data

**Institutional Level**
- Establishment of centrally data pooling centre and strengthening its capacity
- Strengthening institutional capacity of the institution involved in data collection

**Individual Level**
- Training to planner and decision makers on the issues of data standardization
4.6 Diversification of Economic Activities for Alternative Livelihood

**Systemic Level**

- Legal and institutional reform to ensure investment-friendly and worker-friendly condition
- Strategy for diversification of tourism development
- Policy and legal provisions to promote participation of women, marginalized people and disadvantaged groups
- Strategy for the integration of skill development with capital and market

**Institutional Level**

- Strengthening institutional capacity involved in skill development and entrepreneurship development

**Individual Level**

- Trainings for skill development and industrial and business entrepreneurship development

4.7 Research and Development

**Systemic Level**

- Strategy to encourage demand-driven, technology development and transfer focused land degradation research with due attention to policy matter research
- Determination of parameters for mapping and indicators for monitoring
- Sufficient budget for research
- Sufficient fund for research in the university
- Compilation and documentation of research documents
- Strategy for coordination of research activities
- Timely incorporation of research results in development planning
- Use of modern tools and technology in research and development
- Strategy for an integrated land management programme with components of alternative livelihood options and capacity building ensuring the participation of all the stakeholders

**Institutional Level**

- Strengthening capacity of research institutions
- Strengthening capacity of local bodies for integrated land management

**Individual Level**

- Training to social mobilizers in DDC about integrated land management strategies and planning methodologies
4.8 Education and Awareness

**Systemic Level**
- Development and incorporation of specialized course on land degradation with provision of field study in university curricula
- Incorporation of MEAs in university curricula
- Strategy for developing education materials such as development and dissemination of farmer-field school literature
- Strategy for developing demonstration site at different scales from plot to landscape and watershed
- Strategy of utilizing both the electronic and print media in awareness creation

**Institutional Level**
- Establishment of department to offer land degradation course and strengthening its capacity
- Establishment of a large scale demonstration centre for soil conservation and management and strengthening its capacity
- Strengthening the institutional capacity of training institutions and federations of natural resource user’s group

**Individual Level**
- Training for trainers i.e member of federations of natural resource user’s group
- Field visits to the demonstration site for planners, decision makers and other key stakeholders

4.9 Participatory Processes and Empowerment

**Systemic Level**
- Explore effective mechanism of participation and empowerment of women, poor, marginalized people and disadvantaged group in land management including adoption of technology
- Strategy for making consultative processes and participation women, poor, marginalized people and disadvantaged group mandatory in planning processes
- Expedite human resource development activities

**Institutional Level**
- Strengthening the capacity of Federations of user’s group and Associations of local bodies

**Individual Level**
- Micro-business entrepreneurship and skill development training with provision of micro-credit

4.10 Technical and Scientific Cooperation

**Systemic Level**
- A plan of technical cooperation on UNCCD
**Institutional Level**

- Strengthen capacity of National Focal Point

**Individual Level**

- Organize a group of experts to prepare a plan of technical cooperation

4.11 Joint Research Programme

**Systemic Level**

- Encourage to carry out joint research programme for the development of improved affordable technologies

**Institutional Level**

- Enhance the capability of research institute to develop research proposal jointly with other research institutes inside and outside the country

**Individual Level**

- Organize meetings, seminars, workshops for improved communication and interactions
- among professionals of different institutions
References


MFSC, 2004. Medicinal Plants and Non-Timber Forest Product Development Policy. Medicinal Plants and Non-Timber Forest Product Coordination Committee, Department of Botany, Ministry of Forests and Soil Conservation, Kathmandu


Annex 1.1: Composition of Thematic Working Group on Land Degradation

<table>
<thead>
<tr>
<th>SN</th>
<th>Name</th>
<th>Position</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mr. Laxman Prasad Mainali</td>
<td>Chair</td>
<td>Ministry of Environment, Science and Technology (UNCCD Focal Point)</td>
</tr>
<tr>
<td>2</td>
<td>Mr. Sher Jung Karki</td>
<td>Member</td>
<td>Ministry of Environment, Science and Technology</td>
</tr>
<tr>
<td>3</td>
<td>Mr. Arjun Kumar Thapa</td>
<td>Member</td>
<td>Ministry of Environment, Science and Technology</td>
</tr>
<tr>
<td>4</td>
<td>Mr. Tulsi Bhakta Prajapati</td>
<td>Member</td>
<td>Ministry of Forests and Soil Conservation</td>
</tr>
<tr>
<td>5</td>
<td>Mr. Naresh Sharma</td>
<td>Member</td>
<td>Ministry of Agriculture and Cooperative</td>
</tr>
<tr>
<td>6</td>
<td>Mr. Shuseel Dangol</td>
<td>Member</td>
<td>Ministry of Land Reform and Management</td>
</tr>
<tr>
<td>7</td>
<td>Mr. Manahari Khadka</td>
<td>Member</td>
<td>National Planning Commission</td>
</tr>
<tr>
<td>8</td>
<td>Mr. Chewan Prasad Guragain</td>
<td>Member</td>
<td>Department of Soil Conservation and Watershed Management</td>
</tr>
<tr>
<td>9</td>
<td>Mr. Bishwo Nath Oli</td>
<td>Member</td>
<td>Department of Forest Research and Survey</td>
</tr>
<tr>
<td>10</td>
<td>Mr. Khila Nath Dahal</td>
<td>Member</td>
<td>Department of Water Induced Disaster Prevention</td>
</tr>
<tr>
<td>11</td>
<td>Mr. Kumar Raj Shahi</td>
<td>Member</td>
<td>National Federation of Irrigation Water Users Association Nepal</td>
</tr>
<tr>
<td>12</td>
<td>Mr. Thakur Bhandari</td>
<td>Member</td>
<td>Federation of Community Forestry Users Nepal</td>
</tr>
<tr>
<td>13</td>
<td>Mr. Saroj Nepal</td>
<td>Member</td>
<td>Association of Village Development Committees</td>
</tr>
<tr>
<td>14</td>
<td>Mr. Bechan Kumar Mahato</td>
<td>Member</td>
<td>Rangers Association Nepal</td>
</tr>
<tr>
<td>15</td>
<td>Mr. Batuk Krishna Uprety</td>
<td>Member</td>
<td>Ministry of Environment, Science and Technology</td>
</tr>
</tbody>
</table>
### Annex 2.1: Donor supported national and local level projects directly or indirectly related to the UNCCD

