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COUNTRY PROFILE



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INTRODUCTION - 2002 COUNTRY PROFILES SERIES

Agenda 21, adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, underscored the important role that States play in the implementation of the Agenda at the national level. It recommended that States consider preparing national reports and communicating the information therein to the Commission on Sustainable Development (CSD) including, activities they undertake to implement Agenda 21, the obstacles and challenges they confront, and other environment and development issues they find relevant.

As a result, in 1993 governments began preparing national reports for submission to the CSD. After two years of following this practice, the CSD decided that a summarized version of national reports submitted thus far would be useful. Subsequently, the CSD Secretariat published the first Country Profiles series in 1997 on the occasion of the five-year review of the Earth Summit (Rio + 5). The series summarized, on a country-by-country basis, all the national reports submitted between 1994 and 1996. Each Profile covered the status of all Agenda 21 chapters.

The purpose of Country Profiles is to:

- Help countries monitor their own progress;
- Share experiences and information with others; and,
- Serve as institutional memory to track and record national actions undertaken to implement Agenda 21.

A second series of Country Profiles is being published on the occasion of the World Summit on Sustainable Development being held in Johannesburg from August 26 to September 4, 2002. Each profile covers all 40 chapters of Agenda 21, as well as those issues that have been separately addressed by the CSD since 1997, including trade, energy, transport, sustainable tourism and industry.

The 2002 Country Profiles series provides the most comprehensive overview to date of the status of implementation of Agenda 21 at the national level. Each Country Profile is based on information updated from that contained in the national reports submitted annually by governments.

Preparing national reports is often a challenging exercise. It can also be a productive and rewarding one in terms of taking stock of what has been achieved and by increasing communication, coordination and cooperation among a range of national agencies, institutions and groups. Hopefully, the information contained in this series of Country Profiles will serve as a useful tool for learning from the experience and knowledge gained by each country in its pursuit of sustainable development.

NOTE TO READERS

The 2002 Country Profiles Series provides information on the implementation of Agenda 21 on a country-by-country and chapter-by-chapter basis (with the exception of chapters 1 and 23, which are preambles). Since Rio 1992, the Commission on Sustainable Development has specifically addressed other topics not included as separate chapters in Agenda 21. These issues of trade, industry, energy, transport and sustainable tourism are, therefore, treated as distinct sections in the Country Profiles. In instances where several Agenda 21 chapters are closely related, for example, chapters 20 to 22 which cover environmentally sound management of hazardous, solid and radioactive wastes, and chapters 24 to 32 which refer to strengthening of major groups, the information appears under a single heading in the Country Profile Series. Lastly, chapters 16 and 34, which deal with environmentally sound management of biotechnology, and transfer of environmentally sound technology, cooperation, capacity-building respectively, are presented together under one heading in those Country Profiles where information is relatively scarce.

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LIST OF COMMONLY USED ACRONYMS

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|----------|-------------------------------------------------------------------------------------|
| ACS | Association of Caribbean States |
| AMCEN | Africa Ministerial Conference on the Environment |
| AMU | Arab Maghreb Union |
| APEC | Asia-Pacific Economic Cooperation |
| ASEAN | Association of Southeast Asian Nations |
| CARICOM | The Caribbean Community and Common Market |
| CBD | Convention on Biological Diversity |
| CIS | Commonwealth of Independent States |
| CGIAR | Consultative Group on International Agricultural Research |
| CILSS | Permanent Inter-State Committee for Drought Control in the Sahel |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| COMESA | Common Market for Eastern and Southern Africa |
| CSD | Commission on Sustainable Development of the United Nations |
| DESA | Department for Economic and Social Affairs |
| ECA | Economic Commission for Africa |
| ECCAS | Economic Community for Central African States |
| ECE | Economic Commission for Europe |
| ECLAC | Economic Commission for Latin America and the Caribbean |
| ECOWAS | Economic Community of West African States |
| EEZ | Exclusive Economic Zone |
| EIA | Environmental Impact Assessment |
| ESCAP | Economic and Social Commission for Asia and the Pacific |
| ESCWA | Economic and Social Commission for Western Asia |
| EU | European Union |
| FAO | Food and Agriculture Organization of the United Nations |
| FIDA | Foundation for International Development Assistance |
| GATT | General Agreement on Tariffs and Trade |
| GAW | Global Atmosphere Watch (WMO) |
| GEF | Global Environment Facility |
| GEMS | Global Environmental Monitoring System (UNEP) |
| GESAMP | Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection |
| GHG | Greenhouse Gas |
| GIS | Geographical Information Systems |
| GLOBE | Global Legislators Organisation for a Balanced Environment |
| GOS | Global Observing System (WMO/WWW) |
| GRID | Global Resource Information Database |
| HIV/AIDS | Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome |
| IAEA | International Atomic Energy Agency |
| ICSC | International Civil Service Commission |
| ICSU | International Council of Scientific Unions |
| ICT | Information and Communication Technology |
| ICTSD | International Centre for Trade and Sustainable Development |

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| IEEA | Integrated Environmental and Economic Accounting |
| IFAD | International Fund for Agricultural Development |
| IFCS | Intergovernmental Forum on Chemical Safety |
| IGADD | Intergovernmental Authority on Drought and Development |
| ILO | International Labour Organisation |
| IMF | International Monetary Fund |
| IMO | International Maritime Organization |
| IOC | Intergovernmental Oceanographic Commission |
| IPCC | Intergovernmental Panel on Climate Change |
| IPCS | International Programme on Chemical Safety |
| IPM | Integrated Pest Management |
| IRPTC | International Register of Potentially Toxic Chemicals |
| ISDR | International Strategy for Disaster Reduction |
| ISO | International Organization for Standardization |
| ITTO | International Tropical Timber Organization |
| IUCN | International Union for Conservation of Nature and Natural Resources |
| LA21 | Local Agenda 21 |
| LDCs | Least Developed Countries |
| MARPOL | International Convention for the Prevention of Pollution from Ships |
| MEAs | Multilateral Environmental Agreements |
| NEAP | National Environmental Action Plan |
| NEPAD | New Partnership for Africa's Development |
| NGOs | Non-Governmental Organizations |
| NSDS | National Sustainable Development Strategies |
| OAS | Organization of American States |
| OAU | Organization for African Unity |
| ODA | Official Development Assistance/Overseas Development Assistance |
| OECD | Organisation for Economic Co-operation and Development |
| PPP | Public-Private Partnership |
| PRSP | Poverty Reduction Strategy Papers |
| SACEP | South Asian Cooperative Environment Programme |
| SADC | Southern African Development Community |
| SARD | Sustainable Agriculture and Rural Development |
| SIDS | Small Island Developing States |
| SPREP | South Pacific Regional Environment Programme |
| UN | United Nations |
| UNAIDS | United Nations Programme on HIV/AIDS |
| UNCED | United Nations Conference on Environment and Development |
| UNCCD | United Nations Convention to Combat Desertification |
| UNCHS | United Nations Centre for Human Settlements (Habitat) |
| UNCLOS | United Nations Convention on the Law of the Sea |
| UNCTAD | United Nations Conference on Trade and Development |
| UNDP | United Nations Development Programme |
| UNDRO | Office of the United Nations Disaster Relief Coordinator |
| UNEP | United Nations Environment Programme |

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| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNFF | United Nations Forum on Forests |
| UNFPA | United Nations Population Fund |
| UNHCR | United Nations High Commissioner for Refugees |
| UNICEF | United Nations Children's Fund |
| UNIDO | United Nations Industrial Development Organization |
| UNIFEM | United Nations Development Fund for Women |
| UNU | United Nations University |
| WFC | World Food Council |
| WHO | World Health Organization |
| WMO | World Meteorological Organization |
| WSSD | World Summit on Sustainable Development |
| WTO | World Trade Organization |
| WWF | World Wildlife Fund |
| WWW | World Weather Watch (WMO) |

CHAPTER 2: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES

Decision-Making: National Planning Commission (NPC) is the central body in coordination with various ministries involved in the decision-making process for sustainable development in Nepal. The NPC has been implementing Sustainable Community Development Programme (SCDP) in partnership with UNDP/Capacity 21 since 1996. The NPC is also formulating Sustainable Development Agenda for Nepal (SDAN) in coordination with key ministries and stakeholders. The government has been incorporating the sustainable development concepts since 8th five-year plan.

Programmes and Projects: As a continuous of development and implementation of sustainable development (SD) strategies for Nepal begun in the early 1980s, the NPC launched SCDP in 1996 to support the efforts of His Majesty's Government of Nepal to promote sustainable development in the country integrating the principles of Agenda 21 into national development. The development objective of SCDP is to assist the government in building the capacities of local communities and governments, and in adopting the local and national policies necessary to ensure sustainable community development which integrates effective and gender sensitive poverty alleviation strategies with sound watershed management.

Global Environment Facility- has been supporting the government and non- governmental organization (NGO) for community demonstration projects in the GEF focal areas. The GEF including Small Grant Programme aim to achieve global level environmental benefits through local level action conserving biodiversity, reducing adverse climate change and forest ecosystem. Department for International Development (DFID) of UK government has focussed its programme on sustainable livelihood with overall objective of poverty alleviation. In addition multilateral and bilateral donors agencies have supporting the government's initiatives at various areas of sustainable development. Environment Support Fund (ESF) to support the local NGOs with coordination of Finnish Government, HMG and Nepal Forum of Environmental Journalists (NEFEJ) is active in eastern and Far Western Nepal. This fund provides grant to the NGOs working in environment and sustainable development.

In order to make the long-term vision of sustainable development, several initiatives are taken which include preparation and adoption of Forestry Master Plan, Agricultural Perspective Plan and Nepal Environmental Policy and Action Plan. HMG initiated dialogues on national strategy for sustainable development (NSSD) is being later integrated into Sustainable Development Agenda for Nepal (SDAN). The SDAN will provide a twenty-year vision plan for sustainable development in Nepal. The CBOs have generated 2,60,23,457 Rupees as Community Fund. Several income-generating activities are launched in the programme areas in order to uplift the economy of the locals. More than 265 individuals from the programme districts are given various useful in-come generating training.

Environmental management is one of the entry points of the SCDP. The SCDP promotes sustainable use and management of natural resources. In order to decrease high dependency on natural resources for fuel wood, and smoke prone diseases the programme has installed 1953 Improved Cook Stoves, 68 Bio-gas plants, 33 solar panels and 2 micro-hydro electricity. The SCDP has also done several activities on watershed conservation and wetland management. GEF has been working in many districts with different priority programmes such as cultural and heritage conservation activities in Mustang district, Rhino and Tiger conservation in Chitwan district, Makalu Barun Conservation Area in Eastern Nepal in collaboration with UNDP and the Mountain Institute.

Small Grant Programme of GEF works in close collaboration with the SCDP adopting the sustainable development model. It has been implemented in nine environmentally susceptible, economically and infrastructurally backward districts through local NGOs. The GEF-SGP not only provides the grants but also facilitates and monitors the NGOs' activities. In order to decrease communities' dependency on natural resources the GEF-SGP has supported installing of 144 Solar Panels, 590 Improved Cook Stoves, and 49 Biogas plants. The GEF-SGP has played a significant role in the conservation of biodiversity and management of wetland and watersheds as well.

Status: The SCDP started with the major thrust of social development, economic development and environment management in building the capacity of the communities and the local stakeholders in six districts at different ecological zones. As one of the objectives of the SCDP is to organize the community and motivate them towards the sustainable social work, 1369 Community Based Organizations (CBOs) comprising 38710 members have been formed of which 449 are of male, 303 are of female and 617 are of mixed type. The SCDP pays special attention to the gender based activities such as income generating activities, non-formal education for women and alternative energy development. They are made aware and mobilized towards the natural resource conservation and management. More than 838 households are provided with clean drinking water supplies.

Capacity-Building, Education, Training and Awareness-Raising: The SCDP's one of the thrust objectives is to strengthen the local communities through capacity building, training and awareness raising programme. More than 1688 individuals from the programme districts are provided training on different areas- income generating, environment management, sustainable agriculture and renewable energy, realizing and adopting the thrust of Agenda 21 that is the role of major groups such as farmer, students, women, indigenous people for sustainable development, the SCDP has paid special attention to the capacity building of the major groups so that they could play significant role in sustainable development. Non-formal education programme for women are also addressed in cooperation of District Education Offices.

Information: Sustainable Development Network (SDN) was established in order to coordinate the local NGOs involved in sustainable development. The SCDP has adopted several means of information dissemination in order to create awareness about the sustainable development from local level to the national level such as bulletins, brochures, reports, and CD ROMs , documentaries, video films, information on web- www.scdp.org.np . GEF-SGP has the web site- www.undp.org/sgp.

Research and Technologies: The SCDP has carried out action research and organized training on biogas, solar and improved cook stoves. The GEF-SGP has carried out researches on biodiversity, management of non – timber forest products and medicinal plants.

Financing: The SCDP budget is of about US \$ 2.1 million excluding the co funding of US \$ 361,436 from Community Based Organizations (CBOs) and others. The GEF-SGP has provided the grant of US \$ 538,000 to the NGOs excluding the co-funding of US \$ 241,178 from Community Based Organizations (CBOs) and GOs.

Cooperation: The National Planning Commission coordinated UNDP/Capacity 21 for the implementation of the SCDP. For the formulation of NSSD/SDAN, OECD-DAC WWF and Earth Council and IUCN are providing the financial support. Similarly, the GEF-SGP and mid-term projects were implemented under the financial support of UNDP/GEF. Other major cooperation is also received from DFID, World Bank, Asian Development Bank, Finish Government and other bilateral and multilateral agencies.

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CHAPTER 2: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES - TRADE

Decision-Making: Nepal has bilateral trade relations with several countries, around 17 in number, based on the most favoured Nations principle. With India the relationship is based on preferential agreements. It should, however, be noted that sandwiched between two giant nations, China and India, this mountainous kingdom with rugged terrain has very high transport costs. There are no restrictions on imports except on contraband items. In addition, payments for goods and services have benefited from the convertibility of the Nepalese currency at current account. Macro-economic stabilization has been introduced in the Eighth Five-Year Plan to ensure economic growth. It aims at moving Nepal to a higher sustainable growth path by invigorating private sector participation in economic activities. To supplement this objective, Nepal has adopted a liberal trade policy in order to expand exports, to attract foreign investments, to make domestic products competitive, to diversify trade, and to generate employment. Population, forestry, education, health, fiscal policies, and construction works are all involved in the area. Environmental concerns are gradually being incorporated into the trade sector. Nepal is now in the process of becoming a member of the WTO. As mandated by the WTO sanitary and phytosanitary rules and by the International Standard Organization (ISO), Nepal has shown growing awareness towards this direction. Likewise in the case of trade-related investment measures, every attention is being paid to take into account environmental concerns.

Programmes and Projects: In order to make Nepalese products and companies competitive in the global market even from the environmental concerns, demonstration programmes are being launched to introduce Environmental Management System (ISO 14000) in the Nepalese industries. Also demonstration programmes on cleaner production, energy efficiency and environmental labelling are underway to enhance productivity and environmental credibility. Common effluent treatment facilities are being demonstrated in industrial districts and leather sector to reduce the cost of pollution control.

Status: The total volume of trade has increased from 30614 million rupees in 1990/91 to 158590 million rupees in 1999/2000. The negative trade balance was about 52 % in 1990, which has comedown to 35 %.

Capacity-Building, Education, Training and Awareness-Raising: Every attention is being paid to the development of labour intensive technology with prior environmental impact assessment. The focus is on the massive use of renewable resources. Legal measures are being taken to avoid child labour, awareness programmes are launched for occupational health and safety, various training programmes are implemented to create awareness among business communities to take into account the environmental concerns. Dry port development and ICCUDA have been underway for trade facilitation.

Information: Information Technology Policy has been announced and sharing of information and capability development is underway.

Research and Technologies: Attention is being given to the development of labour intensive technology with prior environmental impact assessment. The focus is on the massive use of renewable resources.

Financing: HMG allocates limited financial resources from budgetary process. Donor supports are also mobilized when available. In addition credit facilities are provided through banking institutions and NGOs.

Cooperation: Nepal is now in the process of becoming a member of the World Trade Organization (WTO). Nepal participates in the work of the United Nations Conference on Trade and Development (UNCTAD), United Nations Industrial Development Organisation (UNIDO), United Nations Development Programme (UNDP) Economic and Social Commission for Asia and the Pacific (ESCAP), World Bank, International Monetary Fund (IMF), and Asian Development Bank (ADB) in this field.

CHAPTER 3: COMBATING POVERTY

Decision-Making: Poverty has stood as a serious challenge to the country. The ninth plan (1997-2002) has set poverty alleviation as its main objective with a determination of bringing down the number of those below poverty line from 42 percent to 32 percent. The mid-term review of the plan revealed that the percentage of people living below poverty line has gone down from 42 to 38. The plan also aims at improving the living standard of the people below poverty line, placing special emphasis on uplifting the living standard of those lacking productive assets and incoming-generating resources and those counted as the poorest, empowering socially and economically the backward, downtrodden and weaker sections of society, and lowering the high incidence poverty by developing physical, social and economic infrastructure in the underdeveloped, remote regions of the country. The following strategies have been outlined in the Plan to the target: emphasis to achieving high economic growth rate in various sectors and also to generating extensive employment opportunities; the implementation of the Agriculture Prospective Plan (APP) to take a lead role to play in poverty alleviation; emphasis will be put upon uplifting the socio-economic status of those from backward, remote regions and the neglected and weaker section of the society by accessing to them primary health, education and drinking water; programmes such as skill development, and credit flow, social mobilization, population control, women's empowerment, rural electrification, environmental protection and legal provisions against various exploitation of weaker sections will be emphasized upon for the purpose of poverty alleviation.

Programmes and Projects: Different ministries have launched a number of projects aiming at poverty eradication. The programmes primarily focus on employment generation and manpower development. Two types of programmes have been carried out to alleviate poverty in Nepal:

- (i) Targeted programmes: These programmes focus on very backward remote areas without road access (emphasis will be laid upon constructing and expanding roads to connect district head quarters along with development of rural and agriculture roads); deprived, ethnic and down trodden group (study and research on tradition, culture, and rites of the ultra poor groups including establishment of Ethnic Academy); social and other oppressed group (special programmes for people suffering from social malpractice and other reasons to involve in production process); landless rural family (credit facilities for self employment opportunities); families with small landholdings (agri-credit programmes); urban poor and unemployed (self employment opportunities for educated and unemployed youth in the service and productive sectors); specific groups (rehabilitation programmes for bonded labourers); social mobilization programmes (group organizing, skill development, capacity building, group savings and capital formation); and
- (ii) Sectoral programmes, including Cottage and Small Industry Development, Rural Electrification, Suspension Bridge Building, Crops Development, Horticulture and Vegetable Development, Livestock Development, Fish Production, Sericulture, Agriculture Trainings, Support in Agriculture Inputs, Rural Roads and Trails, Small Business Promotion Programmes, Community Forest Development etc. The UNDP funded Sustainable Community Development Project is focusing on organizing communities in various income generating activities in remote areas.

Status: According to the Nepal Living Standard Survey 1996, 42 percent of the total populations have remained below the absolute poverty. Among them, about 17.1 percent are counted as ultra poor or the poorest. Poverty is a rural and an agrarian phenomenon in Nepal (44% rural poor and 23% urban poor). Poverty level is higher in mountain districts (56%) followed by Tarai (42%) and hills (41%). The ninth plan midterm review has mentioned the overall status of people living below poverty lines is 38 %.

Capacity-Building, Education, Training and Awareness-Raising: Formation of a Poverty Alleviation Commission, Establishment of Poverty Alleviation Fund, Poverty Monitoring System, Geographic Information System (poverty mapping) all are aimed towards national capacity building and raising awareness.

Information: On going works on Geographic Information System, including the poverty mapping. Poverty mapping of two districts has already been finished.

Research and Technologies: The government is preparing the Poverty Reduction Strategy Paper (PRSP) which also will be the HMG's tenth five-year plan (2002-2007)

Financing: HMG allocates limited financial resources from budgetary sources. Donor supports are also mobilized when available. In addition credit facilities are provided through banking institutions and NGOs. Poverty Alleviation Fund, and micro credit programme also support the poverty alleviation activities.

Cooperation: UNDP, the World Bank, Asian Development Bank, DFID, JICA, DANIDA, FINIDA, CCO, and others are providing support. Besides these, INGOs and NGOs are also getting cooperation to launch various programmes.

* * *

CHAPTER 4: CHANGING CONSUMPTION PATTERNS

Decision-Making: The concept of sustainable resource management adopts the theory of carrying capacity of the natural ecosystem. The ninth plan adopts this theory as the guiding principle for environmental and natural resource management. Recognizing the failures of the past efforts of managing common resources mainly due to lack of property rights, the concept of community forest has made consumer both the owner and manager of the forest, and so it has achieved a remarkable success. The changing consumption pattern has begun to show the adverse impact on environmental resources (urban air quality, river bodies, and soil) i.e. the very life supporting system. As a developing country aiming to get high economic growth rate, maximum efforts are given to the use of renewable resources within the regenerative capacity of eco-system. The economic and environmental policies are tuned to promote the use of renewable resources particularly the renewable energy development. Recycling industries enjoy various incentives as a nationally prioritised sector. Different government, local bodies and non-governmental institutions are launching awareness programmes in the conservation of resources and protecting environment. Productivity enhancement is emphasized in every sectoral development programmes. The implementation of APP to enhance the agricultural productivity having ecological niches and comparative advantages, cleaner production demonstration programmes in industries, the banning of inefficient vehicles and import of only environment-friendly vehicles are aimed to reduce the burden of increasing consumption trends seen in the Nepalese society. The Ministries of: Population and Environment; Agriculture; Industry, Commerce and Supplies; Forest and Soil Conservation; Water Resources; Labour and Transport Management; and Education and various departments and corporations under these ministries are involved in these endeavours.

Programmes and Projects: Cropping Intensity and Productivity Enhancement Programme; High Value Agriculture Commodities Production and Development Programmes; Livestock and Poultry Production Related Extension Service Programme; Agro-business Promotion Programme; Irrigation Facilities Expansion and Utilization; Community Forestry Development Programmes; Bio-diversity Conservation and Watershed Management Programme, Energy Sector Assistance Programme; Environment Sector Support Programme; Energy Conservation Programmes are some of the major programmes under which various projects are being implemented to enhance productivity and conserve environmental resources while fulfilling the need of changing consumption patterns.

Status: Income Consumption Survey 1976-77, Multipurpose Household Budget Survey 1984/85, and Nepal Living Standard Survey 1996 reveal that overall household expenditure in real terms is increasing but the distribution is highly skewed. Consumption has diversified in urban areas and areas closer to the roads. Electricity consumption is growing almost by 8 percent per year. Overall energy consumption trend is growing towards the use of clean energy. The use of the biogas, natural gas, and electricity is increasing rapidly at the rate of about 12 percent while the use of fuel wood (still the main source of energy) is only increasing by 2 percent. The growth rate of the use of fossil fuel is increasing rapidly. The alcohol consumption is increasing and in rural areas the conversion of grains to alcohol is continuing creating more pressure on agricultural land.

Capacity-Building, Education, Training and Awareness-Raising: Nepal has promoted education on nutrition from the primary level onwards in order to raise public awareness on the nutritive values of food, on the different types of food, on cooking methods to save nutritive values, on the way foodstuffs should be stored, and on the changes needed in eating habits. It has also been planned to introduce nutritive education into adult literacy programmes as well as into agriculture productivity- oriented projects in order to enhance the quality of food storages and to bring about changes in eating habits. Training and awareness programmes on productivity improvement, environmental management, cleaner production, and energy conservation are aimed to build national capacity and awareness among the business community.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through T.V./ Radio, posters, pamphlets, official reports etc.

Research and Technologies: Nepal agriculture Research Council, Ministry of Science and Technology, Royal Nepal Academy of Science and Technology, Alternate Energy Promotion Centre are launching various research and technology improvement programmes on renewable agricultural productivity enhancement, energy development and energy conservation.

Financing: HMG allocates limited financial resources from budgetary sources. Donor supports are also mobilised when available. In addition credit facilities are provided through banking institutions and NGOs.

Cooperation: World Bank, ADB, DFID and other have been extending their support.

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CHAPTER 4: CHANGING CONSUMPTION PATTERNS - ENERGY

Decision-Making: Energy in Nepal is derived from biomass resources, from imported fossil fuel resources, and from hydropower. Ministry of Water Resources is primarily responsible for the hydropower development. Ministry of Industry, Commerce and Supplies, through public corporation like the Nepal Oil Corporation is responsible for the supply of fossil fuels. The Ministry of Science and Technology is taking leading role in the promotion of alternate energy primarily the renewable energy sources. Ministry of Forestry and Soil Conservation looks after the forest sector, which is the major source of energy in Nepal. Nepal has the Energy Perspective Plan (1991-2017) and Renewable Energy Perspective Plan (2000-2020) and are being implemented in the energy sector.

Programmes and Projects: The current hydropower capacity of the Integrated Nepal Power System is 383,518 kW. Of this, 29.56 percent (113,400kW) is from IPPs and the rest is generated by NEA. Hydropower projects under construction are: Kali Gandaki "A" (144,000 kW), Middle Marsyangdi (70,000 kW), Gandak (400 kW), Heldung (500 kW), Chilime (20,000 kW), Indrawati (7,500 kW), Upper Modi (14,000 kW), and Piluwa Khola (3,000 kW). Biogas Support Programme (BSP) was started in 1991 with support from the Dutch government. It has been successful in scaling up the number of plants from around 6,000 when it started to some 80,000 plants today and the number of companies installing plants has gone up from one to 48. Nepal has overtaken India in terms of per capita biogas plants and is quickly catching up with China.

AEPC was established in November 1996 under the Ministry of Science and Technology and reports to the Alternative Energy Promotion Development Board (AEPDB). AEPC work areas include biomass, micro-hydro, solar, wind, improved cook stoves, and geothermal. AEPC does not directly implement renewable energy projects but works with the Renewable Energy industries and NGOs to provide decentralized renewable energy services to rural as well as urban communities. AEPC's major programme is the Energy Sector Assistance Programme (ESAP) signed between HMG/N and the Government of Denmark in March 1999. Expected outputs of ESAP are the installation of 2,500 kW of micro-hydro, 25,000 solar home systems, and 35,000 improved cook stoves. The Interim Renewable Energy Fund jointly managed by AEPC and ESAP processes requests for grant financing to micro-hydro and solar PV projects. AEPC works closely with ongoing national level renewable energy projects like the Biogas Support Programme (BSP) and the Rural Energy Development Programme (REDP), being represented in these organizations at the Coordination Committee and Board levels respectively.

There are some 2000 micro-hydro plants built and operated by organizations outside the NEA system. For example Annapurna Conservation Area Programme, and Rural Area Development Programme (RADP) have built micro hydro plants in different parts of country. RADP has already built 14 micro hydro plants by 2001 against the target of 30 for the ninth plan period. ACAP has supported local communities with the generation of around 570 KW in six districts. REDP started its programme in September 1996. The programme is active in fifteen districts in the country. From west to east, they are: Baitadi, Dadeldhura, Acham, Bajura, Dailekh, Pyuthan, Baglung, Myagdi, Parbat, Tanahu, Kavrepalanchowk, Dolakha, Okhaldhunga and Tehrathum. Till the end of 1999, REDP has achieved impressive results: 25 micro-hydro projects commissioned (400 kW), another 35 systems (600 kW) under construction, 300 solar home systems installed, 300 biogas systems installed with toilet attachments, and 1,000 improved cook stoves installed. In addition to the hardware installed, the programme has also made substantial achievements in social capital building through Community Organizations and institutional strengthening through the creation of NGO Support Organizations plus the creation of the Rural Energy Development Section in each of the 15 districts.

Status: Nepal's per capita energy consumption is about 336 kilogram's of oil equivalent (kgoe) or 14 gig joules (GJ). In 1998, the total energy demand in the country was estimated to be 7,340 thousand tones of oil equivalent (toe). There was an average increase of 3.3% per annum between 1980 and 1998. Out of the total energy consumption, 92% is consumed by the residential sector and the remaining 8% by other sectors. About 88% of the energy demand is met from traditional sources (fuel-wood, agricultural residues, and animal dung). The remaining 12% is met from commercial sources such as petroleum products, coal, and electricity, with shares of 9,2, and 1%,

respectively. All petroleum products are imported into Nepal, of which a considerable amount is used for automobiles, followed by industry (SOE 2001, MOPE).

Capacity-Building, Education, Training and Awareness-Raising: The programmes mentioned in the programmes and project headings are also aimed at national capacity building in generating clean energy sources and create awareness to people for efficient use of energy sources.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through T.V./ Radio, posters, pamphlets, official reports etc.

Research and Technologies: Research and Technology improvement works are being carried out in biogas and micro hydro sector with active participation from private sector.

Financing: HMG allocates limited financial resources from budgetary process. Donor supports are also mobilized when available. In addition credit facilities are provided through banking institutions and NGOs.

Cooperation: UNDP, Win rock International, ADB and etc.

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CHAPTER 4: CHANGING CONSUMPTION PATTERNS - TRANSPORT

Decision-Making: Ministries of: Labour and Transport Management; Works and Physical Planning; Population and Environment; and Finance are the central level government ministries primarily responsible for making decisions on the development of transport sector in an environment friendly manner. Department of Transport Management is the main implementing agency of transport policy. Because of the increasing numbers of vehicles coupled with the poor conditions of roads, the transport sector is becoming one of the major sources of air pollution in urban centres. In order to deal with the air pollution problems, government has taken following preventive and corrective measures:

- Import of only unleaded gasoline and less than 0.25% sulfur content diesel;
- Ban on the import of two stroke engine vehicles, second hand and reconditioned vehicles;
- Introduction of vehicle emission standards for existing vehicles plying in the streets;
- Introduction of Nepal Vehicle Mass Emission Standard 1999 (EURO-I) for new vehicles to be imported; and
- Phasing out of highly polluting diesel operated three wheelers from Kathmandu Valley

HMG/N has recently introduced the new transport policy- National Transport Policy 2001. The integration of the environmental consideration in the transport management field is one of the major highlights of this policy. As hydropower is the major source of electricity, this policy gives highest priority for the promotion of electric vehicles. The proper maintenance of roads, equalization of traffic density within the capacity of roads, preference for mass transport, compliance to environmental requirements, and running of public transport purely on competitive basis are some other highlights of this policy.

Programmes and Projects: The ongoing project on Air Quality Management of Kathmandu Valley is focusing on promotion of electric vehicles, review of vehicle emission standards and monitoring mechanism, laboratory strengthening for fuel quality checking, awareness programmes on vehicle emissions and health effects, establishment of ambient air quality monitoring stations in Kathmandu Valley, Vehicle engine maintenance and training centre. Department of Transport Management is working on the carrying capacity of the roads of the Kathmandu Valley and developing Computerized Information System. Ministry of Population and Environment has programmes of introducing vehicle emission testing and green stickers system in five major cities other than Kathmandu Valley in the current fiscal year.

Status: The total road length has been developed so far is 15308 km in 2000, Economic (Survey 2001). Almost two-thirds of the total road lengths are gravel and earthen which contribute to dust pollution to the air during the dry season. Blacktopped roads account for only 33% of the total road length and are mostly concentrated in large urban areas. The total number of Airfields including small and large has reached 44 of which international Rail way is only 51 KM in one location. Along the expansion of roads, the number of vehicles has also increased. The total number of vehicles increased from 75,141 in 1990 to 290644 in 2000/2001. Two wheelers (motor cycles) accounted for the largest share (~57%), followed by light vehicles such as cars, jeeps, and vans (~20%). IN 2000/01, the largest number of vehicles was registered in the Bagmati zone, which includes Kathmandu Valley, making more than 50 % of the total vehicles registered in Nepal. The vehicular traffic density to localized air pollution is considerable high in major urban centres. The density of vehicles for the country as a whole is around 19 vehicles per km of roads. For Bagmati zone it was 51 vehicles per km of the road in 1998.

Capacity-Building, Education, Training and Awareness-Raising: Above mentioned project is working towards capacity building on vehicle standards development, compliance of standards, training on repair and maintenance, awareness raising for transport owners, drivers and general public. Another major works include the capacity building of private workshops on carrying emission testing.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through T.V./ Radio, posters, pamphlets, mapping, official reports etc.

Research and Technologies: One of the sugar industries is doing research on the prospects of using ethanol as alternative fuel in the vehicles. Himalayan Light Foundation is developing four-wheeled electric vehicles. Research Centre for Applied Science and Technology, Tribhuvan University is doing a feasibility study for producing petrol and diesel substitute oil from the plants available in various parts of the country.

Financing: HMG allocates limited financial resources from budgetary process. Donor supports are also mobilized when available.

Cooperation: World Bank, Asian Development Bank, DFID, SDC Japan are supporting in road network developing.

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CHAPTER 5: DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

Decision-Making: The Ministry of Population and Environment and the National Population Committee are most directly concerned with this issue. The Population Policy in Nepal was first introduced in 1965 with the family plan package. The Maternal and Child Health Programme was established in 1968. The broad policies are: to curtail birth rate; to control immigration; to develop urban areas; and to regulate the migrants from the hills to Terai (the plains).

Programmes and Projects: The Ninth Plan (1997-2002) has given emphasis on programmes for providing production credit for women through Micro Credit for Women (MCW), Production Credit for Rural Women (PCRW), Small Farmer Development Programme (SFDP), Grameen Bank, Agriculture Development Bank and other banks. Programmes for developing women's capabilities as well as for encouraging them to educate themselves more and to win competitive jobs will have important impacts in the long run.