<table>
<thead>
<tr>
<th>Name of project</th>
<th>UNCCD component</th>
<th>Time Frame</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Leasehold forest and livestock development program</td>
<td>Poverty Reduction, pro-poor NRM, capacity development of CFUG</td>
<td>2005-2013</td>
<td>IFAD</td>
</tr>
<tr>
<td>2. Northern Mountain Conservation Project</td>
<td>Sustainable forest management, capacity building of resource users</td>
<td>2001-2011</td>
<td>WWF</td>
</tr>
<tr>
<td>3. Livelihood and Forestry Program</td>
<td>Capacity development of CFUGs</td>
<td>2001-2011</td>
<td>DFID</td>
</tr>
<tr>
<td>4. Terai Arc Landscape Program</td>
<td>Management at landscape level, integration of livelihood with biodiversity conservation</td>
<td>2001-2011</td>
<td>WWF</td>
</tr>
<tr>
<td>5. Biodiversity Sector Program Siwalik and Terai (BISEP-ST)</td>
<td>Develop suitable forest management system and enhance implementation skills for sustainable forest management</td>
<td>2001-2006 extended to 2009</td>
<td>SNV</td>
</tr>
<tr>
<td>7. Churia Watershed Management Project</td>
<td>Sustainable NRM involving local people, capacity development of local institutions/ stakeholders</td>
<td>2001-2006 (bridging phase 2007)</td>
<td>CARE, USAID</td>
</tr>
<tr>
<td>8. Participatory Conservation Project (Phase II)</td>
<td>Biodiversity conservation and capacity building of buffer zone users</td>
<td>2004-2006</td>
<td>UNDP</td>
</tr>
<tr>
<td>9. Western Terai Landscape Complex Project</td>
<td>Integrated biodiversity conservation including agri-biodiversity and capacity building</td>
<td>2003-2011</td>
<td>UNDP/GEF, SNV, WWF</td>
</tr>
<tr>
<td>10. Strengthening Actions for Governance in Utilization of Natural Resources (SAGUN)</td>
<td>Enhance management skill for natural resource, develop advocacy skill of civic societies, encourage women participation</td>
<td>2002-2006 (second phase in pipeline)</td>
<td>CARE, WWF, RIM, FECOFUN, USAID</td>
</tr>
<tr>
<td>11. Community Development and Forest/Watershed Conservation Program</td>
<td>Land use planning, community based integrated watershed management, community mobilization and training</td>
<td>1999-2008</td>
<td>JAPAN, KR2</td>
</tr>
<tr>
<td>15. District and National Implementation of Agricultural Perspective Plan (APPSP)</td>
<td>Strengthening existing institutional management to support farmers by providing technical services</td>
<td>2003-2008</td>
<td>DFID</td>
</tr>
<tr>
<td>Project Description</td>
<td>Objective</td>
<td>Dates</td>
<td>Implementer</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>16. Commercialized Agricultural Development Project (CADP)</td>
<td>Reduce poverty in rural communities through equitable and sustainable commercialization of agriculture</td>
<td>2006-2013</td>
<td>ADB</td>
</tr>
<tr>
<td>17. Japanese Fund for Poverty Reduction (JFPR) for CADP</td>
<td>Reduce poverty in rural communities through equitable and sustainable commercialization of agriculture</td>
<td>2006-2010</td>
<td>ADB</td>
</tr>
<tr>
<td>18. Maize Based Cropping System Phase II</td>
<td>Identification and development of improved maize cultivation technology</td>
<td>2003-2008</td>
<td>SDC</td>
</tr>
<tr>
<td>19. Crop Diversification Project (CDP)</td>
<td>Poverty reduction through crop diversification</td>
<td>2001-2008</td>
<td>ADB</td>
</tr>
<tr>
<td>21. Agriculture Training and Extension Improvement Project (ATEIP)</td>
<td>Delivery of training and agricultural extension according to the need of target farmers groups</td>
<td>2005-2009</td>
<td>JICA</td>
</tr>
<tr>
<td>23. Increase in Food Production (KR2)</td>
<td>Fertilizer sale</td>
<td>2004-2007</td>
<td>JAPAN</td>
</tr>
<tr>
<td>25. Bagmati Irrigation Project</td>
<td>Irrigation development and conservation of command area</td>
<td>1979-2012</td>
<td>SDF</td>
</tr>
<tr>
<td>27. River Training Program</td>
<td>Provision of materials for river training and development of Master Plans for disaster prevention</td>
<td>1989-2008</td>
<td>JAPAN/NPG</td>
</tr>
<tr>
<td>29. Biogas Production Program</td>
<td>Construction of biogas and training on technology</td>
<td>2003-2009</td>
<td>SNV, KFW</td>
</tr>
<tr>
<td>31. Rural Energy Development Program</td>
<td>Study/research, workshop, seminar, establishment of energy and environment unit in DDCs</td>
<td>2007-2011</td>
<td>UNDP</td>
</tr>
<tr>
<td>32. Renewable Energy Development Program</td>
<td>Establishment of District Energy Fund, training, seminar, workshop, awareness creation on solar energy</td>
<td>2003-2008</td>
<td>EC</td>
</tr>
<tr>
<td>33. Informal Education and National Literacy Campaign</td>
<td>Management workshop and training for facilitators, distribution of teaching materials, informal education program</td>
<td>1999-2008</td>
<td>UNFPA</td>
</tr>
</tbody>
</table>
34. Skills for Employment  | Skill training for self-employment  | 2005-2012  | ADB  
35. Education for All  | Female education, informal education  | 2002-2008  | UNICEF  
36. Community School Capacity Improvement Programme  | Capacity improvement of community school  | 2007-2008  | EU  
37. Gender Equity and Women Empowerment Programme  | Orientation training, group mobilization, leadership training  | 2007-2008  | ADB  
38. Decentralized Local Self Governance Support Program (DLGSP)  | Capacity assessment of DDCs and strategies for their improvement, skill development training, establishment of Community Development Fund  | 2004-2007  | UNDP/NORWAY  
40. Strengthening Environmental Management Program at Local Level (SEAM)  | Strengthening environment management support Fund, promotion of environmental monitoring, training, workshop, seminar  | 2001-2008  | FINIDA  

Source: Compiled from Annual Program for Fiscal Year 2007/08 published by NPC and information collected from concerned Ministry – MFSC, MoAC, MoWR.

Annex 2.2: Natural Resource Users Groups

<table>
<thead>
<tr>
<th>Activities</th>
<th>Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Community forestry</td>
<td>14337 groups; 1.6 million households; 1.2 million ha</td>
</tr>
<tr>
<td>2. Collaborative forest</td>
<td>3 sites (6669 ha by 77368 households) managed, 3 sites (8507 ha) in process of approval; 5 sites (23308 ha) proposed</td>
</tr>
<tr>
<td>3. Leasehold forest and forage development</td>
<td>3417 groups, 28128 households involved, 17242 ha degraded forests, barren land managed</td>
</tr>
<tr>
<td>4. Private Forest</td>
<td>2402 plots with 2333.04 ha registered (as of 2005)</td>
</tr>
<tr>
<td>5. Eviction/plantation</td>
<td>11000 ha evicted, 41470 ha plantation (1991-04/050)</td>
</tr>
<tr>
<td>6. Soil conservation and watershed management</td>
<td>1307 community soil conservation plans, 13,140 ha of degraded land reclaimed, 5648 ha to multiple cropping, 128 km of stream bank stabilized, 547 km irrigation channel, 662 catchment ponds, 580 landslides controlled, 1425 gullies, 390 local stream controlled</td>
</tr>
<tr>
<td>7. Landscape and biodiversity conservation</td>
<td>Protection and conservation of 28998.67 km² (19.7% of total country area (10288 km² National Park, 979 km² Wildlife Reserve, 1325 km² Hunting Reserve, 11327 km² Conservation Area, 5079.67 km² Buffer Zone Area))</td>
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<tr>
<td>8. Buffer zone management</td>
<td>3454 user groups, 112125 households</td>
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<tr>
<td>9. Irrigation</td>
<td>Agency managed 913991 ha, Farmers managed 286637; more than 2200 water users associations in 68 districts</td>
</tr>
<tr>
<td>10. Watershed management through EIA process</td>
<td>Hydroelectricity projects are encouraged to invest certain amounts of their benefit for soil conservation and watershed management during EIA report approval</td>
</tr>
<tr>
<td>11. International Year of Mt (IYM)</td>
<td>Awareness creation</td>
</tr>
</tbody>
</table>
12. Promotional activities on alternative energy use

560 megawatt of hydroelectricity distributed in 2100 VDCs, 170000 biogas plants, 9.5 megawatt of micro-hydroelectricity, 81000 solar home system, 213000 improved stoves (5.8% people enjoy alternative energy facility), establishment of Rural Energy Fund.

13. Sustainable harvest and commercial farming of NTFP

Commercial plantation initiated

14. High value commodities

Tea (16012 ha), coffee (1285 ha), fruits (54112 ha) cardamom

15. Flood forecasting facilities

Narayani river

16. Documentation of indigenous knowledge

Study conducted

17. Fund generation at the local level

Up to 50% sharing of royalty generated from hydroelectricity sale, protected areas, and mining activities; 30% trekking and mountaineering tourism; 10% from forest products; 5-90% from house and land registration fee.

18. Regional cooperation

Trans-boundary issue, flood, ICIMOD database, SARC-Technical Committee on Environment and Meteorology

19. National capacity assessment

To be done in NCSA process

Source: compiled from different sources – MoEST, 2006; NPC, 2007; DoF database (2007); DNPWC database (2007).