Status: The formal and regular population census started in 1911. In the early 20th century until 1930, there was negative growth rate of population. The highest population growth rate of 2.66 percent was observed between the census years 1971 and 1981. Total households in 1991 were 332,8721, which grew by 2.6 percent suggesting the trends towards nucleus family (average family size dropped from 5.8 to 5.6 persons). Preliminary result of the Census 2001 has revealed that the total population has been 23.25 million and is increasing with 2.27 % growth rate. As a consequence of high population growth rate, the population of the country is fairly young suggesting high dependency ratio. The population under 14 years of age is approximately 40 percent and that below 5 years of age is nearly 15 percent. There is also fairly high population of reproductive age women (15 to 49 years) that is growing by almost 3 percent per year. This has led to high fertility rate of 5.1. Every year, more than 800,000 births take place. The annual labour force addition is over 200,000. Looking at the population carrying capacity of Nepal, the population must stabilize at around 60 million within this century.

Although there is predominance of rural population (of about 86 percent), the rate of urbanization (defined as the population within various municipalities) has also been very high. Between 1980 and 1993, Nepal's urbanization rate of 7.7 percent was highest in South Asia. However, new municipalities have been added without consideration of the urban requisites such that many municipalities do not have the urban character. The real urbanization is the agglomeration of settlements with non-farm activities. The proportion of female population has been less than 50 % in three of the last 4 censuses. According to the biological norm, the proportion of female to male in the population must be 1.06:1. Thus there is an indication of "Missing Women" in Nepal. Human Development Report, 1997 showed that only in Nepal and Maldives, the life expectancy of female at birth is less than that of male.

The population density (144 persons per sq km for Nepal) is higher in Tarai, followed by the hills and the mountains. The density is higher in the East than in the West. The rate of direct unemployment is 4.9 percent but the rate of underemployment is very high at almost 50 percent. The availability of cultivable land has declined from 0.6 ha per person in 1954 to 0.17 in 1997/98. There was a high rate of migration from hills to Tarai up to the 80s. Although this is continuing at a slightly reduced rate, the recent rate of migration from the rural to urban areas has increased significantly. There is also a high rate of in-migration from the Northern India to Nepal Tarai. Migration to India and overseas in search of jobs is also high which generates an estimated annual remittance income of nearly 70 billion rupees. Recently, the quicker development of the eastern hill districts such as Ilam has reversed the migration trend to Hills because of greater pull factor.

Capacity-Building, Education, Training and Awareness-Raising: Mass awareness programmes are being launched from central to local level through mobilizing government and non-government sectors regarding domestic violence against women. Proposals are being made to expend at least 10 percent of the grant allocated to each VDC in the education of women. Ministry of Population and Environment has launched various awareness programmes through regional and district level seminars, and mass media. Preferences have been given to women in selecting trainees for employment oriented training programmes.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through T.V./ Radio, posters, pamphlets, official reports etc.

Research and Technologies: Census 2001 was done in order to find out the population status of last ten years in Nepal.

Financing: HMG allocates limited financial resources from budgetary process. Donor supports are also mobilized when available. In addition credit facilities are provided through banking institutions and NGOs.

Cooperation: Nepal cooperates with the UN Fund for Population Activities.

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CHAPTER 6: PROTECTING AND PROMOTING HUMAN HEALTH

Decision-Making: The Ministry of Health and the Ministry of Housing and Physical Planning are most directly concerned with health in Nepal. It is necessary to initiate policies and to revise procedures, legislation and regulations in order to improve water supply management and to put sanitation into practice extensively. In the area of health services, to keep its national and international commitments, the Government must provide these services for everyone by the year 2000. To this end, the National Health Policy (1991) has been reformulated with the objective of providing effective health services at the local level. The basic primary health services in Nepal include preliminary treatment of common diseases, immunization against infectious diseases, maternity and child health care services, family planning services, and management of essential medicines. In addition, the Government provides health education, information about food, nutrition, clean drinking water, and about sanitation and environmental practices, which have been singled out as the major factors contributing to the poor state of health in Nepal. Ministry of Population and Environment is responsible for the protection of environmental services for the protection and promotion of human health. Also this ministry is primarily responsible for coordinating all the line ministries and other non-governmental and private sector institutions for effective implementation of national policies and programmes directed towards protecting environmental resources. Development and enforcement of environmental requirements that will have minimum impact on human health fall under the jurisdiction of this ministry.

Programmes and Projects: The main aim of HMG's Drinking Water and Sanitation Programme is to provide basic knowledge of sanitation and sanitary facilities to the maximum number of people to facilitate them to take up cleaning and conservation exercises. In line with the call by WHO for eradicating polio from the globe by the year 2000, a vaccination programme for children has been carried out through the observation of a special immunization day all over the Kingdom. A Sexually Transmitted Diseases and AIDS Programme was launched in the fiscal year 1988-1989 in order to control the social and economic hazards emerging from the increase in the number of people suffering from such communicable diseases. Ministry of Population and Environment has initiated various programmes and projects for the protection and conservation of environmental resources. Among them the "Air Quality Management of Kathmandu Valley", and the Institutional Strengthening of Environmental Authorities of Nepal are the prominent ones.

Status: In general, the health status of the population in Nepal is poor. The lack of potable water and sanitation, adulterated food supplies and paucity of medical facilities are major contributing factors resulting in the poor state of health. The lack of clean water, in particular, is imposing a high cost on the economy in terms of its impact on human health and productivity. The country's rapidly growing population is also placing a stress on available water resources. The total number of hospitals, health centres health posts and other is 4433. The hospital beds are 5318 in 2000/01 (Economic Survey 2001). The emerging rural and urban environmental problems have also direct impact on the human health. The major rural environmental problems are the over exploitation of the natural resources which has direct impact on the quality of drinking water sources. Another major environmental problem in the rural Nepal is the indoor air pollution because of the burning of fuel-wood in poorly ventilated houses. The air quality in Nepal's major urban areas has deteriorated because of the emission of smoke from vehicular traffic and concentration of stationary sources in the cities. Air pollution has had a direct impact on human health. Respiratory diseases increased from 10.9% of the total outpatient visits (5167378) in 1996 to 11.6% of the total outpatient visits (7115981) in 1998. Acute Respiratory Infection (ARI) accounted for more than 30% of the total deaths in children under five years of age (SOE, 2001). Solid waste management problem and the poor sewer system are polluting water and soil and thus having direct impact on human health. The increased use of chemical fertilizer (7.6 kg per hectare in 1975 to about 30 kg in 2001) has also direct impact on the soil and water quality. Patients visit to hospitals because of diarrhoeal problems have increased tremendously. A report from a local hospital in Kathmandu showed that 16.5% of all deaths were due to water-borne diseases (SOE, 2001).

HMG/N has initiated various response measures to deal with the emerging environmental problems and their impact on human health. The various programmes launched in rural Nepal to promote the efficient cooking stoves (choolus), solar photovoltaic, biogas plants, and micro hydro all will reduce the problem of indoor air pollution in

rural areas. Government has set the targets to provide the potable drinking water to all the people within the ninth five-year plan (1997-2002). MOPE has taken initiation in bringing the ambient air quality, water quality and noise standards to protect the human health and will be in place by the end of 2002. The recent efforts of gazetting the environmental standards for industries and vehicles are also aimed to promote the human health.

Capacity-Building, Education, Training and Awareness-Raising: The establishment of ambient air quality monitoring system in Kathmandu Valley by the end of 2002 is aimed at enhancing the national capacity in assessing the ambient air quality and the associated health and environmental impacts. This will help to build national capacity in designing more effective training and awareness programmes for the protection and promotion of human health. Various government and non-governmental organizations are involved in carrying out training and awareness programmes in sanitation, waste management, occupational health and safety areas. However the lack of adequate resources are the biggest hurdle.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through T.V./ Radio, posters, pamphlets, official reports etc.

Research and Technologies: Medical colleges, Teaching hospitals, and other government and private institutions have accomplished several researches regarding human diseases, drinking water, nutrition, etc.

Financing: HMG allocates limited financial resources from budgetary process. Donor supports are also mobilized when available.

Cooperation: Nepal cooperates with the World Health Organization and UNICEF.

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CHAPTER 7: PROMOTING SUSTAINABLE HUMAN SETTLEMENT DEVELOPMENT

Decision-Making: In Nepal, human settlements are the concern of: the National Planning Commission; the National Habitat II Follow up Committee under the Ministry of Housing and Physical Planning (MHPP)/His Majesty's; government (HMG), the Ministry of Population and Environment; Department of Housing & Urban Development/MHPP; the National Committee on IDNPR; other agencies and research organizations of HMG/N; the Municipality Association of Nepal; NGOs/Community Based Organizations, and professional bodies. In general, the adoption of the Nepal Environmental Policy and Action Plan (NEPAP), and the constitution of the Environment Protection Council (EPC) are significant contributions to the implementation of Agenda 21 in this area. Nepal's participation in the Habitat II Conference (City Summit) in Istanbul, Turkey 3-14 June 1996, along with the commitments on priority issues included in the National Plan of Action and Best Practices reports, are important achievements towards the realization of sustainable human settlements in an urbanizing world.

Programmes and Projects: The objectives for the urban sector proposed in the on-going Ninth Plan include: Development of integrated physical and social infrastructure; Efficient, sustainable, and employment oriented role for urban area in the national production system that is supportive of poverty alleviation and rural development; Development of infrastructure and public utilities in municipalities and small towns; Increased role for the private sector in housing development. Urban sector policies to address the above objectives include: Promotion of balanced urbanization, enhanced urban-rural linkages and growth of small towns; Development of Kathmandu Valley as a cultural and tourist centre; Increased private sector participation in the development of infrastructure and services with the government as a facilitator; Encourage urban investments on the basis of Master Plans of Municipalities and other Towns; Human resources development and organizational improvement.

Accordingly, the following programmes were envisaged: Policy formulation and research including national urban development policy and national building policy; Improvements in urban sector related legislations, regulations and standards including urban planning and building acts; Institutional strengthening and trainings for human resource development; Programmes for development of sub-regional market centres and those along major north-south highways; Kathmandu Valley Development Programme; District level integrated physical development planning for 20 districts; Urban area development plans for 22 municipalities and IAP for 20 municipalities; Promotion of small towns, urbanizing villages and market centre; Programmes for rural housing and compact settlements development; Provision of loan and grant facilities through Town Development Fund for infrastructure and related developments.

The policies and programmes envisaged appear comprehensive. However, there is an evident lack of institutional, administrative, technical, and financial capabilities at the level of both local and national governments to implement the policies and programmes. The mid term review of the Ninth Plan shows that important legislations still do not remain in place, coordination in programme implementation is lacking, and investment programmes remain inadequate. The draft Approach Paper for the Tenth Plan recognizes the need to reduce regional imbalance in urban growth as well as the urgency to address the negative consequences of urbanization. The emphasis, among others, is on infrastructure development in urban areas, people's participation, development of market and small towns, planned process of urbanization in Kathmandu Valley, and rural development to reduce urban-rural migration.

Status: Nepal is predominantly a land of villages. In 1952 only 2.9 percent of the population lived in 10 designated urban areas. This proportion rose to 3.6, 4.1, 6.3 and 9.2 respectively in 1961, 1971, 1981 and 1991. In 1991 there were all together 33 designated urban areas. Preliminary results of the 2001 census show that 14.23 percent of Nepal's population of 23.2 million live in 58 designated urban areas. The census figures indicate that the average annual growth rate of urban population during 1991-2001, inter-censal, decade has been 6.89 percent. Rural population in the meantime has grown at an average annual rate of 1.72 percent. In Nepal, the criteria for providing urban status to a locality has not been consistent throughout. At present there is a three-fold classification of municipalities. A municipal corporation requires a minimum of 300,000 population and annual revenue of at least 70 mill NRS. A sub-municipal corporation requires 100,000 population and annual revenue of 20 mill NRS. Any

area can be declared a municipality if it has at least 20 thousand populations in the Tarai or 10 thousand in the hills, an annual income of 5 mill NRS, and basic urban amenities. Density, contiguity, and occupational structure criteria are not used. Presently Kathmandu is the only Municipal Corporation in the country. There are four sub-municipal corporations: Lalitpur, Biratnagar, Pokhara, and Birgunj. The rest, 53, are municipalities.

Regional levels of urbanization based on 1991 census for the 58 urban areas shows that Kathmandu valley is the most urbanized region in Nepal. About 60 percent of the Valley population resided in urban areas. This percent was only 17 in the Inner Tarai and 11 in the Tarai. The Hill/Mountain region is the least urbanised with only 5.53 percent of the population living in 20, mostly small (with the exception of Pokhara) urban areas. About 40 percent of Nepal's total urban population is in the Tarai and about 29 percent in the Kathmandu valley. Urban growth rates vary for different regions. Because of low base population the highest growth rates were seen in the hill towns (17.8%) followed by Inner Tarai (11.55%), Tarai (8.18%), and Kathmandu Valley towns (6.17%) during 1981-91.

Urban infrastructural services are generally poor and over-burdened. The Nepal Living Standard Survey (NLSS) 1998 suggests that only 58 percent of urban households obtain water from piped systems and supply is intermittent or very inadequate. Most hill towns face problems of water availability. Urban population survey 1996 reported that about 76 percent of urban population have access to toilets. Reportedly about 85 percent of urban households have access to electricity and this percent is only 16 for the nation as a whole. Seasonal Load shedding and unscheduled interruptions are frequent. Sewerage systems even in the capital city of Kathmandu is quite limited and sewer lines discharge directly to rivers and streams. Solid waste is very poorly managed with low rates of collection and often unsanitary disposal. Most municipalities report collection of only 50 to 60 percent of solid waste. Solid waste generation in urban areas ranges from 0.25 to 0.5 kg per capita per day. The proportion of non-biodegradable and hazardous waste is reported to be rising. No municipality has a sanitary landfill site.

Flooding is a major problem in Tarai towns but drainage is a problem in all low-lying municipalities. Drainage management is generally very poor and is made more acute due to development in areas that are difficult to serve. Urban transport is presently a problem in the valley towns and to a lesser extent in Pokhara and Tarai towns, but is likely to be experienced in other growing towns. Public sector housing is almost unknown in Nepal as housing is considered an individual responsibility. Land development is informal. Because of high cost of land and housing, there is a wide gap between housing need and supply, in urban areas alone to the tune of over 30,000 new units per year. The result has been a rise in squatters and slums. A 1991 survey showed that nine percent of the total housing stock was of squatter type and was rising in fast growing municipalities such as Butwal and Pokhara. The NLSS found that about 78 percent of households are owner-occupied. The condition of housing stock reveals that 41.4 percent are pucca (permanent), and 34 percent are semi-pucca (semi-permanent). The NLSS shows literacy rates in urban areas to be of the order of 70.5 percent, much higher than that for the whole nation. Urban health situation, however, is generally poor although the provision of health services in the country is inordinately concentrated in urban areas. For urban poor and squatters the situation may be no better than in rural areas.

Capacity-Building, Education, Training and Awareness-Raising: Higher education system on architect at various engineering colleges.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination.

Research and Technologies: No information available

Financing: Finance is provided by HMG sources, municipal and local bodies. Financing comprises for housing is emerging. Multilateral and bilateral financing for urban development are mobilized when available.

Cooperation: This is undertaken through the SAARC framework and with Economic and Social Commission for Asia and the Pacific (ESCAP); United Nations Development Programme (UNDP)/United Nations Centre on Human Settlements (UNCHS/HABITAT); United Nations Environment Programme (UNEP); other UN bodies;

Global Programmes; UMAP; UMP; CITYNET; Metropolitan Environmental Improvement Programme (MEIP), and others.

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CHAPTER 8: INTEGRATING ENVIRONMENT AND DEVELOPMENT IN DECISION-MAKING

Decision-Making: The constitution of Nepal has the special provision for fixing the responsibility of protecting the natural resources on the State. A separate parliamentary committee is formed with the objective of integrating the environmental concerns in the national legal system. In order to coordinate at the decision making level, Environmental Protection Council under the chair of prime minister with all the ministers as the member has been formed together with representation of private sector, academic institutions and national experts. Besides these, the National Planning Commission, The Ministry of Population and Environment (established in 1995), sectoral ministries, NGOs, the private sector, and local authorities all participate in decision making. Awareness of environmental issues has grown perceptibly. There have been efforts to integrate environment into development-related decision-making. The Natural Conservation Strategy (1988) and Nepal Environmental Policy Action Plan (1993) has been successful in integrating environmental concerns into different programmes and institutions. The Rio Declaration has stimulated environmental concerns at the policy-making level. A number of important measures have already been adopted with the objectives of integrating environmental concerns into development programmes. Nepal has already enacted an umbrella type Environment Protection Act 1996, and Environment Protection Regulation 1997 which sets the legal framework for the integration of environmental issues into the development programmes. Environmental Impact Assessment of major development activities has been made mandatory by these legal measures. All the sectoral development policies also been tuned accordingly. Various sectoral acts and regulations have also been reviewed and amended in order to integrate the environmental concerns and achieve the objective of sustainable development.