<table>
<thead>
<tr>
<th>Sectors</th>
<th>Policies</th>
<th>Provisions</th>
<th>Strength</th>
<th>Weakness</th>
<th>Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>APP, 1995 (till 2017) NARP, 2004</td>
<td>Emphasis on market; investment in small number of inputs (irrigation, agricultural roads and power, fertilizer, and technology system of research and extension); production package (high value tree crop in the hills and mountains; and food grains in the Terai); livestock, agribusiness; forestry; and also on the assumption of multiplier effects of agricultural growth and increased farm income; creation of new institutions such as for agricultural roads</td>
<td>Diagnosis of the issues; emphasis on participatory approach; regional balance; specialization by ecological regions, market orientation; public-private partnership in investment; system of technology and research. Recommendation for new institutions such as National Support Committee, Subcommittee for Implementation of the District Agricultural Programme and Independent Analytical Unit and for their capacity building</td>
<td>• Too idealistic assumptions (multiplier effects can be achieved only after the growth which needs huge investment at the beginning) • Inadequate attention on environmental services; environmental impact of inputs on soil, land, landscape and watershed and; and their management and improvement • Inadequate attention on land distribution, tenure; ownership and land use management (increasing land abandonment in the hills and mountain, land ownership conflict in the Terai, Inner Terai and Chure) • Inadequate attention to mountain areas (high land pasture) • Some contradictory provisions with other policies (emphasis on low intensity use in areas which are identified fragile by other policies – NEPAP, FSMP) • Inadequate assessment of implementation processes and achievement so far made</td>
<td>Revision after detailed policy assessment</td>
</tr>
<tr>
<td>Forest</td>
<td>MPFS, 1989 (till 2014), FSP, 2000</td>
<td>Emphasis on basic needs fulfillment and sustainable use of forests – classification of forests under different management modalities – government managed forests, protected forests, community forests, leasehold forests, religious forests, private forests and collaborative forests, protected areas (park, reserve, buffer zone), conservation areas, Emphasis on local level participation (users), adopts a holistic approach to the multiple use of land, emphasis on integrated farming system, research and training.</td>
<td>• Challenge to the traditional rights – poor, disadvantaged groups, distant and seasonal users • Assumed that the same management modality works in all the geo-ecological regions – Terai, Chure, Mahabharat, hills and high mountain areas • Identification and delineation of protected area based on the availability of rare and endangered species not upon ecological stability • Inadequate provision for changing social power structure in the implementation modalities • Inadequate attention to plantation • Inadequate attention to the forests adjoining nearby community forests • Marginal area to marginal people (leasehold forests) without reasonable incentives and guarantee of ownership</td>
<td>Impacts (socio-economic and ecological) assessment of forest management modalities and revision in MPFS with separate management modalities for different geo-ecological regions</td>
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<tr>
<td>Pasture</td>
<td></td>
<td>National policy for pasture/ grazing land management does not exist yet</td>
<td>National policy for pasture/ grazing land management does not exist yet</td>
<td>Needs to formulate national policy</td>
<td></td>
</tr>
</tbody>
</table>
| Water/wetlands | WRS, 2002 and NWP, 2005 (till 2027) | Sustainable management of watersheds and aquatic ecosystem, appropriate and efficient irrigation, manage and mitigate water induced disasters including drought (identification of potential drought prone area and preparation and implementation of a national plan to cope with drought) | A holistic approach relying on IWRM; emphasis on participation of all the stakeholders: integration with social development, equitable sharing of benefits; and wider use of existing as well as innovative technologies, conservation of resources and protection of environment. Envisaged new institutional arrangements – a Sub-basin Committee; District Water Resource Committee and Major River Basin Authority which are responsible to prepare data base, assess water needs, develop and implement water related development programme, raise financial resources, inform and educate the general public in the benefit of integrated water management; WEC as a coordinator at central level | • Institutional arrangement is too idealistic in the context of current administrative divisions which are not based on watershed boundary
• Ambitious targets, for example by 2007 potential disaster zones are identified by type and location on district maps, a management plan for nationally important watershed and aquatic system is prepared and initiated
• Focus only on disasters not on hazards and its processes (on relief and mitigation rather than prevention/protection/recharging)
• Overlapping activities with other policies, i.e. preparation of land use map at watershed level, erosion hazard maps, training programme on soil and water conservation, rehabilitation program on degraded watershed, promotion of SALT model
Needs to redefine the activities in a coordinated away with other Departments such as Soil Conservation and Watershed Management, Survey Department |

| WP, 2003, IDV 2006 | Utilization of water resources through participatory management system with due priority to the multipurpose projects; increase the roles and responsibility of local bodies; extension of irrigation services even to marginal farms; initiation of new and non conventional systems such as rain water harvesting, pond, sprinkler, drip, paddle pumps etc; develop storage type irrigation systems, use of ground water, trans-basin water transfer, develop institutional capacity of water users and strengthen working capability of technical human resources | Participatory involving local users and their associations and local bodies; innovative introducing new methods and technology and introduction of integrated irrigation development linked with watershed condition. | • Emphasis on physical and institutional development and taxation but less attention to water use management in relation to agricultural crops though the irrigation development vision mentions integrated crop and water management programme.
• Strong coordination between DoI and DoA is expected, but there is weak coordination in reality |
Master Plan for trans-basin water transfer; revision in line with Irrigation Development Vision, 2006 |

| WIDMP, 2005 | Reduction in loss of life, properties and infrastructure through conservation of river, watershed area and wetlands; rehabilitation of land degraded from water induced disaster – flood, landslide, debris flow etc; establishment of early warning system; awareness creation; participation of local bodies, establishment of relief and storage centres; preparation of risk maps | Restoration and rehabilitation of degraded land through preventing and protective measures with participation of local bodies/users groups and improvement in livelihood. Emphasis on strengthening capability of local bodies/NGOs/Users; research and technology development. | • Less attention to watershed conservation (focus on river training and protection of infrastructures)
• Implementation modalities and coordination mechanism not clearly defined |
Needs implementation modalities and coordination mechanism to be clearly defined |

| NWLP, 2003 | Wetlands management based on local participation with different modalities – leasehold, community, private, joint, religious and state; and in different areas – protected, government/public and private | Different modalities of management in different areas; participatory approach with promotion of awareness and capacity enhancement of local bodies, groups and individuals; emphasis on programmes that provide tangible benefit to local people and improve their livelihood, use of local knowledge, skills and technology | • Less attention to environmental services and management strategy following a holistic approach of IRBM (focus on use management, habitat protection and prohibition of activities with adverse impacts rather than restoration and maintenance through watershed management)
• Undefined management authority outside the protected areas |
Needs integration and coordination with other sectoral and cross sectoral policy such as NWIP, WP, WIDMP/BCS |
<table>
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<tr>
<th>Soil/ Watershed</th>
<th>Cross sectoral</th>
<th>SDAN, 2003</th>
<th>Growth and reorientation of agriculture through investment in fertilizer, irrigation, research and extension, high value-low volume crops, expedite land reform, land use management and security of contractual farming; environmental redress by creating economic incentives to use clean energy sources and requiring environmental impact assessment; extension services through social mobilization with assistance of NGO/Groups through linkages with local bodies; management of natural forest and protected areas by promoting people’s participation; conservation of ecosystem and genetic resources by implementing NBS; conservation of biodiversity at landscape level; protection of land against degradation by conducting activities to minimize losses from soil erosion, flood, landslides, desertification and other effects of ecological imbalance through the enforcement of locally prepared land use plans and more effective interaction between forestry and farming practices, promotion of sustainable harvest and management of NTFP; ensuring agricultural biodiversity; conservation of range land by developing comprehensive range conservation strategies; good governance through effective decentralization, civil service reform and legislative provisions; set up a system of early warning in every village and weather prediction system; build decentralized response capacity</th>
<th>Specific national policy for soil conservation and watershed management does not exist yet; activities related to it are based only on Act. Other relevant policies are NWS, NWP, DIWMP, WLP etc</th>
<th>Need of a comprehensive soil conservation and watershed management policy</th>
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<tr>
<td></td>
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<td>Vision document guiding till 2017 and compatible with MDGs; sustainable development approach involving different stakeholder; emphasis on good governance and decentralization, arrangement of a coordinating body.</td>
<td>Only a guiding document without technical details or specific development strategies</td>
<td>Only a guiding document without technical details or specific development strategies</td>
<td>Preparation of land use plan</td>
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<td></td>
<td>• Less attention to the slow degradation process particularly in cultivated land, development and transfer of soil conservation technologies</td>
<td>• Though proposed for new policies and plans, not yet exist</td>
<td>Preparation of a comprehensive rangeland conservation strategies</td>
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<td></td>
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<td></td>
<td>• Preparation of a comprehensive soil conservation policy</td>
<td></td>
<td>Set up of early warning system including</td>
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<tr>
<td>Source</td>
<td>Description</td>
<td>Emphasis</td>
<td>Observations</td>
<td>Comments</td>
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| MDG, 2000 | Ensuring environmental sustainability is one of the goals (other goals are eradicate extreme poverty; achieve universal primary education; promote gender equity and empower women; reduce child mortality; improve maternal health; combat HIV/AIDS, malaria and other diseases; develop a global partnership of development. Nepal’s strategy is to reverse loss of environmental resources | Emphasis on human resource development with specified targets; well integrated with periodic development plans; Periodic assessment of the achievements | • Environmental sustainability has been treated as crosscutting issues without specific programmes  
• The indicators used for ensuring sustainability are based on the land cover change in terms of area (depletion) not in terms of quality or degradation | Evaluation report suggests for the needs of coordination between MPFS; APP and LSG; provision of integrated land management plan for the fragile Swalik and implementation plan for NTFP policy (draft management plan for Swalik has been prepared) |
| NEPAD, 1993 | Sustainable management of natural resources (land; proper soil fertility management through optimal utilization of locally available biomass, rehabilitation of degraded agricultural land and improved management of livestock and rangeland; forest- adoption of a national land use plan, formulation of a national energy policy; greater participation of local communities in management; and water – protection of watershed through low-cost vegetative and cultural measures); mitigation adverse environmental impacts from urban and industrial development and infrastructure development through EIA processes; safeguarding national heritage; and capacity building (legislation, institutions, education and public resources) | Adoption of a multi-sectoral framework with defined immediate, short-term and long term actions; emphasis on participatory approach; enhancement of local level institutions, NGOs; environmental education | • Less attention to integration among various sectors (seems compilation of activities – i.e incorporation of land use policy under forest and rangeland management)  
• Less attention to restoration and rehabilitation of degraded land and their utilization  
• Less attention to coordination in implementation, monitoring and evaluation mechanisms | Strategic assessment of rangeland; a national land use policy; management plans for key watershed, strategy for cultural heritage preservation |
| LUPS, 2005 | Use of land as per its capability and maintain environmental balance and conserve environment, formulation and implementation of land use plan from central to district level | Identification of criteria for land use zoning and mapping, use of RS/GIS tools in mapping and monitoring | • No clear cut strategies for formulation and implementation modalities of land use plan at local level  
• No provision for social land use mapping and integration with RS/GIS technology | Land use policy/ strategies specific to different ecological regions well integrated with different sectors |
<table>
<thead>
<tr>
<th>Year</th>
<th>Document</th>
<th>Focus and Objectives</th>
<th>Policies and Initiatives</th>
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</thead>
</table>
| 2002   | NBS, 2002 and NBSIP, 2006 | Conservation of biodiversity in protected area, forests, rangelands, agro-biodiversity, wetlands and mountain areas with focus on strengthening management practices, sustainable harvesting ecosystem networking and species conservation. Introduction of landscape planning approach: participatory integrated with livelihood improvement; use of indigenous knowledge in biodiversity conservation; conservation of natural habitat through rehabilitation and restoration of degraded ecosystem; promotion of conservation awareness. | • Classification of areas for biodiversity conservation is not mutually exclusive (mixing of land use/land cover and landform i.e. mountain)  
• Spatial scale of landscape unit not clearly defined  
• Less attention to the degradation of land (soil erosion, landslides, channel shifting, sedimentation) and its implications in biodiversity conservation. | A comprehensive rangeland policy; National Mountain Policy and Research Network for biodiversity conservation. |
| 2004   | NTFP, 2004                | Participatory conservation and sustainable harvesting without any adverse impact on regeneration and reproduction; delineation of pocket area; value addition by promoting storage, processing, packaging, extraction activities; promotion in employment and increase in national income. Emphasis on enhancing productivity of unproductive marginal land; intercropping encourage poor, landless and marginal family to cultivate in marginal areas; development of infrastructure, technology, knowledge and skills; promotion of public awareness and education. | • Focus on production and harvesting, less attention to land management (runoff and erosion control, terracing etc) | Formulation of Master Plan, mapping. |
| 2006   | REP, 2006                 | Development and transfer of environment friendly technologies of renewable sources of energy such as micro-hydropower, biogas, solar energy, wind energy; improved stoves and improved water mills in rural areas to contribute in environment conservation, poverty reduction and improvement in livelihood. Emphasis on strengthening capacity of local bodies, skill development, training, promotion of awareness and demonstration on the use and management of technology. |  |  | |
| 2004   | TALSP, 2004               | Guiding document for biodiversity conservation and sustainable development; program areas – sustainable forest management, grazing management, Churia watershed conservation, species and ecosystem conservation, sustainable development, awareness and education. Adaptive and holistic approach, shifting from site based to landscape-level conservation, sustainability, ensuring equitability, empowering the women, poor and disadvantaged group, strong partnership among stakeholders, highlight the issues, compatible with NBS, MDG,SDAN | • Covers only 14 Terai districts with focus on biodiversity and forest corridor conservation  
• Spatial scale of landscape unit not clearly defined | National land use policy, integrated land use planning, and integrated watershed management plan. |
| 2007   | NUP, 2007                 | Conservation and sustainable use of agricultural land, forest, water and watershed in urban areas through implementation of appropriate land use and management plan. Protection of productive land from the use other than agriculture; participatory; awareness promotion. | • Less attention to rehabilitation and restoration of degraded land  
• Plans and programmes are yet to be formulated | Land use zoning and management plan. |
### Annex 3.2: Legislative Provisions, Weaknesses and Needs

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<tbody>
<tr>
<td>Agriculture</td>
<td>Seed Act, 1988</td>
<td>Production, processing and distribution of high quality seeds for increased production of crops</td>
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<td></td>
<td>Pesticides Act, 1991</td>
<td>Regulates the use of insecticides</td>
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<td>Forest</td>
<td>Forest Act, 1993 and Forest Regulations 1995</td>
<td>Management and conservation of forest through different modalities (national forest, government managed forests, protected forests, community forests, leasehold forests, religious forests and private forests), forest boundary delineation, users group mobilization, handing over forest, use and ownership rights and monitoring and evaluation</td>
<td>Vague definition of forests; not consistent with forestry sector policy, 2000 (no provision for collaborative forests); inadequate for ensuring access to poor, landless and disadvantaged groups and long distance traditional users; and conflicting with other Acts such as LSGA, MMA on ownership and use rights and management responsibility</td>
<td>Needs revision streamlining with other Acts</td>
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<td>National Parks and Wildlife Conservation Act, 1973; National Parks and Wildlife Conservation Regulations, 1974 and the Buffer Zone Management Regulations, 1996</td>
<td>Conservation and management of wildlife habitat and areas with high aesthetic values declaring National Parks, Reserves and Conservation Area and its Buffer Zone. Buffer zone management through users group</td>
<td>Inconsistency in community forest management guidelines and buffer zone management guidelines of the CFUG; traditional use right of poor, disadvantaged group and long distance users and management options and benefit sharing mechanism are not well addressed; conflicting with WRA, LSGA, MMA on use right and management responsibilities</td>
<td>Needs streamlining</td>
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<tr>
<td>Pasture</td>
<td>Pasture Land Nationalization Act, 1974 and Rules, 1976</td>
<td>Handing over of nationalized pasture land to VDCs, VDC is responsible to prohibit the use of pasture land other than animal grazing, fix grazing tax and conserve pasture land</td>
<td>Conflicting ownership and use rights, and management responsibility with FA (as per FA uncultivated part land around the forest is also national forest)</td>
<td>Needs revision</td>
</tr>
<tr>
<td>Water/wetlands</td>
<td>Water Resource Act, 1992 and Water Resource Regulation 1993</td>
<td>Recognition of State as the owner of water resources available in the country and management through water user’s association; provision for handing over water related projects to users and environmental impact assessment for water related projects</td>
<td>Focus on water use, less attention to water conservation; lack of recognition to private water resources; wetlands management not included; conflicting with ALPA on matter of private water resource and NPWCA on matter of ownership and use right and management mechanism</td>
<td>Needs revision and streamlining with other Acts; needs a separate legal provision for wetlands management in line with National Wetlands Policy</td>
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<td>Electricity Act, 1992</td>
<td>Avoidance of adverse environmental impacts such as soil erosion, flood, landslides while developing hydroelectricity and its distribution</td>
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<td></td>
<td>Aquatic Life Protection Act, 1961</td>
<td>Protection of aquatic life</td>
<td>Less attention to habitat conservation; wetlands management; conflict with WRA in terms of ownership right (private water resource)</td>
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<td>Soil/Watershed</td>
<td>Soil and Water Conservation Act, 1982</td>
<td>Conservation of soil and watershed through control of soil erosion, floods and landslides and introduction of appropriate land utilization practices; empowers the government to declare protected watershed area and carryout different structural and non-structural protective activities and provide financial and technical support</td>
<td>Focuses only to the protected watershed area declared by the government, conflicting with WRA, MMA on use right and management responsibilities</td>
<td>Revision in line with the proposed national policy for soil conservation and watershed management</td>
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<tr>
<td>Cross-sectoral</td>
<td>Environment Protection Act, 1996 and Environment Protection Regulation, 1997</td>
<td>Protection of environment and mitigation of adverse impacts of development projects through EIA and IEE processes; empowers the government to declare Environment Protection Areas</td>
<td>Different modalities of protected and conservation areas such as Protected Forests in FA, Conservation Area in NPWCA, Protected Watershed in SWCA and Protected Area in EPA are not defined clearly, they are not mutually exclusive and management strategies are not compatible each other</td>
<td>Streamlining management strategies for protected and conservation areas</td>
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<tr>
<td>Mines and Mineral Act, 1985; Mines and Mineral Product Regulation, 1999</td>
<td>Empowers government to regulate mining activities and implement different environmental mitigation measures in and around mining sites</td>
<td>Conflicting provision for use right and management responsibilities with other Acts – FA, NPWCA, SWCA, LSGSA</td>
<td>Streamlining with other Acts</td>
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<td>Land (Survey and Measurement) Act, 1961; Land Revenue Act, 1977; Land Related Act, 1964; Land Acquisition Act, 1977</td>
<td>Land survey and ownership fixation, fixation of land ceiling, acquisition of land more than the ceiling, judicial distribution of land; tenancy right, control of land fragmentation and land consolidation, land use planning</td>
<td>Judicial distribution of land, fixation of use and ownership right, tenurial arrangement and land fragmentation are still a burning problems which adversely affect motivation in investment for land management improvement activities</td>
<td>Revision in the Land Act, 1961 and Land Related Act, 1964. National Land Use Regulations and Guidelines</td>
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<td>Local Self Governance Act, 1999 and Regulations, 1999</td>
<td>Conservation of natural resources involving local bodies – VDC/Municipality, and DDC</td>
<td>Overlapping use right and management responsibility (VDC/ Municipality and DDC)</td>
<td>Regulations and Guidelines for integrated land use plan with provision for active participation of different stakeholder at local level (community, ward or VDC/ Municipality and then district level)</td>
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<tr>
<td>Natural Calamities (Relief) Act, 1982</td>
<td>Protection of life and properties from natural disasters</td>
<td>Focuses on relief/ rescue activities rather than preparedness, rehabilitation and restoration of damaged land</td>
<td>Land Use Regulation and Guidelines</td>
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</table>
### Annex 3.3: Institutions, Structure, Responsibilities, Strengths and Weaknesses