Programmes and Projects: Recently in November 2001, HMG/N and Government of Norway reached into an agreement for launching a project with the objective of strengthening the national capacity in the field of Environmental Impact Assessment in the Hydropower sector. MOPE in association with the Ministry of Water Resources will implement this project. Under DANIDA support an Institutional Strengthening of Environmental Authorities project is under implementation to ensure the effective implementation of environmental policies and legal provisions. Another project “Strengthening of Environmental Administration at Local Level” with FINIDA support has recently been initiated as a demonstration programme in the Biratnagar-Dharan Corridor. UNDP is also supporting Municipalities for the implementation of environmental issues at the local level. In addition to these, various line ministries have programmes and projects that are aimed at integrating environmental issues into sectoral development programmes. Sustainable Community Development Programme, a joint undertaking of National Planning Commission and UNDP since the late 1996, is working in six districts in strengthening the local level capabilities in integrating environmental issues into development works.

Status: As per the EPA 96 and EPR 97, various projects and industrial establishments have undertaken the EIA and IEE studies and approved. EIA and IEA guidelines are prepared by the MOPE for environmental impact study. MOPE is the final authority for the approval of EIA reports while line ministries are responsible for the approval of IEE. Since the promulgation of EPA and EPR, MOPE has already approved more than a dozen of EIA reports mainly in the field of hydropower sector. Significant numbers of IEE reports are being prepared and approved in the industry sector.

Capacity-Building, Education, Training and Awareness-Raising: The programmes and projects mentioned above are primarily focused on the national capacity building. MOPE organizes various training programmes for sectoral ministries in the field of EIA and IEE. National consulting companies are involved in carrying out the EIA and IEE studies and this has significantly contributed to the development of the national capacity in the field of environmental impact assessment. Almost all higher level degree courses include the environment management discipline and universities are running bachelor and masters degree programmes in environmental fields. There have been relatively significant achievements in producing the trained human resources in the field of environmental management in the last decade.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination.

Research and Technologies: Different socio-economic and Environmental Impact Studies are conducted by the MOPE. Environment being cross cutting issues different sectoral research are instructed to cover environmental issues.

Financing: HMG allocates limited financial resources from budgetary process. Donor supports are also mobilized when available.

Cooperation: The support of various donor agencies and countries are mentioned in the programme and projects heading.

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CHAPTER 9: PROTECTION OF THE ATMOSPHERE

Decision-Making: Ministry of Population and Environment is the focal for international conventions and protocols related to the protection of atmosphere. Nepal has ratified the United Nation's Framework Convention on Climate Change in May 1994. Currently an enabling project is ongoing to prepare the National Communication and is expected to be completed by July 2002. As Nepal is endowed with huge potential of water resources, Nepal is advocating in international and regional meetings for the promotion of hydropower to limit the GHG emissions in South Asia. MOPE is heading a Steering Committee with representations from all the concerned government ministries, academicians and private sector to ensure proper coordination. Promotion of renewable energy is the main thrust of national policy on energy development. Forest Policy 1991 gives highest priority in public participation to manage the forest resources- the sinks of GHG emissions. Similarly, Nepal is party to Montreal Protocol and Vienna Convention. In the process of fulfilling the international obligations of these two international commitments, Nepal has already submitted the National Communication. In addition to this, National Inventory of ODS is in place and legislations are enacted for the ODS phasing out programme in 2001. Ministry of Population and Environment is heading a Steering Committee in ODS management programme with representation from all the concerned stakeholders.

Programmes and Projects: MOPE and Department of Hydrology and Meteorology are currently jointly implementing An Enabling Project on The Preparation of National Communication to fulfil the national obligations of UNFCCC. Besides the enabling activities for national communication, there are few global, regional and national programmes in pipeline in the field of climate change, namely: Promotion of Renewable Energy Technology through Micro-Hydro Development in Nepal; Global Solar and Wind Resource Assessment Project. Further a global programme on Capacity building for improving national GHG inventories particularly focusing on Asia and in this Nepal is also included will concentrate primarily on: Emission factors and appropriate data gathering; Strengthen national arrangements for archiving, updating and managing of GHG inventories; and Training for the implementation. In the field of protecting the ozone layer, the ongoing projects include: Monitoring of the activities included in the refrigerant management programme; National programme for recovery and recycling of refrigerants; Policy development and training programmes for custom officers; Training programme on good practices in refrigeration.

Status: Under the US Country Assistance Programme, Nepal has prepared a national inventory of GHG considering CO₂ emission from energy consumption and cement production, methane emission from flooded rice cultivation, livestock and bio-mass burning and N₂O emission from fertilizer. According to this study, the energy sector has contributed 912.74 Gg and the cement production 82.91 Gg of CO₂ in 1990/91 respectively. Similarly the estimated emission of methane from flooded rice cultivation is 550.59 Gg, from livestock 370.07 Gg, and from bio-mass burning 84.87 Gg for the base year 1990. And the N₂O emission from fertilizer is 803.13 tons in 1990. According to the survey carried out NBSM in 1999, CFC 12 and HCFC-22 as the main ozone depleting substances in Nepal and in 1996, the consumption of these two substances was 29.058 tones and 23.04 tons respectively. The country does not produce any ODS.

Capacity-Building, Education, Training and Awareness-Raising: The projects and programmes mentioned above are primarily focused on capacity building, education, training and awareness raising.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through Radio/T.V., posters, pamphlets, official reports, etc.

Research and Technologies: Alternate Energy Promotion Centre is supporting various researches and technological development works in the field of bio-gas, solar power, wind power, and micro hydro.

Financing: HMG allocates limited financial resources from budgetary process. Donor supports are also mobilized when available.

Cooperation: Nepal signed the Montreal Protocol (1987) on 6 July 1994 and the London Amendment (1990) signed in 6 July 1994. It signed the United Nations Framework Convention on Climate Change on 2 May 1994. As least developed country, the submission of Nepal's first report is left to its discretion. The protection of the atmosphere is a worldwide concern and Nepal, as a Least Developed Country, cannot afford to invest in this issue without compromising its economic growth and development.

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CHAPTER 10: INTEGRATED APPROACH TO THE PLANNING AND MANAGEMENT OF LAND RESOURCES

Decision-Making: Agricultural policies must be flexible in order to conform to the features of different agro-ecological zones and thus take maximum advantage of the diversity of natural resources. A Comprehensive National land use Policy and its effective implementation would guide sustainable use of valuable land resources. As Nepal adjusts to these essential requirements, the production of food grains, fruit farming, forest, wildlife and livestock farming will be gradually expanded. In addition, district level planning will have a significant role. Therefore, a land use mapping system for districts will be developed taking into account different agro-ecological zones.

Programmes and Projects: The land use programmes are initiated by the Ministry of Land Reform and Management (MOLRM) and an approach paper has been passed by the cabinet in 2000. There are programmes focused on forests:

- (i) the Hills Leasehold Forestry and Forage Development Project (HLFFD) objectives: raise the income of families living mostly below the poverty level in the hills and improve ecological conditions by minimizing deforestation in the fragile hills of Nepal. A participatory approach is the basis for the implementation of the project. The project is specifically designed for the marginal and landless families to supplement the efforts of the Government's Community Forestry Programme. Main activities include: the distribution of forest land to the poor; planting of trees; establishing veterinary services for livestock; creation of income generating environment through training and increased facilitation of loan flows; and
- (ii) the Hill Community Forestry Development Project (HCFD) aims at developing and managing forest resources through active participation of the local people to meet their basic needs of forest products by gradually handing over all accessible hill forests to the communities (user groups) to the extent that they are able and willing to manage the forests.

Status: Management of land resources has been deemed critical from the point of view of sustainable agricultural production. Improved agricultural output is the only way towards economic growth and poverty alleviation. Soil fertility is a crucial element in determining the productivity of the land. It has been noted that soil fertility is declining in many parts of Nepal, having a negative impact on the yield of the key crops. Changes in farming practices are needed to reverse this trend, and institutional improvements are imperative for agricultural research and extension. There is a great diversity in the nature of different geographical regions of Nepal. The Terai occupies 23%, whereas hills and mountains cover 35% and 42%, respectively, of the country's total land area. Eighteen percent of Nepal's land area has been declared as national parks and protected zones and almost the same is under agricultural land use.

Capacity-Building, Education, Training and Awareness-Raising: In order to strengthen the capacity to implement the programmes, several training programmes have been organized in the districts on various aspects such as community forest management and nursery management. In addition, workshops on user group networking and field trips have been organized for user groups and progressive farmers. Because of this training, the user groups are more capable of managing the forests handed over to them. People are also more aware of the programme objectives and take more interest in the community forest management and in informing user groups. The district forest offices receive more and more requests from the communities to participate in the project.

Information: To make land use and environmental information effective, an appropriate institutional system as National GIS will be developed under the Ministry of Land Reform and Management. A support project to establish National GIS is under implementation.

Research and Technologies: Survey Training Centre is being restructured to meet the requirement of land management and information system.

Financing: The HLFFD project is financed by: IFAD: US\$ 12.79 million; Government of the Netherlands: US\$ 3.36 million; HMG/N: US\$ 2.71 million; and, local communities: US\$ 3.15 million. The HCFD project: World Bank: US\$ 15.5 million; HMG/N: US\$ 4.4 million; DANIDA: US\$ 6.9 million; and, local communities: US\$ 3.15 million. National GIS Support Project of 24 Million US \$ is being financed by EEC.

Cooperation: On forestry programmes, Nepal cooperates with the World Bank; Food and Agriculture Organization of the United Nations (FAO); International Tropical Timber Organization (ITTO); International Fund for Agricultural Development (IFAD); United States Agency for International Development (USAID); Government of the Netherlands; Danish International Development Agency (DANIDA), SNV; Government of Australia; Gesellschaft fur Technische Zusammen Arbeit (GTZ) (Germany); European Union and others on this issue.

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CHAPTER 11: COMBATING DEFORESTATION

Decision-Making: Ministry of Forest and Soil Conservation and National Planning Commission are the central level agencies responsible for decision-making in the forest sector. Department of Forest, and Department of Soil Conservation, and their district offices, District Development Committees, NGOs and local communities (user groups) are involved in local level decision-making process. The long-term concept of the forest sector development has been adopted following the 20-year long-term forestry development Master Plan 1989. The National Conservation Strategy 1988, and Nepal Environmental Policy and Action Plan 1993, Agricultural Perspective Plan are other main documents guiding the various decisions for the conservation and management of natural resources. Strengthening the capacities of both the governmental and semi-governmental organizations at all levels, from central to local level, is essential for the successful implementation of these plans and strategies.

Programmes and Projects: HMG/Nepal has launched various programmes categorized as sub-sector programmes and supportive programmes (Ninth Plan, 1997-2002). The sub-sector programmes include: Community and Private Forest Development; National and Lease-hold Forests; National Parks, Wild-life Reserves and Conservation Management; Soil and Watershed Conservation Programme; Botanical Garden and Herbal Plants Development; Support to Bio-diversity Conservation and Tourism Industry; Industries Based on Forest Product. The supportive programme include: Rules, Regulation and Institutional Arrangement; Manpower and Human Resources Development; Forest Research and Resource Information; Monitoring and Evaluation; Planning and Management System Development.

The projects under foreign assistance at the Ministry of Forest and Soil Conservation include: Ministry of Forest and Soil Conservation—Shivapuri National Park, second phase with Norway, FAO support; Department of Forest—Community Forestry Development Project (third phase) with IDA support; Hill Area Lease-hold Forest and Pasture Development project with IFAD support; Tree Improvement Project with Danida support; Nepal Australian Community Resources Development Project with support from Australia; Churia Forestry Development Project with German support; Dolkha-Ramechhap Community Forestry Development Project with support from government of Switzerland; Forest Enterprises Programme with support from USAID; Community Forestry Training Project with support from DANIDA; Nepal-UK Community Forestry Project with support from ODA; Bhutanese Refugee Project with UNHCR support. Under Department of Soil Conservation the ongoing projects include: Syagha-Adhikola Watershed Management Project with support from CIS; Nepal Australia Community Resources Development Project; Farm Project with support from UNDP; Churia Forestry Development Project with support from Germany; Watershed Management Project with support from JICA; Forest Enterprise Programme with USAID; Bagmati Watershed Project with EEC support; Community Forestry and Watershed Conservation Project with JICA; Nepal-Denmark Watershed Management Project; Participatory Watershed Management Training Project with FAO. The projects under the Department of National Parks and Wildlife Conservation are mentioned in the Chapter on Bio-diversity. In the Research and Survey Centre, a project on Forest Resources and Information Collection third phase is ongoing with FINNIDA support. In addition to these projects other various projects are launched by other line ministries, NGOs, INGOs and local governments.

Status: The forest sector has a vital place in the environmental conservation in Nepal, its condition has been deteriorating since the past few decades. The forest sector used to cover more than 45 percent area of the country according to the statistics of 1964; the forest area was 43 percent around 1979 and 37.4 percent in 1986; and a survey concluded in 1998 shows that forest area is around 40 % of the total land area of the country, which includes 10.6 % shrub area (Ninth Plan). The rate of deforestation in the country was 1.7 percent per year between 1978 and 1994 (SOE 2001, MOPE). It is 1.3 percent in the Terai, but 2.3 percent in the hills and mountains (HMG/DFRS, November 1999). It is estimated that more than 50,000 hectares of forest is encroached. Substantial area of forest degraded, for example the shrub land which was 4.8 percent in mid 1980 has increased to 10.6 percent in mid 1998. This has resulted with various environmental problems including the soil erosion, landslides and floods. Other major environmental concerns include the pressure on biological diversity, and the loss of sinks for GHGs. The drying up of the water sources like the springs and wells is another main concern.

In recognition of the existing environmental issues in the forestry sector HMG/N has formulated policies, legislations, standards and guidelines and implemented several activities since the start of planned economic development in the mid fifties. Previous policies aimed to use natural resources even at the cost of environment. However, the more recent policies and programmes are more environment-friendly and there is a clear shift in policy from command and control approach to people's participation and empowerment i.e. the importance of people's participation in the conservation of the natural resources. The Forest Policy 1991 promotes the conservation, management and sustainable use of forest products through peoples' participation. The guiding principles for forest management (ninth plan) are to promote participatory and ecosystem-based management, sustainable forest development and poverty alleviation, and to establish a national forestry fund. Besides Forest Policy 1991, the Agriculture Development Policy, Poverty Alleviation Policy, Hydropower and Irrigation Policies, address the need of conservation of forest resources to meet the objective of sustainable development. Even though the macro level survey shows continuing rate of deforestation and degradation, micro level studies show that the hills and mountains are recuperating with trees and forests mainly due to the successful programme of community forestry (Jackson, 1999)

Capacity-Building, Education, Training and Awareness-Raising: Academic and technical training is provided to the concerned staff and local communities are also provided with various kinds of training. Institute of Forestry is producing forestry sector manpower.

Information: Department of Forest survey and Research (DOFSR) is responsible for developing information base and research activities. Awareness programme on conservation through Radio, T.V. are operated.

Research and Technologies: Technology is provided for forest management, plantation and nursery techniques. DOFSR has been implementing research activities.

Financing: HMG allocates limited resources form budget. donor's supports are also mobilized when available.

Cooperation: The support of various donor agencies and countries are mentioned in the programmes and projects heading.

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CHAPTER 12: MANAGING FRAGILE ECOSYSTEMS: COMBATING DESERTIFICATION AND DROUGHT

Decision-Making: Responsible for this area at the central level are: The Ministry of Forests and Soil Conservation, the National Planning Commission, the Ministry of Land Reform and Management (MOLRM), and the Ministry of Population and Environment. At the district level, District Development Committee and District Soil Conservation Offices; and at the community level, user groups, NGOs, and GOs are responsible. Active participation of local people is important in land-use planning, forest management, and watershed development. Ecological rehabilitation and specific measures on land and resources have been the appropriate base for sustainable development. Experiences to date show that planning, decision-making and implementation efficiency is to grow from the grassroots level. Policies for resource management, ecological balance and industrial growth prevail in a broader sphere of human undertakings. Updating policy formulations need to be in terms of achieving the objectives through ensured implementation and of strengthening regional cooperation in specific issues of concern. National and regional activities need to be active simultaneously and be directed towards providing capacity for resource management.

Programmes and Projects: The Department of Soil Conservation is planning, implementing and monitoring the Soil Conservation and Watershed Management (SCWM) Programme through its District Soil Conservation Offices in 55 of 75 districts. The SCWM Programme includes land-use development and improvement, land productivity conservation, erosion hazard prevention, infrastructural protection, and community soil conservation and income generation activities. In addition, line ministries are implementing various programmes and projects which also directly or indirectly aimed to reduce land degradation and draught. Particularly the programmes and projects focused on Collective Action and Forest Management and Farmer Management Irrigation System have been very successful and are ongoing.