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<thead>
<tr>
<th>Institutions</th>
<th>Structure</th>
<th>Responsibility</th>
<th>Strength</th>
<th>Weakness</th>
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<tbody>
<tr>
<td><strong>A</strong></td>
<td>Advisory/policy formulation bodies</td>
<td>Central level advisory body Chaired by the Prime Minister with Vice Chairman and 8 members nominated by the government; it has five divisions—economic management, social development, infrastructure development (water and energy), agriculture and rural infrastructure (agriculture, forest, land reform, environment, sustainable development), and poverty mapping with 152 staffs; CBS is under NPC. Other bodies under this are DHM, APEC, NITC, NFLDC, BPKMPO and SMDC</td>
<td>Formulation of development policies and plans; monitoring and evaluation; advising for any kind of technical and financial assistance; build capacity for planning, monitoring and evaluation; coordination; and data collection, compilation and standardization</td>
<td>Experience of planning, monitoring and evaluation processes and techniques</td>
</tr>
<tr>
<td><strong>1</strong></td>
<td>National Planning Commission</td>
<td>Formulation of development policies and plans; monitoring and evaluation; advising for any kind of technical and financial assistance; build capacity for planning, monitoring and evaluation; coordination; and data collection, compilation and standardization</td>
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<td><strong>2</strong></td>
<td>MoEST Focal Point for UNCCD with four divisions—planning, evaluation and administration; science and information technology promotion; environment; and law and convention with 76 staffs. Other bodies under this are DHM, APEC, NITC, NFLDC, BPKMPO and SMDC</td>
<td>Formulation and implementation of policies, plans and programmes; research on environment and technology; promotion of alternative energy; implement EIA processes; coordination of activities under UNCCD including implementation of NAP</td>
<td>Formulation of NAP and regular reporting; active in awareness creation at central level</td>
<td>Inadequate coordination in implementation of NAP, NCD and other coordinating bodies for NAP implementation including desertification unit envisaged in NAP not yet formed; monitoring and evaluation of NAP implementation not yet started. Inadequate staffs, resources and political commitment for coordination in NAP implementation; inadequate monitoring and evaluation; inadequate formal/informal consultation with other agencies; implementation responsibility in other agencies</td>
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<td><strong>3</strong></td>
<td>MFSC</td>
<td>Five divisions—administration; monitoring and evaluation; environment; foreign aid coordination; and planning and human resource. It has also human resource development training section, 5 regional forest directorates, 5 regional training centres, 5 departments (forest, national parks and wildlife conservation, forest research and survey, plant resources and soil conservation and watershed management. Other bodies are Forest Product Development Committee, Timber Corporation of Nepal, and Herbs Production and Processing Company. It is the Focal Point of CBD.</td>
<td>Formulation and implementation of policies, plans, strategies and programs for the conservation of forest, wetlands, biodiversity, soil, watershed and environment; promotion of conservation technologies; monitoring and evaluation; research; and creation of public awareness.</td>
<td>Wide coverage of district and illaka based offices; adoption of participatory approach involving local community in resource management</td>
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<td>MoAC</td>
<td>MoLRM</td>
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<td>4</td>
<td>It has 5 divisions – administration; planning; agri-business promotion and services; gender equity and environment; monitoring and evaluation with 132 staffs. It also has 4 departments - agriculture, livestock services, cooperatives and food technology and quality control with 5 regional directorates; 5 regional training centres; 5 regional seed laboratories; 5 regional soil testing laboratories; 5 regional crop protection laboratories; 12 horticultural centres; 9 vegetable development farms/centres; 11 fishery development and training centres; 75 district agricultural development offices; 378 agricultural service centre; 3 central level institutions – agriculture information and communication centre with 35 staffs, national agriculture research fund with 15 staffs, and seed quality control centre with 32 staffs. Other bodies are National Agriculture Research Council; Nepal Veterinary Development Council; National Cooperative Development Board; National Dairy Development Board; National Tea and Coffee Development Board; Kalimati Fruit and Vegetable Market Development Committee; Cotton Development Committee; Livestock Feed Development Committee; Chandra Dangi and Milk Production Committee; Agri-lime industry; Agri-implement Company and National Seed Company.</td>
<td>Formulation and implementation of agricultural and cooperative development policies and plans; its activities include crop development; livestock development; dairy development; research, training and promotion of modern agricultural technology.</td>
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<td>Wide coverage with extension services.</td>
<td>Weak coordination with other sectors such as irrigation, forest at central level; inadequate attention to prevent land degradation and restoration of degraded land; inadequate monitoring and evaluation, inadequate attention to food security system.</td>
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<td>5</td>
<td>It has two divisions – administration and land management; and planning monitoring and coordination with 6 sections – administration; land management; planning and monitoring; land information and training coordination; and level and financial administration with 48 staffs. It has three departments – survey, land reform and management, and land information and archive; one land management training centre with 52 staffs and two development programme- the national land use project, and the ex-Kamaiya rehabilitation and career development.</td>
<td>Formulation and implementation of policies and plans for the management of land. Its activities include land reform; land registration; revenue collection; fixation of ownership right of land; tenancy right; fixation of land ceilings; land survey and mapping; aerial photo surveying.</td>
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<td></td>
<td>Wide coverage</td>
<td>Inadequate coordination with other sectoral agencies; less attention to land management more on land survey and fixation of ownership right; inadequate human resource for integrated land use/management activities.</td>
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<td>6</td>
<td>MoWR</td>
<td>It has three divisions – administration (administration, law and account); policy and planning (irrigation and electricity policy, foreign aid and environment); and program and evaluation (program, public relation, monitoring and evaluation) with 73 staffs. It also has three departments – irrigation, electricity development and water induced disaster prevention. Other bodies are Water and Energy Commission and Nepal Electricity Board</td>
<td>Formulation and implementation of policies and programmes for the conservation, control and development of water resources, conduct bilateral/ regional talks and implement agreement and treaties on water resource development, fix charges for the use of water resources, coordinate with other agencies involved in water resources and develop human resources.</td>
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<td>7</td>
<td>WEC</td>
<td>Chaired by the Minister for water resources has four divisions – energy planning (traditional, renewable, commercial), water resources (hydropower, irrigation, basin), legal and institutional development, and environment (social, environment and economic) with 47 staffs. Other sections are administration, account, and information and documentation.</td>
<td>Assist government of Nepal, the ministry of water resources other related agencies in the formulation of policies and planning of projects related to water resources and energy sector.</td>
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</tr>
<tr>
<td>8</td>
<td>MoES</td>
<td>It has 4 divisions – administration and sports; higher education and educational management; planning and monitoring evaluation and inspection. Department of Education, Curriculum Development Centre, National Centre for Educational Development, Non-formul Education Centre, Higher Secondary Education Board, Council for Technical Education and Vocational Training, Janak Education Materials Central are central level offices under the ministry.</td>
<td>Policy analysis, integrated basin management approach</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>MoHA</td>
<td>It has 4 divisions – management, personal administration, law and order, and planning and special services; 5 regional administration offices and 75 district administration offices. Disaster management section is under the planning and special service division. A Central Disaster Relief Committee is under this ministry.</td>
<td>Formulation and implementation of policies and plans for disaster management is one of the responsibilities of this ministry</td>
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</tr>
</tbody>
</table>

Wide coverage

Formulation and implementation of policies and planning for education sector including management and provision of service delivery systems

Inadequate monitoring, evaluation and assessment of policies and plans (institutional network at watershed level, early warning system, Himalayan climate change study and research centre envisaged not yet established); inadequate coordination among other sectors

Focuses only on relief and rescue operation; inadequate coordination with other relevant line agencies such as DWIDP, DSCWM, DHM
<table>
<thead>
<tr>
<th>No.</th>
<th>Ministry</th>
<th>Description</th>
<th>Functions</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>MLD</td>
<td>It has 4 divisions – general administration; self governance; coordination; municipality management; and planning and foreign aid coordination with one department – local infrastructure and agricultural road. Other bodies are Local Bodies Financial and Administration Commission; Solid Waste Management and Resource Mobilization Centre; Remote Area Development Committee; Gumba (stupa) Management and Development Committee; Aborigine and Ethnic Promotion National Academy; Deprived/Disadvantaged/Dalit Groups Promotion Committee; Academy for Local Development Training; National Dalit Comission. There are 75 DDCs; 58 municipalities; and 3914 VDCs under this ministry.</td>
<td>Formulation and implementation of policies and programmes related to remote area development, integrated rural development and decentralization; coordination among local bodies and local programmes and mobilization of local resources.</td>
<td>Wide coverage.</td>
</tr>
<tr>
<td>11</td>
<td>MoICS</td>
<td>It has 6 divisions- supplies and government industries; foreign investment and industrial promotion; world trade organization; export promotion, trade and transit; planning and information management; and technology and environment with 6 departments – industry, commerce, mines and geology; Nepal standards and metrology; office of the company registration, and cottage and small industries. The Nepal Food Corporation is under this ministry.</td>
<td>Formulation and implementation of policies and programmes related to mines and mineral exploration, industrial development, internal and international trade promotion, regular supply of commodities including food to the common people.</td>
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<tr>
<td>12</td>
<td>MoIC</td>
<td>It has 3 divisions – administration, communication, and frequency management and technology analysis and 3 departments – postal service, information and printing. Other bodies are Press Council, Nepal Telecommunication Authority, Radio Broadcasting Development Committee, Rastriya Samachar Samiti (national news committee), Nepal Television Corporation, Gorkha Patra Corporation, Film Development Board.</td>
<td>Formulate and implement policies on information and communication and create public awareness.</td>
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<tr>
<td>13</td>
<td>MoPPW</td>
<td>It has 6 divisions – administration; foreign aid and quality standards; planning, monitoring and evaluation; physical planning; water and sanitation; and works and 3 departments – roads, water supply and sewerage, urban development and building</td>
<td>Formulation and implementation of policies and plans for infrastructure development.</td>
<td>Wide coverage.</td>
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<td></td>
<td>Implementing GoN Departments/Agencies</td>
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<tr>
<td><strong>1</strong> Department of Forest</td>
<td>It has 3 divisions – national forest (forest management, forest product utilization and conservation), community forest (community forest, private forest/agarforestry, tree improvement); and planning and monitoring (planning, monitoring and evaluation; communication and extension; and statistics); Offices in 74 districts with 2112 technical staffs and 5415 non-technical staffs</td>
<td>Management of forest resources for the conservation of the natural environment and supply forest products to the people</td>
<td>Wide coverage with communication and extension services and participatory approach in conservation</td>
<td>Appropriate management model specific to different geocological zones with different socio-economic conditions yet to be developed; inadequate communication and extension services; inadequate training to technical staffs on social mobilization, networking and capacity building</td>
</tr>
<tr>
<td><strong>2</strong> Department of Soil Conservation and Watershed Management</td>
<td>It has 8 sections – planning; monitoring and evaluation; soil conservation; watershed information system; communication, extension and training; technology development; administration; and account. Offices in 55 districts with programmes in 60 districts. 329 technical and 327 non-technical staffs</td>
<td>Planning, implementation, and monitoring soil conservation and watershed management programs/activities focusing on land productivity conservation; protection of infrastructure; prevention of natural hazards through community mobilization, extension services, development and transfer of conservation technologies</td>
<td>Wide coverage with programmes on conservation technology development, communication and extension; participatory community development approach in conservation</td>
<td>Inadequate monitoring and evaluation of the programmes, research and training on transfer of conservation technology focusing on traditional knowledge and skills, community mobilization and networking and their capacity building. Watershed information system; watershed level demonstration program; farmer-field school yet to be developed. Inadequate capacity to utilize allocated financial resources</td>
</tr>
<tr>
<td><strong>3</strong> Department of Plant Resources</td>
<td>It has two divisions – research and planning (research, planning, monitoring, evaluation and training) and management and development (utilization, management and development); 3 central level offices and 7 district offices</td>
<td>Scientific study of wild flora, preservation of the specimens, and development of agro-technology on plants</td>
<td>Research, training and extension services</td>
<td>Coverage not adequate</td>
</tr>
<tr>
<td><strong>4</strong> Department of National Park and Wildlife Conservation</td>
<td>It has 7 sections – management, monitoring, and evaluation; planning; ecology; conservation education; administration; account; and computer with 9 national parks, 3 wildlife reserves, 1 hunting reserve, and 3 conservation areas covering about 19.7% of the total area of the country. 1443 staffs working in different offices</td>
<td>Conserve and manage the rich biological diversity of Nepal with much emphasis on wildlife and protected areas</td>
<td>Conservation of wildlife habitat with creating public awareness and improvement in socio-economic condition of local communities through education, ecotourism development and buffer zone management involving local community</td>
<td>Wide coverage</td>
</tr>
<tr>
<td><strong>5</strong> Department of Agriculture</td>
<td>It has 4 sections – planning and human resource; monitoring and evaluation; technology transfer and coordination; and account and administration with a total of 4974 staffs. It has agriculture development offices in 75 districts and agriculture service centres in 378 localities</td>
<td>Increase production and productivity of agricultural crops by promoting crop diversification, agricultural entrepreneurship and agribusiness, technologies, specific pocket for specific crop, extension program mobilizing farmer’s groups</td>
<td>Wide coverage</td>
<td>Inadequate attention to prevent land degradation and restoration of degraded land; inadequate monitoring and evaluation</td>
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<td>No.</td>
<td>Department</td>
<td>Activities and Services</td>
<td>Challenges</td>
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<td>6</td>
<td>Department of Livestock Services</td>
<td>It has livestock production and marketing section</td>
<td>Pasture management indirectly by making community and leasehold forest available to the users group and directly by managing community pasture land through users groups with provision of technical and infrastructural support</td>
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<td>Overlapping management responsibility with forest and ownership conflict; inadequate attention to pasture management</td>
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<tr>
<td>7</td>
<td>Department of Irrigation</td>
<td>It has 4 divisions – planning, design, monitoring and evaluation; surface irrigation, environment and mechanical management; ground water irrigation; and irrigation management. Irrigation management division has water user development and training section. It has 5 regional directorates, 26 irrigation development division, 30 irrigation development sub-divisions, 8 irrigation management divisions and 8 field offices of ground water development program located in different parts with 1888 staffs</td>
<td>Development, extension and management of irrigation schemes; development of technical manpower and technology and promotion of institutional capacity of NGOs and users group</td>
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<td>Wide coverage with network of users groups</td>
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<td>8</td>
<td>Department of Water Induced Disaster Prevention</td>
<td>It has two divisions – research, training and monitoring; and study and implementation and 6 sections – technology development; training and information; river training implementation; river training study; mechanical management; and administration, account and legal with 7 field based division offices and 5 sub-division offices and a total of 151 technical and 80 non-technical staffs</td>
<td>Assists the ministry in formulating river management policy, carryout emergency disaster prevention and rehabilitation works, conduct research and training, create public awareness, develop and transfer conservation technology, develop disaster information including risk mapping</td>
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<td></td>
<td>Focus on protection and rehabilitation of degraded land through river training</td>
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<td>9</td>
<td>Department of Land Reform and Management</td>
<td>There are 83 land revenue offices and 21 land reform offices located in different parts of the country with 2862 staffs</td>
<td>Assist the ministry in formulating policies and legal provisions for the land administration and adjudication, decide/direct on cases forwarded by the district offices, keep land record up to date and safe</td>
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<td>Wide coverage</td>
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<td>10</td>
<td>Department of Land Information and Achieves</td>
<td>The department has 38 staffs</td>
<td>Introduce modern land information/geo-information (LIS/GIS) technology; provide comprehensive land information and improve the quality and reliability of land information; assist for the development of national spatial data infrastructure (NSD) and develop central archive of land records and cadastral maps</td>
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<td>Inadequate coverage</td>
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<tr>
<td>Department of Survey</td>
<td>It has three branches – geodetic survey; cadastral survey; and topographical survey with 9 survey parties (Goswara) and 83 survey offices covering all the districts in the country and 2701 staffs. Establish a national network of control points, study crustal movement, update land data base, cadastral survey maps, land resource maps, topographical maps; keep records of land transaction, aerial photo survey, coordinate surveying, mapping, remote sensing and GIS activities.</td>
<td>Wide coverage</td>
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<tr>
<td>Department of Local Infrastructure Development and Agricultural Roads</td>
<td>It has three divisions – rural agricultural roads; planning, monitoring and foreign aid; and other infrastructure development (rural water supply, sanitation, building, irrigation, river training). Assist the ministry as well as the local bodies in formulation and implementation of policies and programmes for infrastructure development and disaster mitigation measures.</td>
<td>Overlapping responsibility with other line agencies such as DoR, DWIDP, DSCWM, DUDB</td>
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<tr>
<td>Department of Hydrology and Meteorology</td>
<td>Focuses on 5 program areas - hydrology, climatology, weather and forecasting, flood forecasting, glacier and snow hydrology with 57 experts, 132 technicians and 49 administrative staffs. Collection, compilation, analysis and dissemination of hydrometeorological data including snow and ice. Adequate expertise for forecasting. Inadequate hydro-meteorological stations, forecasting is confined to daily weather condition; flood forecasting is limited only in few basins, drought forecasting not yet initiated; mechanism for information dissemination to stockholders not well developed; inadequate financial resources and advanced technologies- hardware and analytical software, Himalayan Climate Change and Research Centre as envisaged by Water Plan not yet established (change in line Ministry).</td>
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<tr>
<td>Alternative Energy Promotion Centre</td>
<td>Four divisions – policy planning and resource mobilization; energy promotion; monitoring, evaluation and quality assurance; and support service with a total of 48 staffs. Development and transfer of alternative energy technologies - biogas, micro-hydro power, improved cooking stoves, solar energy and wind energy; support local organization making them financially and technically capable for the promotion of alternative energy. Focused on rural areas with adequate expertise. Inadequate staffs, networking, financial resource mobilization, training and research activities; Capacity of Energy and Environment Unit in DDC yet to be built (needs to be extended at community level).</td>
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<td>Central Natural Disaster Relief Committee</td>
<td>Chaired by the Minister for Home Affairs with Central Natural Disaster Aid Fund. District Natural Disaster Committee under it. Assist in formulation and implementation of policies and programmes for disaster management including rescue, relief, rehabilitation and resettlement.</td>
<td>Wider coverage Focus only on rescue and relief works</td>
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<tr>
<td>Central Bureau of Statistics</td>
<td>It has 3 divisions – social statistics, economic statistics, planning and human resource management. Collection, consolidation, processing, analysis, publication and dissemination of statistics.</td>
<td>Focus on decennial population census, agricultural sample census and quinquennial manufacturing establishment census inadequate attention to land degradation and environment</td>
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</tbody>
</table>
### 17 Department of Mines and Geology