Status: Ministry of Population and Environment, the focal ministry for UNCCD concluded a study on desertification and land degradation in 1999. In July 2000 MOPE prepared a country status which focused on poverty alleviation and rural development through public participation in resource management as a means to mitigate land degradation issues in Nepal. In July 2001 MOPE studied five different thematic areas relevant to UNCCD. These five thematic studies include: Traditional Knowledge, Know-how, Practices and Technologies; Identification of Financial, Technical and Technological Needs; Identification for Capacity Building and Public Awareness Activities Including Outreach Materials; Data Requirement Needs and Identification of Desertification Monitoring and Evaluation Parameters; and Potential Linkages Between the UN Convention to Combat Desertification (UNCCD), Convention of Bio-diversity (CBD), and the UN Framework Convention on Climate Change (UNFCCC) and Identification of Issues for the Development of Necessary Regulatory Measures for UNCCD.

Nepal losses over 240 million cubic meters of top fertile soil every year (Ghimire and Uprety ed, 1998). Siltation problem has been seen in the plains due to loss of soil in the mountains (ibid). Riverbeds in the plains are estimated to be raised by 10 to 30 centimetres every year. This problem causes shifting of the river courses and destroys agricultural land. For example Koshi River has shifted its course 110 kilometres from east to west in 232 years (1731 to 1963) and also destroyed 1300 square kilometre area of fertile land (ibid). These expanding riverbeds, and overlay of sand and silt on the productive land of the Terai in south plain area is a growing concern of Terai people. About 10,000 hectares of Mustang/Dolpa area in the north are reported to be in desert-like condition, mainly due to low rainfall (Kandel, 2001, Paper Presented in National Workshop, December 11-12, 2001, Kathmandu).

Capacity-Building, Education, Training and Awareness-Raising: Nepal needs capacity-building for the technical and professional staff and, at the local level, awareness-building and transfer of technology. The Thematic studies mentioned above in the Status heading are primarily focusing on the national capacity building and creating awareness. Ministry of Population and Environment organized a national seminar on Desertification and Land Improvement in November 1997. Recently in December 11-12, 2001 MOPE in collaboration with UNCCD and GM of CCD organized National Workshop on Land Degradation, Drought and Sustainable Land Management.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through Radio/T.V., posters, pamphlets, official reports, etc.

Research and Technologies: IUCN, ICIMOD, WWF have carried out several action researches. ICIMOD has done several activities through mountain farming.

Financing: Finance for activities includes national funds and external assistance when available.

Cooperation: Nepal signed the International Convention to Combat Desertification in Countries Experiencing Drought and/or Desertification Particularly in Africa in 1994, and ratified it in 1996. Nepal took an active part in the UN Conference on Desertification (1977), and in the formulation of the UN Plan of Action to Combat Desertification. Nepal is also a party to UN Framework Convention on Climate Change, and Convention on Biological Diversity. These three conventions are intimately related with one another. Nepal being a mountainous country, combating desertification is a matter of great concern and have to coordinate in bringing all the UN agencies and other donor agencies together in order to initiate coordinated efforts to implement the issues identified in the thematic reports mentioned earlier.

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CHAPTER 13: MANAGING FRAGILE ECOSYSTEMS: SUSTAINABLE MOUNTAIN DEVELOPMENT

Decision-Making: The UN Conference on Environment and Development in 1992 acknowledged the fact that the fate of the mountains may affect more than half of the world's population. The role of the mountains as water towers, as habitat for rich bio-diversity, and as natural regulators of the stability and productivity of downstream resources, mountain development has emerged as a priority global agenda. In Nepal's context, mountain development should not be seen in terms of specific policies and programmes designed for development of mountain areas, but rather in terms of the sensitivity of development policies and programmes in general to conditions obtained in the mountains. The conditions obtained in mountain regions pose typical constraints to development due to inaccessibility or fragility of resources, but at the same time provide multiple development opportunities that may not be possible elsewhere. Sustainable mountain development should mean conceiving, designing and implementing programmes that relax these constraints and create conditions for people in these regions to take comparative advantage of available opportunities. Further, sustainability has to be seen not only in terms of resources and their use but also in terms of their implications for the economic, social, cultural and political processes.

Therefore, the development policies of Nepal try to be responsive to the mountain conditions. These may be: *access improvement* (emphasis on environment friendly transport infrastructure; diversified mode of transport based on specific environmental and economic situation; linking accessibility to economic opportunities, enhanced highland-lowland linkages and growth of market towns; local income/employment generation; technology adapted to local conditions), *resource regeneration* (emphasis on environmental conservation and recycling of resources; focus on resource upgrading and reinvestment; emphasis on use of low cost inputs; identification of vulnerable areas, resources and people, and development of special programmes for such areas), *use of diverse resources* (identification and development programming for spatially and temporally diverse but interlinked production systems; integrated development of watersheds; understanding of indigenous systems of human adaptation to conditions of diverse, small scale resources and their use in policy and programme development; build up of multidimensional institutions, technology options), *harnessing comparative advantage* (identification of unique products/activities with significant comparative advantage and their use as basis for development; emphasis on regulating over-extraction of resources and establishment of environmental safeguards; local benefits from the development of niche opportunities), *empowering local communities* (decentralization in decision making and devolution of authority; proportionate share in the benefits of development and mandatory resource reinvestment; local human resource development to reduce external dependence on know-how or use and maintenance of technology; policy and programme development with local participation; focus on de-marginalizing vulnerable areas, peoples and cultures; different norms for investment to take care of high overhead costs; build up of participatory local institutions for promoting local, economic, environmental, social and cultural development).

Programmes and Projects: Programmes like Remote Area Development and Development of Backward and Special Regions are intended to de-marginalize particular areas, peoples and cultures and bring them into the mainstream of national development. In the ninth plan, 632 VDCs in 25 districts were identified as special regions that were particularly remote and economically backward due to absence of infrastructure. Appropriate programmes relating to mountaineering are also being undergone under the Development of Mountain Tourism Programme. In addition to these, there are various programmes currently being implemented in order to implement the policy response mentioned above and are mentioned in various chapters.

Status: The Land Resources Mapping Project (1986) divides Nepal into five physiographic zones: Terai (less than 200m), Siwalik including the Inner Terai (300 to 1500 m), Middle Mountains (700m in low valleys to 2500m in the highest peaks), High Mountains (2000m in river valleys to above 4000m) and High Himal (3000m and beyond). Terai accounts for 14.4 percent and Siwalik including Inner Terai 12.7 percent of the total land area of Nepal. Middle Mountains (29.5 percent), High Mountains (19.7) and High Himal (23.7), which together might be considered the mountains region in Nepal, comprise 72.9 percent or nearly three-fourths of the country's total area. From this perspective development in Nepal should largely mean mountain development.

In the last five decades or so, there have been significant changes in the demographic scenario of Nepal. In 1952/54, 18 districts of the Terai proper had 29.1 percent of the total population of the country. The six districts of the Inner Terai had 6.0 percent of the population and the rest of the hill and mountain districts had 64.9 percent of the population. The preliminary results of the 2001 census show that the 18 Terai districts have 44.4 percent of the population. Inner Terai districts harbour 9.4 percent and the hill and mountain districts account for 46.2 percent of the total population. Population in the Terai has grown by 329 percent, in the Inner Terai by 341 percent and in the hill mountains by 100 percent in almost half a century since 1952/54. While this demographic process is indicative of the mobility of Nepal's population, it also is a telling commentary on the state of mountain development in Nepal. The Interim Poverty Reduction Strategy Paper of the NPC reveals that of the three broad ecological regions (Himal, Hills, and Terai) the incidence of poverty (head count index) is highest in the Himal (56 percent).

Mountain environments manifest a number of objective conditions (Jodha 1991). Access is a major problem. Building road infrastructure is not only expensive but also has environmental impact that needs to be mitigated. Transport cost is high and development inputs tend to be costly. Environmental carrying capacity is limited, as mountain regions tend to be scaling sensitive. With repeated, high-intensity use of limited resources the chances of irreversible damage to the environment remain high. This calls for continuous effort at resource regeneration, recycling and reinvestment. Mountain communities have traditionally devised ingenious methods of handling natural resources. Terracing for the conservation of soil in condition of slope is an example. A diversity of micro-climatic conditions, resources and adaptation of slope is an example. A diversity of micro-climatic conditions, resources and adaptation patterns are obtained in mountain areas resulting from differences in altitude, geology or aspect. This diversity calls for inter-linked, location and area-specific activities and may put a limit to scale-associated benefits. This means that development interventions need also to be diversified and decentralized. Mountains provide opportunities for comparative advantages in particular products or activities. Hydropower, tourism, medicinal products, specialized indigenous crafts etc are some of the comparative advantages of the hill-mountain region. Mountain regions in general are also economically and politically marginal entities, often cut-off from, or unheard by the 'mainstream', often subsistence oriented and lacking the economic and political resources or harnessing niche opportunities. Even when niche opportunities and harnessed the mountain people remain at the lower receiving end as the terms of trade tend to be unfavourable for mountain areas.

Nepal is a Himalayan terrain with hills and mountains covering three quarters of the country's total land area. Because of the pronounced steepness and fragility of the land, there are landslide and erosion problems, which limit its productivity. Migration from the hills and mountains to the Terai is likely to continue as new infrastructure increasingly opens up in the south, and as the disparity between incomes in upland and lowland regions continues to grow. The hills and mountains need to be developed in an ecologically sustainable way with the development of watersheds and by providing hydropower to industrial establishments. Growing urbanization, markets and employment accelerate the economy in the hinterlands. This is still a matter of operational research and cautious practices. The ecologically and economically strained hills and mountains have to develop their unique but intrinsic potential to support the population growth. More research is needed in order to improve the productivity in terms of crop yield in the hills to serve the needs of the people living in the inner remote terrain.

Capacity-Building, Education, Training and Awareness-Raising: Human resource development and skill training in mountain areas remain largely inadequate and external dependence continues particularly on matters of know-how, use, and maintenance of technology and skills necessary to take advantage of new opportunities. Various programmes launched by King Mahendra Trust for Nature Conservation is managing the largest protected area of country, the Annapurna Conservation Area with maximum emphasis on education, training and public participation. Conservation Area Management Committees are formed and various programmes are launched to make these committees effective in managing various development components such as natural resources conservation, alternative energy development, agriculture and livestock development, eco-tourism management, heritage conservation etc. All other programmes mentioned in the various chapters on energy, bio-diversity, deforestation, and protection of atmosphere and like also including various programmes on capacity building.

Information: In order to keep population and concerned parties informed about the issues and activities, the government and NGOs/ INGOs have adopted several means of information dissemination such as advertising through Radio/T.V., posters, pamphlets, official reports, etc.

Research and Technologies: ICIMOD, Resource Himalaya, WWF, KMTNC and Eco-Himal are carrying out various research works in managing the fragile mountain ecosystem.

Financing: HMG allocates limited financial resources from budgetary process. Donor supports are also mobilized when available.

Cooperation: The government is cooperating with ICIMOD, WWF, UNDP, IUCN, KMNTNC and other donor agencies in order to bring financial and technological resources.

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CHAPTER 14: PROMOTING SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT

Decision-Making: The Ministry of Agriculture and Cooperatives (MOAC), in collaboration with other line agencies such as the Ministry of Local Development (MOLD), the Ministry of Water Resources (MOWR), and the Ministry of Forest and Soil Conservation (MOFSC), is responsible for sustainable agriculture and rural development. The National Planning Commission (NPC) is the apex body in formulating and monitoring the national plans in a sustainable manner with the help of line ministries. Bottom up approach has been adopted in the programme formulation. HMG/N has adopted the 20-year Agriculture Perspective Plan (APP) in 1995 for broad based economic development and poverty alleviation. It also aims to convert subsistence farming into diversified commercial ventures. The ninth plan (1997-2002) has envisaged the agriculture sector as a lead economic sector in line with the APP. The objectives of the sustainable agricultural and rural development are to enhance food security; enhance the productivity of the agricultural and rural enterprises by extending irrigation and inputs use; increase rural employment through the development of agro-based rural enterprises; diversify agricultural and rural enterprise and increase household income; and promote environment friendly agriculture such as Permaculture, organic farming and the use of integrated waste management practices.

Programmes and Projects: The APP has fixed certain priorities with the vision to contribute to poverty alleviation by utilizing available resources of the country effectively and by expediting sustainable development of agriculture. The main programmes in the category of prioritised production and service programmes include: Crop Intensification and Productivity Enhancement Programme; Production and Development of High Value Agriculture Commodities; Livestock and Poultry Production; and Agro-business Promotion Programme. The programmes in the category of priority-production input mobilization include: Expansion of Irrigation Facilities and its Utilization; Fertilizer Supply; Agriculture Credit; Agriculture Research; Agriculture Extension; and Development of Agriculture Roads and Electrification. In addition to these programmes various sectoral programmes are launched, namely: Seed Multiplication; plant protection; Animal diseases Control and Veterinary Programme are also aimed at sustainable agriculture and rural development. Nepal has initiated programmes to integrate a developmental dimension into land productivity enhancement within the Rural Development Programme. It has opened up off-farm economic opportunities for industrial development based on the resources available in the mountain terrain. Nepal is among the few countries in the world where farmers use indigenous botanical pesticides with considerable success in crop protection. Exploiting these skills, His Majesty's Government of Nepal (HMG/N) has launched an Integrated Pest Management (IPM) Programme in the Kingdom, and IPM has now been one of the important activities in agricultural extension. To deal with the negative environmental impacts of the use of chemical fertilizer, the ninth plan has committed to launch programmes on the balanced use of fertilizers.

Status: About 86 % (2001) of Nepalese people live in the rural areas. Agriculture contributes around 38% of the GDP and is the major base for Nepal's economic growth. The percentage of people dependant on agriculture has declined gradually from 91% in 1981 to 81% in 1991. The land use statistics shows about 18% (2.6 Million ha) of land has been used for agricultural purposes (1991). Land under National Parks and Reserves is around 18% of the total land (147181 Sq. Km) of the country and around 40% of land is under forest of which 10 % is under low crown cover which is termed as bushy areas. Up to 1999/2000, the total irrigated area was 1.104 million-hectare (according to Energy Master Plan) of which around 40 % is under year around facility. The land distribution is also very uneven. Around two third of the land is owned by one third of the holders. The per capita agricultural land declined from 0.16

ha in 1981 to 0.13 ha in 1991. The person land ratio on cultivated land has increased considerably from 4.7 in 1981 to 7.7 per ha in 1991 (CBS 1999). The share of development budget expenditure in this sector is around 18%. Agricultural growth averages 3% per annum (1998-2000), just above the population growth rate of 2.27%. Nepal was self-sufficient in food-grains until the 1980s but now the country has to import food grains when there is monsoon failure. National average consumption of chemical fertilizer is low around 30 kg/ ha. Although average use is very low, its inappropriate use has increased soil acidity in a number of places (SOE, 2001, MOPE).

Capacity-Building, Education, Training and Awareness-Raising: Agriculture Training Centre and the Cooperatives Training Centre are launching various training programmes in accordance with the APP priority. Rural Development Training Institutes are providing training for local leaders and staff under MOLD, Participatory District Development Programme (PDDP), Local Governance Programme (LGP) and so many other projects are targeted for capacity build up for the District Development Committees (DDCs). The Agriculture Communication Division of MOAC develops various awareness materials including Video films, booklets, brochures, pamphlets, folders and posters and these are distributed by District Livestock Offices and District Agriculture Offices for farmers and other stakeholders. Besides, there are daily Radio and Television Programme on agricultural activities. Institute for Agriculture and Animal Science and Institute of Forestry are providing academic courses for producing agriculture and forestry manpower in the country under Tribhuvan University.

Information: In order to keep concerned stakeholders informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through Radio/T.V., posters, pamphlets, official reports, etc.

Research and Technologies: Nepal Agriculture Research Council and Concerned Regional Research Directorates are undertaking various research works and technological improvements. However investment in agriculture is less than 0.5 % of AGDP. HMG/N has established various Regional Laboratories (plant protection, Seed testing, Animal disease diagnostic, food quality and fertilizer quality, etc.) in five different development regions.

Financing: HMG allocates limited financial resources from its annual budgetary sources. Donor supports are utilized when available. In addition credit facilities are provided through banking institutions, NGOs and cooperatives.

Cooperation: There are cooperative programmes in Agriculture research with International Rice Research Institute (IRRI), CYMMIT, etc. There are programmes for agriculture development with World Bank, Asian Development Bank, DFID, EEC, SATA, GTZ, FAO and with many donor agencies. Among Nepal's cooperative efforts are: Nepal is trying to become a member of the International Plant Protection Convention (IPPC), the Asian Plant Protection Convention (APPC) and similar international/regional agencies. Nepal is going to become a member of the WTO for which the MOAC has constituted a core group for agriculture sector issues. Efforts are made to follow the London Guidelines on Safe use of Pesticides and office of the Registrar for regulation has been assigned.