- It has 3 divisions – geosciences, mineral resources, and technical and administrative services with 286 technical and 78 non-technical staffs.
- Assist the ministry to formulate and implement policies related to mining activities, coordinate and monitor mining activities and issues directives for the improvement of environment in and around mining sites.
- Only at centre

### 18 Tea and Coffee Board

- Chaired by the Minister for Agriculture and Cooperative has two regional offices, 7 tea cultivation extension programs in 6 districts.
- Formulation and implementation of policies and programmes with technical support and training for the development of tea and coffee cultivation.
- Large area of rain fed sloping agricultural field are suitable for perennial crops like tea and coffee in the country.
- Currently confined in limited area, under staffing (out of 76 approved post, 25 is vacant)

### C Local Bodies

#### 1 District Development Committees

- District Council represented by all the chairman and vice chairman of the village development committee, members of parliament as the apex and district development committee as executive with district coordination committee to coordinate all the development activities in the district; 75 districts.
- Formulate, implement, coordinate and evaluate all the development activities in the district including agriculture, land reform and management, forest and environment, irrigation, soil erosion control, river training, disaster prevention.
- Wide coverage
- Inadequate capacity specially in planning, implementing, monitoring, evaluation

#### 2 Municipalities

- Municipal Council represented by the Mayor and the vice Mayor, the chairman and members of all the ward committee as apex and municipality as executive committee; 58 municipalities.
- Develop, implement, coordinate and evaluate all the development activities including land use zonation, conservation of water, forest, plant resources, environment, river training, soil erosion control and disaster prevention and mitigation.
- Inadequate capacity specially in planning, implementing, monitoring, evaluation

#### 3 Village Development Committees

- Village Council represented by the chairman and vice chairman of VDC, the chairman and members of all the ward committees as apex and village development committee as executive committee; 3914 VDCs.
- Develop, implement, coordinate and evaluate all the development activities including agriculture, pasture management, irrigation, soil erosion control, river training, land use, afforestation in degraded areas, conservation of forest, soil, plant resources, biodiversity, disaster prevention and mitigation.
- Wider coverage
- Inadequate capacity specially in planning, implementing, monitoring, evaluation