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CHAPTER 15: CONSERVATION OF BIOLOGICAL DIVERSITY

Decision-Making: Ministry of Forest and Soil Conservation is the central authority involved in the decision making process in the field of maintaining biological diversity in Nepal. Ministry of Agriculture and Cooperatives is trying to conserve Agro-biodiversity. Ministry of Population and Environment is responsible for coordinating the activities on biodiversity from the apical perspective. In addition to this Ministry of Agriculture is responsible for protecting agricultural biodiversity. Department for National Parks and Wildlife Conservation (DNPWC) under the Ministry of Forestry and Soil Conservation is primarily responsible for protecting biological diversity. Many NGOs, and INGOs (like WWF and IUCN) are also working in this field. The ninth five-year plan (1997-2002) states that the scope of protecting bio-diversity will be made wider and local bodies, communities, non-governmental organizations and private sector will be given higher priority in this field. This plan also recognizes the need of amending prevailing legislations as required for the protection of bio-diversity. The Forest Policy 1991 has included “to conserve the ecosystem and genetic resources” as one of the long-term objectives. Quite a number of legislative tools have already been enacted to protect bio-diversity. Among them Aquatic Animals Protection Act 1961, Forest Act 1993 and Forest Rules 1995, National Parks and Wildlife Conservation Act, 1973 and Rules 1974; Conservation Area Management Rules 1996; Buffer Zone Management Rules 1996; Government Managed Conservation Area Rules 2000; King Mahendra Trust for Nature Conservation Act 1982 and its Rules 1984 are some of the prominent legislative tools. Nepal has ratified Convention on Biological Diversity 1992 in 21 February 1994. Prior to this in September 1975 Nepal ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973. Also Nepal ratified Convention on Wetlands of International Importance Especially as Waterfowl Habitat 1971 in April 1988. Nepal is actively participating and contributing in all these conventions and agreements. Three wetland sites have been proposed as Ramsar sites to conserve the biodiversity in wetlands. The areas of Manaslu, Kanchanjanga, and Ghatal are planned to become protected areas. Nepal Biodiversity Strategy is being finalised soon. Likewise, Legislation on Strategy Access to genetic resources is in the process of discussion for government approval.

Programmes and Projects: Among the various programmes and projects in the field of biological diversity the major ongoing projects include: Forest Enterprise Programme (USAID); Parks and People Project (UNDP); Makalu Barun National Parks and Wildlife Preservation Project(TMI); National Bio-diversity Working Plan Programme (GEF/UNDP); Birdiya Integrated Conservation Project (WWF); Buffer Zone Development Project Birdiya (CIS/Nepal); Annapurna Conservation Area Project for Nature Conservation (King Mahendra Trust).

Status: Forest depletion has direct impact on wild species of flora and fauna. Habitat destruction or alteration, overgrazing and fire, and human activities such as commercial trade, illegal hunting and poaching, pollution and socio-economic factors have increased pressure on bio-diversity, both flora and fauna. These pressures encouraged HMG to protect 18 species of wild plants, 26, 9 and 3 species of mammals, birds and reptiles respectively. Although Nepal has not defined endangered, threatened or vulnerable biological species, there are fifty-three species of flora and fauna included in the CITES appendix 31 and 45 species, and I are included in appendix II and III respectively (MFSC, 2000). Similarly about 120 species of flora and fauna, which are found in Nepal, are mentioned in the IUCN red list. Although status of plants in terms of population has not been known, there is an increasing trend in the population of rhinoceros, tiger and other wild mammals. For examples, rhino population was estimated to be about 800 in 1950, which decline 108 numbers in 1968. After stringent protection measures, rhino population has increased from 108 in 1968 to 310 in 1978, 358 in 1988, to 466 in 1994. The rhino census in 2000 has confirmed a population of 612 (DNPWC, 2001). The tiger census (1995-96) has estimated the population of tigers to be about 49, 32 and 16 in Royal Chitwan National Park (RCNP), Royal Bardiya National Park (RBNP), and Royal Shuklaphanta Wildlife Reserves (RSWR) respectively. Similarly population of Sarus crane (*Grus antigone*) is estimated at 200 pairs in the country. Similar increase in population may be for musk deer, snow leopard and other wild animals due to increase in protected areas and implementation of management prescriptions.

Capacity-Building, Education, Training and Awareness-Raising: DNPWC organized a training workshop on CITES in Kathmandu in May 1995, in order to coordinate the actions of various organizations involved in the implementation of the Convention. The DNPWC needs to expand its staffing and training activities for effective

conservation and management. Training of professional, technical as well as administrative staff is necessary in order to strengthen DNPWC's capacity.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through Radio/T.V., posters, pamphlets, official reports, etc.

Research and Technologies: Nepal Agriculture Research Council, Department of Forest Research and Survey and Department of Plant Resources, Department of National Park and Wildlife are involved in collection, conservation analysis and technology promotion activities.

Financing: It is estimated that the financing needed for this area is US\$ 67 million. The HMG allocates limited financial resources from budgetary process. Donor supports are also mobilized when available.

Cooperation: Nepal signed the Convention on Biological Diversity in 1992, and ratified it in 1993. The Convention on International Trade in Endangered Wild Fauna and Flora was signed by Nepal in 1975, and the latest report was submitted in 1995. Nepal cooperates with the World Wildlife Fund, International Union for Conservation of Nature and Natural Resources (IUCN), the Mountain Institute USA, CARE International, ICIMOD, DFID

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CHAPTER 16 AND 34: TRANSFER OF ENVIRONMENTALLY SOUND MANAGEMENT OF BIOTECHNOLOGY AND TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGY, COOPERATION AND CAPACITY-BUILDING

Decision-Making:

Technology: National Planning Commission, Ministry of Industry, Commerce and Supplies, Ministry of Population and Environment, Ministry of Finance, Ministry of Forest and Soil Conservation, Ministry of Agriculture and Cooperatives, Ministry of Science and Technology and other line ministries are all involved in the central level decision making process in the field of transfer of environmentally sound technology and establishing regional and international cooperation in this field. In order to facilitate technology transfer a separate act on Foreign Investment and Technology Transfer is in place since early 90s. HMG/N has published a national Science and Technology Policy in 1998. The Environment Protection Act 1996 has special provision of promoting environment friendly technologies with additional incentives. Quite a number of fiscal incentives and measures are introduced in the fiscal act, which supports the inflow of environmentally sound technologies. No customs and taxes for pollution control technologies. In order to discourage the inflow of obsolete technologies, the import of second hand machineries need prior approval of Ministry of Population and Environment. Renewable energy technologies enjoy fiscal incentives in terms of minimum customs and vat exemption. The technology and know-how transfer is among the prioritised area for foreign cooperation. Government has initiated the works of developing technology standards with the introduction of mass emission standards for vehicles. Government private sector partnership is being established in promoting waste minimization techniques and processes.

Biotechnology: The Ministry of Science and Technology was established in 1996 with the aim of conducting various programmes in the field of science and technology in an organized way and linking them with the national development process.

Programmes and Projects:

Technology: Various projects already mentioned in different chapters are focused on transfer of environment friendly technology and know-how. Government has established the cleaner production fund in order to facilitate industries to replace the less efficient technology with environment friendly technologies. The establishment of information centre in MOPE is ongoing with one of the objective of providing information on environmental friendly technologies. Various programmes and projects mentioned under different chapters also fall within this category.

Biotechnology: Tissue Culture, Green manuring, composting and other organic manuring techniques are tested, developed and are initiated for extensive use. Many others need to be explored and promote for use.

Status:

Technology: No information available.

Biotechnology: RONAST, NARC, Department of Botany are the institutions involved in biotechnology in Nepal.

Capacity-Building, Education, Training and Awareness-Raising:

Technology: With regard to the promotion of Environmentally Sound Technology, cooperation and capacity-building, the Ministry is looking forward to setting up information linkages and networks within a reasonable time in pursuance of national activities as well as regional inputs.

Biotechnology: No information available.

Information:

Technology: See under **Programmes and Projects**.

Biotechnology: No information available.

Research and Technologies:

Technology: No information available.

Biotechnology: Biotechnology studies and research have been a priority concern and therefore technical support needs to be extended to agro-industries. Research will concentrate on the main problem areas, and special attention will be given to adaptive research for the improvement of cereal crops, horticulture, livestock as well as rural industries.

Financing:

Technology: This is cross cutting issue. Different sectoral projects have got resources from HMG's limited budgetary sources. Donor supports are also mobilized when available

Biotechnology: No information available.

Cooperation:

Technology: No information available.

Biotechnology: Appropriate technologies from various developed and developing countries will be needed. Therefore, efforts will be made to have access to such technologies through governmental, non-governmental and private sectors. Regional and international cooperation is in the process of being decided.

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CHAPTER 17: PROTECTION OF THE OCEANS, ALL KINDS OF SEAS, INCLUDING ENCLOSED AND SEMI-ENCLOSED SEAS, AND COASTAL AREAS AND THE PROTECTION, RATIONAL USE AND DEVELOPMENT OF THEIR LIVING RESOURCES

Decision-Making: No information available.

Programmes and Projects: No information available.

Status: No information available.

Capacity-Building, Education, Training and Awareness-Raising: No information available.

Information: No information available.

Research and Technologies: No information available.

Financing: No information available.

Cooperation: Although a land-locked country, Nepal has signed (but not yet ratified) the UN Convention on the Law of the Sea

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CHAPTER 18: PROTECTION OF THE QUALITY AND SUPPLY OF FRESHWATER RESOURCES: APPLICATION OF INTEGRATED APPROACHES TO THE DEVELOPMENT, MANAGEMENT AND USE OF WATER RESOURCES

Decision-Making: Nepal's goal for this sector is poverty alleviation through the sustainable development of water resources. Responsible for this are: the Ministry of Water Resources, the Department of Water Supply and Sewerage, Ministry of Physical Planning and Works, Nepal Water Supply Corporation, Development Boards, District and Village Development Committees, User's Committees, NGOs and INGOs, which follow the government decision making procedures. Spring Protection Policy under water supply projects and watershed management programmes are adopted.

Programmes and Projects: Department of Water Supply and Sewerage (DWSS) established in 1972 is the lead agency involved in water supply and sanitation in the country. It alone spends around 60 % of the total HMG budget allocated in constructing new drinking water and sanitation projects. It has regional offices in all five-development regions and district offices in all 75 districts. The policy of the DWSS is to hand over the completed projects to the User Groups. Nepal Water Supply and Sewerage Corporation (NWSC) is responsible to supply and sanitation programmes in the 28 larger municipalities of Nepal. Melamchi Water Supply Project is the biggest and technologically complex water supply project planned in the country. It aims to supply water to the people of Kathmandu valley using a 26-Km long tunnel from the source till 2030. Rural Water Supply and Sanitation Fund Bard (RWSSFB) is the most recent institution in the rural water supply and sanitation sector. Several bilateral donors and NGOs are also implementing water supply and sanitation projects in the various geographical areas. FINNIDA has been implementing its Water Supply and Sanitation Projects in five districts of the country. Similarly, Care Nepal, HELVETAS, SNV, PLAN International, Nepal Red Cross Society, United Mission to Nepal (UMN), NEWAH, KADOORI , British Gorkha Welfare Trust (CEMAT, 2001) and Nepal Water for Health (NEWAH) have been working in the field of drinking water and sanitation.

Status: It is estimated that Nepal has a theoretical hydropower potential of 83,00 MW of which 42,000 MW can be generated according to the economic feasibility studies. The installed hydropower generation capacity in the country is around 384 MW (Nepal Electricity Authority, A year in Review: FY –2000/ 01). This is less than 0.5 % of the total theoretical potential. Fresh water availability is estimated at Indo-Nepal border. Of 235 billion m³ , about 225 billion m³ is estimated as surface water run-off and 11 billion m³ as ground water (Water Resource Formulation Strategy Report). Total annual withdrawal is about 13.88 billion m³ out of which Domestic – 0.8 billion m³ / year, Irrigation – 13.0 billion m³ / year and Industry – 0.08 billion m³ / year (Water and Energy Commission Secretariat Estimate, 2000).

Regarding the drinking water, the national coverage at the end of the fiscal year 1998/99 was as follows:

(i) Urban Areas: Population: 3,292,000; Coverage: 2,131,000; Percent Coverage: 66.2%; (ii) Rural Areas: Population: 19,417,000; Coverage: 12,839,000; Percent Coverage: 66.1%; (iii) Total: Population: 22,709,000; Coverage: 14,970,000; Percent Coverage: 65.9%

Capacity-Building, Education, Training and Awareness-Raising: In Nepal, few regular training programmes available but are insufficient to fully cover the whole country. The government of Nepal has been trying to clean its role in direct service delivery. She is rather trying to improve capacity for policy making and other co-ordination, monitoring and evaluation, research and development and human resources development.

Information: In order to keep population and concerned parties informed about the issues and activities government has adopted several means of information dissemination such as advertising through Radio, T.V. posters, pamphlets and official reports.

Research and Technologies: Several researches have been carried out regarding the water quality. Royal Nepal Academy for Science and Technology (RONAST) has its lab for water quality test. Melamchi Water Supply Project has been using biggest and most complicated technology.

Financing: Due to domestic resource constrains, HMGN has not been able to allocate enough financial resources to achieve the targeted goals. The role of external assistance for providing drinking water and sanitation to people is overwhelming. In order to mobilize local resources, Rural Water Supply and Sanitation Fund Development Board (RWSAFDB) started from July 1996 and ran up to September 2001. Project under this recognizes the involvement of beneficiary community at all stages of project development, implementation and management. Here NGOs support organizations (Community Based Organization and Private Sector Firms) play important roles in helping beneficiary communities for project implementation. The programmes of the DWSS are financed by the Asian Development Bank through Fourth Water Supply and Sanitation Project and the Small Towns Water Supply Project. Melamchi Water Supply Project is running to around US\$ 400 Million. Other INGOs and NGOs have also allocated their budget in their project according to their strategies and capacity.

Cooperation: The Asian Development Bank has been involved in rural water and sanitation management in Nepal. The World Bank, FINNIDA and JICA have been involved in water and sanitation projects in rural as well as in urban areas. In addition, several INGOs are also engaged in Rural Water Supply and Sanitation (RWSS) activities through out Nepal and they have made a notable contribution.

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CHAPTER 19: ENVIRONMENTALLY SOUND MANAGEMENT OF TOXIC CHEMICALS, INCLUDING PREVENTION OF ILLEGAL INTERNATIONAL TRAFFIC IN TOXIC AND DANGEROUS PRODUCTS

Decision-Making: The Ministry of Health (MOH) controls the use of toxic chemicals. Chemical manufacturing industries are now required to obtain a permit. The proponents need to submit IEE or EIA reports depending upon their annual production capacity. Importation of toxic chemicals also requires a permit from the Ministry of Home Affairs. Among industrial users, to date, very little pollution abatement equipment has been used by industries in Nepal. Investors wishing to maximize profits have opted for the cheapest technology, which, unfortunately, often turns out to be the most polluting one as well. It is the people in general who have to face the consequences of such decisions. Therefore, industries need to adopt less polluting technologies, and for that, His Majesty's Government of Nepal (HMG/N) may need to offer a limited range of subsidies as well as provide the technologies directly. HMG adopted the Pesticides Act in 1991, and Pesticides Regulation in 1993. In accordance with these laws, Nepal has established the Nepal Pesticide Board, which will assist the Government in formulating pesticide policies and in adopting regulatory measures for the safe use of these. Among actions against toxic chemicals in the agriculture sector, Nepal has already prohibited some toxic chemicals like DINOSEB and Dinoseb salts, Fluoroacetamide, Chlordane, Chlordimeform, Cyhexatine, Edb (1,2-dibromoethane), Heptachlor, and mercury compounds. HCH (Mixed isomers), DDT, Dieldrin and Aldrin are under an interim import decision to limit their use. HMG/N has just started to implement the Pesticide Act (1991) and the Pesticide Regulation (1993). These laws will ban almost all the extremely hazardous pesticides banned from agricultural use for health and environmental reasons. As of 1997, HMG/N will strictly follow the report and recommendations of the pesticides disposal expert of ANZEDEC Limited (Asian Development Bank-funded consultants). They are in line with the prior informed consent procedure (PIC) procedures established on the basis of the London Guidelines as well as circulars of United Nations Environment Programme (UNEP) and International Register of Potentially Toxic Chemicals (IRPTC).

Programmes and Projects: Department of Agriculture has launched Plant Protection Programme. Ministry of Home operated control on trafficking of toxic with the help of sectoral laboratories.

Status: The cement, leather and tanning, paper and pulp, soap and chemicals, sugar and textile industries have all been identified as major sources of various kinds of pollution. There are about 10 major importers of pesticides in the country and nearly 100 domestic retail outlets. The predominant users of toxic chemicals, especially pesticides, are farmers who are also over 90% of the Nepalese population. Due to the lack of appropriate Integrated Pest Management technologies, farmers have been largely dependent on using these chemicals for pest control to obtain the expected yield. This has, in isolated cases, begun to cause health and environmental hazards.