### D Training Institutions
<table>
<thead>
<tr>
<th></th>
<th>Training Provider</th>
<th>Number of Staff/Divisions/Training Centres</th>
<th>Training Focus/Role</th>
<th>Coverage/Wide Coverage</th>
<th>Challenges/Notable Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regional Training Centres of MFSC (Biratnagar, Godavari, Pokhara, Surkhet, Dhangadhi)</td>
<td>5 Regional Training Centres</td>
<td>Conduct training for staffs as well as users</td>
<td>Wide coverage</td>
<td>Not capable in spending allocated budget (62%); inadequate coordination with donor supported training program</td>
</tr>
<tr>
<td>2</td>
<td>Training Section of MFSC</td>
<td>It has 5 technical and 2 administrative staffs</td>
<td>Conduct training for government employees under the ministry</td>
<td>Wide coverage</td>
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<td>3</td>
<td>Regional Training Centres of MoAC (Haritarbhawan)</td>
<td>Training Directorate; 5 Regional Training Centres (Sunsari, Janakpur, Khairinatar, Nepalgunj, Sundarpur)</td>
<td>Conduct training for staffs as well as farmer groups</td>
<td>Wide coverage up to service centre level</td>
<td>Inadequate coordination among training activities of different level of institutions – central, regional, district and service centre</td>
</tr>
<tr>
<td>4</td>
<td>Land Management Training Centre, MoLRM</td>
<td>It has 52 staffs</td>
<td>Produce skillful surveying and mapping professional by conducting application based short term training and offering survey courses</td>
<td>Orientation programme to government employees</td>
<td>Inadequate attention to land management</td>
</tr>
<tr>
<td>5</td>
<td>Nepal Administrative Training Staff Collage</td>
<td>It has 8 members Governing Council chaired by the Minister for General Administration and 8 members of Executive Committee with 3 departments – general training, consultancy services, and management services and 5 centres – organization and development, human resource management, development policy and planning, local government, secretarial skill training</td>
<td>Provide necessary training for the government employees, identify measures for enhancing the capability of government administration and under take problem oriented research consultancy and information service programmes for preparing training materials and making training more useful</td>
<td>Orientation programme to government employees</td>
<td>Inadequate attention to environmental management in training</td>
</tr>
<tr>
<td>6</td>
<td>Local Development Training Academy</td>
<td>8 members Council headed by the Minister for Local Development; 4 divisions – training and consultancy service, research and documentation, planning and monitoring, and general administration. There are 8 training centres, 5 rural development training centres, 2 women development training centres and 1 urban development training centre located in different parts of the country</td>
<td>Aiming at promoting local development by enhancing capability of local bodies and institutions – DDCs, Municipalities, VDCs, User's Group, NGOs through training and advocacy. The training covers area planning, resource mobilization, organization development, decentralization, institution building, women development, environmental planning and management etc</td>
<td>Wide coverage</td>
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<td>E</td>
<td>Research Institutions</td>
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<tr>
<td>1</td>
<td>National Agricultural Research Council (NARC)</td>
<td>Chaired by the Minister for MoAC with Executive Committee; 15 different subject divisions at the centre; 4 regional centres and 18 centres with 2018 approved positions- 406 scientists (200 posts are vacant), 1131 technicians and 481 other staffs</td>
<td>Assist government in formulating policies and plans; research including development of demand driven technologies; coordination of research activities</td>
<td>Wider coverage</td>
<td>Vacancy of many professional posts</td>
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<td></td>
<td>Department of Forest Research and Survey</td>
<td>It has two divisions - forest research and forest survey. It has also central support units such as soil and seed laboratory; planning, monitoring and evaluation; information and extension; library; finance and administration with 26 technical officers and 23 technicians</td>
<td>Responsible for forest research and survey focusing on appropriate technology for forest management, productivity enhancement, agroforestry and fodder tree improvement, silviculture and forestry data base generation and mapping</td>
<td>Adequate expertise with extension activities</td>
<td>Remote sensing and photogrammetry infrastructure is not properly utilized at present; inadequate attention to data generation and standardization, inadequate communication/coordination with other institutions regarding data quality control</td>
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<td>3</td>
<td>Geodetic Survey Branch</td>
<td>It has 11 absolute gravity stations</td>
<td>Establish trigonometrical points and study crustal movement</td>
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<td>4</td>
<td>National Trust for Nature Conservation</td>
<td>It has Governing Board of Trustees with 360 staffs</td>
<td>Research on wildlife and other natural resources, advocacy, consultancy and information services</td>
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<tr>
<td>5</td>
<td>Nepal Academy of Science and Technology</td>
<td>Academic Assembly is chaired by the prime minister and management council headed by the chief executive. It has 2 faculties – science and technology and 6 divisions – S&amp;T promotion and publicity, planning and evaluation, management and infrastructure development, personnel, administration, and account</td>
<td>Promote research in science and technology; preserve and improve indigenous technology; and transfer of appropriate technology</td>
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<tr>
<td>6</td>
<td>Research Centre Applied Science and Technology, TU</td>
<td>Headed by executive director nominated by executive committee of TU</td>
<td>Carryout research on applied science and technology</td>
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<tr>
<td>F</td>
<td>Education</td>
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<tr>
<td>1</td>
<td>Tribhuvan University</td>
<td>5 institutes - engineering, medicine, forest (373 student), agriculture and animal science (677 student); and science and technology; 4 faculties; 4 research centres including applied science and technology; 26 central departments including environmental science, hydrology and meteorology, botany, geology, geography with more than 200 students; 60 campuses with more than 153000 students and 5970 teachers; 349 affiliated campuses with more than 77491 students; under graduate, graduate, post graduate and Ph.D programs in some subjects;</td>
<td>Education and research</td>
<td>Wider coverage</td>
<td>Introductory courses on land degradation except in forestry; agriculture and animal science programmes; inadequate research activities</td>
</tr>
<tr>
<td>2</td>
<td>Kathmandu University</td>
<td>6 schools (science, management, engineering, medical sciences, arts and education with 138 teachers and more than 2400 students; 11 affiliated campuses with more than 2600 students; intermediate, graduate, post graduate and Ph.D program. Programmes on environmental science and human and natural resources; more than 100 student in environmental science</td>
<td>Education and research</td>
<td>Introductory courses on land degradation except in forestry; agriculture and animal science programmes; inadequate research activities</td>
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<tr>
<td>No.</td>
<td>Organization</td>
<td>Functions and Programs</td>
<td>Inadequate in Land Degradation</td>
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<td>3</td>
<td>Purbanchal University</td>
<td>6 faculties (science and technology, management, education, arts, law, and medical and allied sciences with 3 campuses, 43 teachers and 272 students; 73 affiliated campuses with more than 8500 students; affiliated campuses offers bachelors/master programmes in agriculture; more than 60 students in agriculture</td>
<td>Introductory courses on land degradation; inadequate research activities</td>
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<tr>
<td>4</td>
<td>Pokhara University</td>
<td>3 faculties (humanities, management, science and technology), 2 campuses with 44 teachers and more than 400 students; 23 affiliated campuses with more than 5200 students; master of science in environment management, natural resource management, and disaster risk management in affiliated campuses; more than 80 student on environmental science and 14 student on natural resource managements</td>
<td>Introductory courses on land degradation; inadequate research activities</td>
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<td>5</td>
<td>Curriculum Development Centre, MoES</td>
<td>Two divisions – primary and secondary school curriculum, and non-formal education; seven different subject units – language, science and math, social studies, health physiology, and others; primary curriculum, vocational education and preprimary curriculum, teaching materials, training and supervision, and education and distribution</td>
<td>Develop, implement, supervise and monitor the school curricula, text books and education materials and conduct orientation and training programmes</td>
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<td></td>
<td>Higher Secondary Education Board</td>
<td>Develop and implement policies and plans for higher secondary education including curriculum development, examination, monitoring, supervision</td>
<td>Inadequate attention to land degradation in school curriculum</td>
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<tr>
<td>6</td>
<td>Council for Technical Educations and Vocational Training</td>
<td>24 member assembly chaired by the minister for education and sports; 17 training institutions in which 6 provide training on agriculture; granted provisional affiliation to over 160 private institutions with about 12000 enrollment capacity; 8 functional divisions – polytechnic, planning and policy formulation, curriculum development, research and information; technical, examination, administration, accreditation, vocational and community development; three levels of education – short term, technical school leaving certificate and diploma</td>
<td>Develop basic and middle level human resource through technical education and vocational training; facilitate the private technical schools</td>
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<td>7</td>
<td>Communication</td>
<td>Radio Nepal/FM and many private FM channels</td>
<td>Raise public awareness</td>
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<tr>
<td>8</td>
<td>TVS</td>
<td>Nepal Television and many private TV channels</td>
<td>Raise public awareness</td>
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<td>H</td>
<td>NOG Federation</td>
<td>Representatives of 75 districts with executive committee</td>
<td>Advocacy, networking, capacity building through training</td>
<td>Inadequate resources – human, financial and equipment</td>
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<tr>
<td>1</td>
<td>Association of DDCs</td>
<td>Representatives of 75 districts with executive committee</td>
<td>Advocacy, networking, capacity building through training</td>
<td>Inadequate resources – human, financial and equipment</td>
<td></td>
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<tr>
<td>2</td>
<td>Association of Municipalities</td>
<td>Representatives of 3914 village development committee with executive committee</td>
<td>Advocacy, networking, capacity building through training</td>
<td>Inadequate resources – human, financial and equipment</td>
<td></td>
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<tr>
<td>3</td>
<td>Association of VDCs</td>
<td>Representatives of 58 municipalities with executive committee</td>
<td>Advocacy, networking, capacity building through training</td>
<td>Inadequate resources – human, financial and equipment</td>
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<tr>
<td>4</td>
<td>FECOFUN</td>
<td>Representatives of more than 11200 Forest Users Groups with steering committee, justice committee and programme development</td>
<td>Policy advocacy, lobbying, capacity building through technical support and networking</td>
<td>Inadequate resources – human, financial and equipment</td>
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<td>5</td>
<td>NFIWUAN, NEFUG, ACOFUGN</td>
<td>Representatives of 63 district chapters and 2200 user groups with three wings – technical, administration and consultancy</td>
<td>Community development, poverty reduction, capacity building, awareness raising, skill development and research</td>
<td>Wide coverage</td>
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<tr>
<td>6</td>
<td>Nepal Federation of Environmental Journalists (NEFEJ)</td>
<td>13 member executive committee with 19 staff</td>
<td>Promote participation of mass media both print and electronic in raising awareness, advocacy and lobbying</td>
<td>Wide coverage</td>
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</tr>
</tbody>
</table>

| I | Professional Societies | Many professional societies – Nepal Forester’s Association, Nepal Ranger’s Association, Nepal Society of Agricultural Engineers, Nepal Agriculture Association, Nepal Geographical Society, Nepal Geological Society, Nepal Landslide Society, Society of Hydrologists and Meteorologists | Research and dissemination of research results in the country through publication of journals and bulletins | Inadequate resources – financial for organizing meetings, workshops, and publication of journals and bulletins |

| J | | | | |

June 2008