Capacity-Building, Education, Training and Awareness-Raising: Agriculture Training Centres provide training on use and management of pesticides, herbicides to farmers. Besides institute of agriculture and animal science has course on effects of use, misuse and overuse of such chemicals. Ministry of Population and Environment monitors industrial toxic and launches awareness programmes.

Information: In order to keep people and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through Radio/T.V., official reports, etc.

Research and Technologies: Research has already been carried out in Nepal to identify pollution prone industries. Recently, Green Peace International has provided technical support to Nepal for safe packaging of agricultural toxic.

Financing: HMG allocates limited financial resources from its annual budgetary sources. Donor supports are also mobilised when available.

Cooperation: The very dilapidated old stocks of pesticides of about 50 tonnes were dumped from the beginning in secured stores in Amlekhganj. This is a severe problem at present, and Nepal seeks international assistance to find and support a solution. Lack of sound human resources, R&D and infrastructural support make this a difficult issue for Nepal. FAO's assistance is being sought in order to strengthen plant quarantine and to implement the IPM programme. As a member country, Nepal takes active part in the work of RENPAP (Regional Network on Pesticides for Asia and the Pacific) of the United Nations, and tries to establish links with other agencies such as FINNIDA (Finland), GTZ (Germany) and others.

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CHAPTER 20 TO 22: ENVIRONMENTALLY SOUND MANAGEMENT OF HAZARDOUS, SOLID AND RADIOACTIVE WASTES

Decision-Making:

Hazardous Wastes: The Ministry of Population and Environment (MOPE) is responsible for decision-making on hazardous wastes. The preliminary study has been undertaken by MOPE in 2001 to initiate works to fulfil the national obligation in accordance with the Basel Convention. The Environment Protection Act (EPA) 1996 and Environment Protection Regulation (EPR) 1997 make the generators of waste responsible for managing it in an environment friendly manner.

Solid Wastes: The Ministry of Local Development and Ministry of Population and Environment are the central level institutions responsible for taking decisions on policy and legislative frameworks. A National Council for Solid Waste Management is constituted under the chairmanship of minister for Local Development with representatives from all related ministries, municipalities, private sector and experts. In 1996 government prepared a Solid Waste Management National Policy with following objectives:

- To make solid waste management simple and effective;
- To minimize environmental pollution and adverse effects on public health;
- To mobilize solid waste as resource;
- To privatise solid waste management; and
- To obtain public support by increasing public awareness about waste management.

Solid Waste Management and Resource Mobilization Centre (SWMRMC) which was established in the beginning of 1980 with German support to manage the solid waste of Kathmandu Valley, has now being shifted to Ministry of Local Development as a unit to coordinate the solid waste management activities in all the urban centres. With the enactment of Local Self-Governance Act in 1999, municipalities are the responsible authorities for the management of solid waste generated in the municipalities. Environment Protection Act 1996 and Environment Protection Regulation 1997 has various legal provisions to control the pollution. Although national policies and legal tools adopt the polluters should pay principle, no mechanism has been developed so far.

Radioactive Wastes: The Ministry of Population and Environment is responsible for monitoring radioactive wastes.

Programmes and Projects:

Hazardous Wastes: EIA study is now being carried out for the establishment of incineration plant for the safe management of hospital waste generated in Kathmandu Valley. With DANIDA support cleaner production promotion is launched in industries through Environment Sector Support Programme. No information available. In 2001, Ministry of Population and Environment carried out the study to fulfil the national obligation of the Basel Convention, however, little works have been done for the implementation of the study.

Solid Wastes: Landfill site for Kathmandu Valley will be in operation in 2002 for the safe disposal of municipal solid waste. Local body private sector partnership is established in Biratnagar Sub-Metropolitan City to manage the solid waste. Private sector and NGOs are taking initiations for the recycling and composting of waste in various municipalities in small scale.

Radioactive Wastes: No information available.

Status:

Hazardous Wastes: Hazardous wastes in the country include obsolete pesticides, batteries, and other wastes from hospitals and industry. Hospitals generate about 500 tons of hazardous waste per year, with only a small proportion of it burned in ordinary incinerators (SOE, 2001). Approximately 2000 litres of PCB waste is in Nepal (NBSM, 2001). About 98.6 tons of obsolete pesticides are stored in different government ware. Approximately 1500 tons of lead scrapes was generated in 2000 from vehicles, solar powers, UPS, telecommunications etc. (MOPE/ESPS 2001).

Solid Wastes: Solid waste is essentially an urban phenomenon in Nepal. The per capita waste generation in urban Nepal varies from 0.25 to 0.5 kg per person per day depending upon the size of municipalities (SOE, 2001). Approximately 426,500 tons of solid waste was generated in 1999 from 58 municipalities, which accounts for 83%

of total solid waste generated in the country. City of Kathmandu alone generates slightly less than one-third of the total municipal solid waste. The composition of urban wastes has changed drastically from traditional organic materials to plastics, paper and glasses. Still two third of the municipal waste is organic. Municipalities are taking the responsibilities of managing the solid waste but lack of resources, institutional and infrastructure facilities, solid waste is the most visible environmental problem among many in urban areas. Because of the economic value, different types of thermoplastic are recycled and there are around 30 different small scale recycling industries based on waste plastics as raw materials. Waste paper is collected for recycling in paper mills. Iron scraps, aluminium cans/plates, copper scrapes are also recycled. Beverage glasses are mostly reused. Very little of the organic waste is composted and majority of the municipal waste is dumped into riversides and open spaces. Very few municipalities have landfill sites and a very small portion of waste is composted.

Radioactive Wastes: No information available

Capacity-Building, Education, Training and Awareness-Raising:

Hazardous Wastes: In November 1996, the Ministry of Population and Environment organized a one-day workshop on the Basel Convention and management of solid wastes in Kathmandu Valley. In the workshop, environmental experts and concerned officials from different governmental and non-governmental organizations discussed national policies and programmes for the control of transboundary movement of hazardous wastes and their disposal. In the conclusions of the workshop it was stressed that national policies need to be revised in accordance with the convention, and that the nature of toxic wastes should be identified so as to minimize their potential risks. Wastes from hospitals, laboratories, pathological clinics, and the leather industry cause massive harm to human health. In addition, the experts stressed that it is important to see the issue of hazardous waste in a global context as well as a domestic context and to integrate this issue into overall sustainable decision-making. The establishment of incineration plant for hospital wastes in Kathmandu Valley will enhance the national capacity. The ongoing CP promotion activities will create awareness among industrialists to reduce the hazardous chemicals at source.

Solid Wastes: Government has fixed minimum thickness standard for plastic bags to promote recycling. Ministry of Population and Environment has developed tele-spot and radio jingles to discourage plastic use. Various NGOs are involved in carrying out community based composting activities. Curriculum in schools include the importance of reuse and recycling as well as maintaining clean environment. Schools often organise street cleaning activities to educate people not to dispose waste in open spaces.

Radioactive Wastes: No information available.

Information:

Hazardous Wastes: No information available.

Solid Wastes: No information available.

Radioactive Wastes: No information available.

Research and Technologies:

Hazardous Wastes: No information available.

Solid Wastes: No information available.

Radioactive Wastes: Scientific research and consultation at regional and international levels is useful for Nepal when developing national policies and legislation in this respect.

Financing:

Hazardous Wastes: No information available.

Solid Wastes: Municipal bodies and HMG/Nepal finance solid waste activities.

Radioactive Wastes: No information available.

Cooperation:

Hazardous Wastes: Nepal ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal in 1996.

Solid Wastes: No information available.

Radioactive Wastes: No information available.

CHAPTER 24 TO 32: STRENGTHENING THE ROLE OF MAJOR GROUPS

Women: Decision-Making: Policies, guidelines, strategies and plans are being drawn up to achieve equality in all aspects of society, including issuing a strategy by year 2000 to eliminate obstacles to full participation of women in sustainable development. The Ministry of Women and Social Welfare was established in September 1995 in order to facilitate women to participate in the main stream of development, to increase their involvement in every sector of development and to improve their social, economic, academic, political and legal status. Productive employment opportunities have been provided for them by increasing their efficiency through appropriate knowledge and skills, and appropriate environment and infrastructures have been created so that women are provided with an opportunity to play a decisive role at all levels from the local to the national. The policy and implementation strategy of HMG/N on Environmental and Natural Resources Management states “priority will be given to participatory programmes, particularly involving women and under privileged people while preparing and implementing environmental programmes.” Status: Unfortunately, Nepalese women have been unable to contribute in an expected way to development activities due to illiteracy, poor health, poverty and a traditionally conservative attitude towards them. Rural women are the most affected from the indoor air pollution due to burning of fuel-wood in the rural parts of the country. Capacity-Building, Education, Training and Awareness-Raising: Considering the Beijing Declaration 1995, a Gender Equity and Women’s Empowerment National Work Plan 1997 was formulated encompassing 12 sectors in which education is the prominent one. In order to involve women in the conservation and protection of natural resources programmes have been formulated to enhance women’s capabilities including trainings and awareness-raising. Curricula and educational material are being revised to promote dissemination of gender-relevant knowledge. Cooperation: Nepal signed the Convention on the Elimination of All Forms of Discrimination Against Women on 5 February 1991 and ratified it on 22 April 1991. Several conventions including CEDAW and the conventions of ILO and UNESCO have also been adopted to end gender-biased discrimination and ensure women access to land and other resources, education and safe and equal employment.

Children and Youth: Decision-Making: In response to the World Summit for Children, which was ratified by the parliament, a 10 year National Programme for Action for Children and Development (NAP) was formulated in 1992. Child development policy has been adopted since the seventh plan (1987-1992). In order to implement these action programmes in a coordinated way, the Ministry of Youth, Sports and Culture was established in September 1995. Nepal was the first country to ratify the Convention on the Rights of the Child in 1990. Nepal signed the Declaration against Commercial Sexual Exploitation of Children in 1996 and on Child Labour in 1997. In order to implement these international commitments Government passed the act in 2000 to control child labour. Programmes and Projects: Plans and programmes have been formulated such as infrastructural development, setting up of National Youth Council, conducting youth awareness programmes in the districts, a Youth Day celebration, and youth exchange programmes. A large number of social organizations have conducted various youth activity programmes in order to promote and develop the dynamic vigour of today’s youth for productive purposes. National education system incorporates environmental education with the objectives of preparing environmentally aware citizen as a long-term objective of achieving the goal of sustainable development.

Indigenous People: Decision-Making: Various activities for the preservation and promotion of languages, literature, arts and cultures of different ethnic groups and communities will be taken up by the Archaeology Department, Royal Nepal Academy, Cultural Corporation and various non-governmental agencies.

Non-governmental Organizations: Decision-Making: With the formation of Social Service National Coordination Council in 1977 and the Ministry of Labour and Social Welfare in 1981, an institutional system of coordination and administration system regarding the development of non government sectors has been initiated. Nepal recognizes the importance of non-governmental organizations in the environmental conservation and protection. NGOs have significant roles and responsibilities both in the policymaking and implementation. Government gives highest priority for NGOs in the programmes specifically launching programmes with public participation and also programmes aimed to raise public awareness. Thousands of local self-help NGOs are involved in activities as diverse as the management of community forests or providing access to credit and agricultural labour exchange. They can mobilize local resources very effectively, since the beneficiaries themselves implement the projects. They

also have a large geographical sphere of operation, which can have a significant impact on the development of Nepal. **Status:** Following the restoration of democracy in 1990, reforms that have been made in the existing Act and policies for the development of non-governmental sector have contributed towards speeding up the institutional development of NGOs and INGOs. NGOs presently are found to base their concepts on self-reliance, empowerment and sustainability and are working in sectors like community development, savings and credit, agriculture extension, irrigation, primary health care, education and the environment. From 300 NGOs (registered in SWC) in 1990, the number is estimated to be well over 30,000 and than 200 INGOs, while the number of civil society may be manifold over that of NGOs. NGOs were recognized as a driving force behind development for the first time in the eighth plan (92-97). NGOs reach where GOs have failed to serve and nurture local potential. NGOs have significantly strengthened community based organizations and civil societies, which are proving to be effective mechanisms in carrying out the development activities with due consideration of environmental issues.

Local Authorities: Decision-Making: Local Authorities are very central in both the decision-making and implementation of environment related policies and legislations. Local Self Governance Act, 1999, has assigned local bodies with great responsibility for the environmental protection. These bodies are taking the primary responsibility of managing the solid waste and domestic sewers. Together with the responsibility, they have been entrusted with sufficient authorities. Land use planning including the industrial establishments, local bodies have the crucial decision making role in the process of environmental impact assessment. Environment Protection Act and Regulation also give maximum authority to local bodies prior to approving any development projects and industries in order to make them environment friendly. However, sufficient resources including the human resources are serious hurdles at the moment for their effective participation.

Workers and Trade Unions: Decision-Making: A National Labour Advisory Committee, under the chairmanship of the Honourable Minister of Labour, has been established. The Labour Act (1992) has a provision calling for a Labour Relation Committee, which aims at promoting bipartite relationships in maintaining and improving the working environment at the enterprise level. **Cooperation:** Nepal has ratified ILO Convention No. 114 on tripartite consultation. ILO and DANIDA are supporting the trade unions with programmes related to occupational health and safety in work places. These programmes are aimed to strengthen the capability of trade unions so that they can participate in both the policy making process for better implementation with partnership with the industry.

Business and Industry: Decision-Making: Federation of Nepalese Chambers of Commerce and Industries (FNCCI) is the apex body of business and industry community in Nepal and is also the member of International Chamber of Commerce. Various industry and business associations including their regional and district level organizations are member in this federation. FNCCI has significant role to play in any policy-making decisions related to business and industry. As such FNCCI has permanent membership in many councils, boards, committees. Since early 90s, FNCCI has established a separate division on environment. Business community has significantly contributed in every environment related policymaking or legal or standards formulation process. Business communities are the partners in various resource conservation and productivity enhancement programmes. **Programmes and Projects:** Environment Sector Support Programme (ESPS) with five different components is being launched since 1998 particularly focusing on so-called brown sector. The cleaner production in industries, introduction of EMS in industries, energy efficiency programmes, development of common effluent treatment facilities in industrial districts, occupational health and safety of work places, training on various fields of environmental management, and development of environmental standards and their compliance are the major areas of this project. Recently in 2001, a demonstration project on environmental administration at local level is launched in Biratnagar and Dharan industrial corridor, which also focuses on reducing pollution through promotion of cleaner production and development of common treatment facilities to comply with environmental standards. In order to promote the Nepalese products, institutional development and demonstration on environmental labelling is on-going. FNCCI, and FNCSI are the major partners in the implementation process. In addition to these various programmes on productivity improvement are carried out annually with support from Asian Productivity Organization of which National Productivity and Economic Development Centre is the national agency. **Status:** The programmes that are currently being implemented in government-private sector partnership are focusing on reducing pollution at source, maximizing the reuse and recycling potentials and then only going for control of pollution. These programmes are aimed to bring business and industry communities pro actively in the field of

environment management. Currently around 30 industries are participating in the introduction of ISO 14001 (Environmental Management System) and within this year some will get the certification. Similarly some carpet industries are likely to get eco-labels this year. Quality management system is also introduced in some industries. However, the compliance to environmental requirements as a whole is very poor and has just began. Business and industry community are also involved in various social works.

Scientific and Technological Community: Programmes and Projects: See under **Cooperation**. Research and Technologies: see chapter 35 and also this heading in various chapters Cooperation: In support of the programme on Science and Technology, His Majesty's Government of Nepal (HMG/N) has sought financial and technical assistance from Gesellschaft fur Technische Zusammen Arbeit (GTZ), Food and Agriculture Organization of the United Nations (FAO) and UN agencies to implement Integrated Pest Management and Pesticide Management Programmes. See under cooperation in different chapters.

Farmers: Decision-Making: His Majesty's Government of Nepal is working on policy measures to empower farmers for the development, transfer, and use of technology in sustainable agriculture and rural development. However, farmers are not organized and well informed to ensure environment friendly and sustainable practices in production and consumption. Group approach in technology transfer has been adopted to facilitate interaction and proper decision-making.

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CHAPTER 33: FINANCIAL RESOURCES AND MECHANISMS

This issue has been covered under the heading **Financing** in the various chapters of this Profile. However, you will find below some specific data about financing and sustainable development in Nepal.

Decision-Making: Nepal's goal is economic growth with stability, poverty alleviation and rural development. Both domestic and foreign resources are used for achieving high economic growth, poverty alleviation, employment, rural development and empowerment. Of the annual budgets of His Majesty's Government of Nepal (HMG/N), an average of 35% is from foreign funds, and 62% of this development funding is ODA funding. Population and environment are treated as a separate instrument sector. New economic instrument introduced in Nepal include: polluter pays principle; surcharge on cigarettes and beverages; and, local development fee. There is now a duty concession for environmentally friendly vehicles. Among environmentally unfriendly subsidies that have been eliminated was a previous import duty rebate provided to public vans and cars in Kathmandu, the capital of Nepal.

Programmes and Projects: Environment is a top priority. Agriculture, forestry, power infrastructure projects and the social sector give sustainability much importance in terms of institutionalisation, replicability and financial capacity. Project screening depends on Environmental Impact Assessment (EIA) and sustainability studies. A number of projects, especially in the field of rural and local development, have been started keeping in mind the concepts of empowerment, self-help and sustainable development.

Status: No information available.

Capacity-Building, Education, Training and Awareness-Raising: Staff College, Revenue Training Centre, Bank's Training Centre of Nepal Rastra Bank and Agriculture Training Centre of ADB.

Information: No information available.

Research and Technologies: No information available.

Cooperation: No information available.

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CHAPTER 35: SCIENCE FOR SUSTAINABLE DEVELOPMENT

Decision-Making: Ministry of Science and Technology, National Science and Technology Council, and Royal Nepal Academy of Science and Technology (RONAST) are the central level institutions responsible for bringing national policies and carry out national level research works. In addition to these institutions various sectoral departments and institutions carry out sectoral level research works. The Ninth Plan (1997-2002), the policy document of HMG/Nepal, recognizes the importance of science and technology for increasing productivity through the proper utilization of natural and human resources scarcely available in the country. Highest priority is given to launch programmes in the experiment and development of indigenous technology as well as selection of technologies from among available in the market that suits with the country's geographical, socio-economic and cultural context. The policy strategy focuses on: human resources development through reform in education and trainings; development of indigenous technology through the utilization of local skills and resources; development of adaptive technology; selection of appropriate technology; utilization of natural resources; and research and development, coordination and promotion. Priorities for Nepal in the area of science include: management and expansion of infrastructure necessary for the enhancement of the potential of scientific research in order to promote traditional research and to achieve economic benefits to meet the needs of today. Another area is the institutional development for the promotion of technology transfer and replication and screening of research findings before their publication, and dissemination of technology.

Programmes and Projects: RONAST is undertaking programmes on biotechnology research, botanical resources (FLORA), environment, research on radioactivity, solar photovoltaic water pumping, high altitude science and technology, promotion and dissemination of rural technology, electronic database and information centre. National Science and Technology Council has programmes on research and development plan, study on the investment of the nation in research and development, evaluation of waste recycling technologies, bio-technical policy, study on bio-fertilizer and pesticide uses, implementation of Tyson turbine. Research Centre for Applied Science and Technology, Tribhuvan University also has various programmes including wool dyeing from natural colour, use of solar energy and study of various edible things and low priced house building techniques, petrol and diesel substitute oil from the plants. Institute of Engineering has recently established Centre for Energy Studies and Centre for Environment Studies and doing research works in the field of energy and environment. Agriculture Research Council is involved in various research works in the field of agriculture. Other programmes and projects carried out by various sectoral departments and institutions are mentioned in other headings.

Status: Nepal has adopted its information technology policy recently. It is natural that a nation that is still predominantly rural in character has a need to develop its agricultural sector also in terms of science and technology. In fact, it has become necessary to develop science and technology in a manner, which facilitates the development of local skills and technology and allows the mobilization of available natural resources.

Capacity-Building, Education, Training and Awareness-Raising: No information available.

Information: No information available.

Research and Technologies: The Institute of Science and Technology will make necessary arrangements for the fulfilment of the needs of competent scientists and technical manpower by widening the sphere of research at the national level, and by improving the provisions needed or raising the level of competence of the people at the Central Department of the Institute and the Campuses under the Institute. Research on major productive issues confronted at the national level will be encouraged, including the establishment of graduate study programmes under the Institute of Science and Technology.

Financing: Presently, only one-tenth of one percent of national domestic product is used for research and development. This needs to be improved by allocating a minimum of one percent of national domestic product.

Cooperation: No information available.

CHAPTER 36: PROMOTING EDUCATION, PUBLIC AWARENESS AND TRAINING

Decision-Making: HMG/N has given highest priority to develop capability of manpower in the field of environment. This is one of the main objectives of the Environment and Natural Resource Management Policy of Nepal (Ninth Plan, 1997-2001). The long-term concept of Environment and Natural Resource Management states “Environment will be protected, promoted and managed by using voluntary or participatory techniques, with joint collaboration of government organizations, local bodies, NGOs, user groups and private sector and by creating awareness of people towards environment protection as their individual concern and common responsibility.” The earlier policy documents like National Conservation Strategy 1988, and Nepal Environment Policy and Action Plan 1993, also give priority for environmental education, training and public awareness in order to deal with the environmental concerns. The National Planning Commission, Ministry of Education, and all the line ministries are the responsible central level authorities responsible for launching environmental education, training and awareness programmes. In addition to these central level organizations, the Universities, Schools, Local Bodies, NGOs also have influence on the decision making process in this area. All these are aimed at reorienting education towards sustainable development with the objective of enabling individuals to appreciate more the environmental policies, legislations and standards and take participation in the management of environmental and natural resources.

Programmes and Projects: All the universities have programmes on bachelor and masters level degree courses in the various disciplines of environment and natural resources management. Incorporation of environmental education in school level education system is the ongoing programmes of the government. Public participation and education on environmental resources conservation and use are included in the Agriculture, Forestry, Water Resources, and Energy related sectoral programmes. In 1999, HMG with DANIDA support established the Institute of Environmental Management to provide trainings to business community and policy makers. Various governmental training institutes have programmes on training in environmental field.

Status: In Nepal, environmental education is integrated into social sciences and health and population education at primary, lower secondary and secondary levels. It is called Social and Environmental education (including health education) at grades 1-3; Environmental Science and Health Education at grades 4-5, Population and Environmental Education at lower secondary level (6-8), and Science and Environmental Education at High Schools (grades 9-10). Environmental education represents some 14% of the curricula except at the lower secondary level where the percentage is only seven. Kathmandu University has started higher education on environmental management. The number of students enrolled in the higher education in 1999/2000 is above 16000. Among them students enrolled in engineering, medicine, agriculture and animal science, forestry, and science and technology are 3150, 1453, 742, 396, and 11874 respectively. In addition to these significant numbers of people are getting educations in foreign countries. Universities and Colleges are also running short-term training programmes in collaboration with different stakeholders. Ministry of Population and Environment and all other line ministries have annual programmes on environmental trainings and awareness raising campaigns.

Information: The HMG of Nepal and Private Sectors have adopted different medium of information dissemination in order to aware the public and the concerned stakeholders.

Research and Technologies: Council for Technology, Education and Vocational Training (CTVET)

Financing: HMG allocates limited financial resources from budgetary process. Donor supports are also mobilized when available.

Cooperation: The government is cooperating with CTEVT, Universities, NGOs and INGOs .

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**CHAPTER 37: NATIONAL MECHANISMS AND INTERNATIONAL COOPERATION FOR
CAPACITY-BUILDING IN DEVELOPING COUNTRIES**

Country prospective is given in different chapters, however developing perspective is beyond our reach.

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CHAPTER 38: INTERNATIONAL INSTITUTIONAL ARRANGEMENTS

Country perspective is given in different chapters, however international institutional arrangements are beyond our reach.

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CHAPTER 39: INTERNATIONAL LEGAL INSTRUMENTS AND MECHANISMS

Country perspective is given in different chapters, however the international legal arrangements and mechanisms are beyond our reach.

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CHAPTER 40: INFORMATION FOR DECISION-MAKING

This issue has been covered either under Chapter 8 or under the headings **Decision-Making** and **Information** in the various chapters of this Profile.

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CHAPTER: INDUSTRY

Decision-Making: Industrial development in the country began during the Second World-War period. Though the then Rana regime gave some attention to creating an industrial base, it lacked continuity and proper strategic approach. The process was revitalized only after 1961. Since then industrial development is being accorded high priority. Yet due to policy instabilities industrial development did not take place in a sustainable and desired basis. As a result, this sector is still small, loosely organized and still unable to develop its competitive advantage. Lack of conducive industrial environment, therefore, had been a major bottleneck in the pursuit towards industrialization. However, the discriminatory incentive structure, quantitative restrictions either in specified form or in the form of licensing and other regulatory mechanisms created substantial distortions and the industrial development did not take place on desired basis. The 1991 Industrial Policy is a major departure from past policies. It embarked upon encouraging liberalization in the economy, mitigating distortions and creating a basis for sustainable industrial growth through allocate efficiency. The emphasis was placed on enhanced contribution of the industrial sector to the general economy by increasing efficiency and productivity. The new industry strategy emphasizes deregulation, and encourages competition and reliance on market forces in the allocation of resources. The policy aims at developing the industrial sector through the operation of market so that industries can be promoted where comparative advantage exists. The new policies represent a significant improvement over the past policies. It should also be borne in mind that the speed of Nepalese liberalization is also guided by the speed in the neighbouring countries and the geopolitical realities of the country. The industrial policy also takes into consideration the integration of environmental concerns for its sustainability. For an effective execution of the policies, issues like manpower development, building adequate power and transport facilities are given priority in the national development policies.

Various changes have been noticed in the industrial arena after the introduction of liberal economic policies. These policies have led to a changing pattern of industries, such as emergence of construction, finance airlines and community services at the forefront in place of traditional industries. In order to promote foreign direct investment, Nepal organized the Investment Forum in 1993. Though the new foreign investments may not be as high as the amount committed in the investment Forum held in 1993 in Nepal, yet the pace has increased substantially, indicating that the climate is more suitable now.

The Ninth Plan (1997-2002) has brought a new policy imperative by defining a long-term vision for 20 years. It mainly focuses on doubling the contribution of manufacturing sector to GDP to 20 percent. It basically aims at making the manufacturing sector more competitive and market oriented, increase the domestic inputs, transfer the existing skill and entrepreneurship to manufacturing establishment etc. To attain these it define the strategies as development of labor market, manpower development, protection and monopoly, encouraging foreign investment, privatization of public sector enterprises creating industrial infrastructure, promoting investment, control of pollution, promotion of cottage and small scale industries, development of mineral based industries, promoting productivity and technology transfer, increasing and maintaining quality. The plan has defined some thrust areas which include: Hydropower, Tourism based industries, Energy oriented industries, Computer Software, Local non-metallic mineral industries, Agro-based industries, Commercialization of forest, Leather based industries, Financial services, Sericulture/ floriculture.

Ministry of Industry, Commerce and Supplies is the government ministry whose primary objective is to promote sustainable industrial growth. In order to promote foreign direct investment, an Industrial Promotion Board is established under the chairman of minister with representation of all the concerned stakeholders. Recently in 2001, HMG constituted an Industrial Development Council under the chairmanship of prime minister.

Programmes and Projects: In order to promote industrial growth various programmes and projects are launched. They include: Industrial Plan Statistics and Monitoring Programme; Technology Transfer and Development Project; Technology Park Project; Cottage and Small Scale Industry Programme; Mines and Geological Programme; Petroleum Exploration Project; Micro Enterprise Development Programme; Industrial Perspective Plan Development Programme. Nepal Productivity and Economic Development Centre (NPEDC) is providing

support to industries in productivity enhancement with the support of Asian Productivity Organization. Industrial Enterprise Development Institute (IEDI) is established to promote small businesses.

Status: Nepal's manufacturing sector is still relatively small although its share in GDP, which staggered slightly above 4% during the 1970's, has increased to around 9 percent in the 1990's. In 2000-01, the manufacturing sector contributed 9.9% in the GDP of Nepal. The growth rate in the manufacturing sector was erratic and ranged in between a high of 9.7 % to low of 1.4% during 1991/92, 1996/97. During the early nineties, the growth rate of the manufacturing sector was relatively high and the scenario turned negative since the mid-nineties. However, the average growth rate of 5.5% is slightly higher than the overall national growth rate. In terms of the registration of industries, during the period 1992/93 to 2000 about 2000 manufacturing units were registered. It may be noted that industrial registration is at a declining trend indicating that the environment for industrial development may be deteriorating and the prospect does not appear to be good at present. During this period, the production index of the manufacturing industries went up from 100.58 in 1989-90 to 324.26 in 2000-01. In this period, the production of comparatively higher capital investment and indigenous raw material – based industries such as sugar, paper, beverages, jute goods grew by 2.7-17.5 percent annually. Similarly, the production of imported raw material based industries such as soap, vegetable ghee, iron and steel products, dry cell batteries also grew by 6.8-17.5 percent annually. However, during this period a number of industries recorded huge decline. The carpet industries decreased by 54.6 percent and almost 60 percent of wearing apparel industries have closed down their operation. Production of carpet, rugs, and cotton and woolen thread declined by 5 to 50 percent in the last five years. Among other sectors, severe decline was observed in the production of construction materials: such as bricks, tiles and cement. Declines are noted in major industry shows that everything is not well for the industrial sector. It is reported that many industries have become sick with the adoption of liberalization policies that encouraged both domestic and foreign competition in the market. It is also true that up to 1970's and early 80's a large number of industrial enterprises were established to take advantage of policies rather than in view of the real existence of opportunities and competitive advantage. It is also true, however, that the reduction of customs duties in consonance to adoption of economic reform measures has increased imports significantly and many domestic industries do not seem to be competitive enough to survive and grow in the market.

Capacity-Building, Education, Training and Awareness-Raising: Currently, Environment Sector Programme Support (ESPS) has been launched with the participation of three ministries – Ministry of Industry, Commerce and Supplies (MOICS), Ministry of Population and Environment (MOPE) and Ministry of Labour and Transport (MOLT). The stakeholders like FNCCI, FNCSI and Trade Union are also involved in decision making in the work planning of the programme. Cleaner production, energy efficiency and occupational health and safety and improvement have been targeted for industries to reduce the pollution load enhance productivity and good image of the industries. Institute of Environment and Management (IEM) is established to provide training to industrialists in the field of environmental management. The IEM is also launching demonstration programme on EMS in industries. Demonstration project on establishing common effluent treatment facilities at the industrial district is ongoing to reduce pollution and hence to reduce cost for unit industries. To enhance the central government's capacity to coordinate and manage environmental issues in particular within the industrial and urban sub sector, the ESPS under the institutional strengthening formulation, monitoring and enforcement of environmental laws, rules and regulations and standards for pollution and occupational health and safety. HMG has already gazetted environmental standards for five major polluting industrial sectors namely PULP and Paper, Tanning, Wool dyeing, Fomentation and Vegetable Oil and Glue. Baseline studies of four sectors have been done and one is in pipeline to know the actual environmental status of these industrial sectors. The ESPS programme is helping to develop the compliance plan to meet with the standards.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through Radio/T.V., posters, pamphlets, official reports, etc.

Research and Technologies: No information available.

Financing: Nepal Industrial Development Corporation is established to finance industries. Commercial Banks are the primary source of financing. Ministry of Industry, Commerce and Supplies has recently established a Cleaner Production Fund to support industries to launch cleaner production processes, techniques and technologies.

Cooperation: UNDP/UNIDO, DANIDA, FINIDA, GTZ, JICA, The World Bank, Asian Development Bank and other international donor agencies/countries are launching various programmes and projects for the sustainable industrial development in Nepal.

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CHAPTER: SUSTAINABLE TOURISM

Decision-Making: In 1995 a new Tourism Policy was adopted by the government with the objective of promoting Nepal as an attractive destination, improving the natural, cultural and human environment, diversifying tourism into rural areas to improve employment opportunities, and developing the linkages of this important sector with other sectors of the national economy. Major policy initiatives included the following:

- induce private sector participation in the development and diversification of tourism product;
- encourage people's participation in environmental conservation programmes;
- upgrade existing tourism infrastructure, and develop new destination in rural areas;
- promote quality tourism and improve regional balance in tourism development;
- promote linkages of tourism with other sectors specially agriculture and cottage industries;
- encourage local as well as foreign investment in the tourism sector; and
- marketing promotion.

Accordingly, trekking areas were classified into general trekking, guided trekking and controlled trekking areas, and institutional arrangement for a Tourism Development Board, with substantive private sector participation was proposed to replace tourism development work undertaken by the Department of Tourism.

Programmes and Projects: The Ninth Plan (1997-2002) recognized the challenges facing the tourism sector and called for a long term perspective in tourism development. A number of general policies touching upon tourism infrastructure development, expansion and diversification of tourist attractions, quality tourism, tourism marketing and promotion, environmental protection, and the mobilization of the private sector were proposed. The programmes make specific mention of the following:

- Creation of a Tourism Development Fund for new site development;
- Tourism infrastructure development in Pokhara, Lumbini and Gorkha, and airport improvements in Jumla, Mustang and Lukla;
- Promotion of model tourist villages in rural destinations;
- Environmental conservation and employment generation activities in Sagarmatha and Annapurna areas with people's participation;
- Tourism promotion activities under the auspices of Nepal Tourism Board; and
- Human resources development in the tourism sector through various programmes of the Hotel Management and Tourism Training Centre.

The Plan aimed at achieving the following:

- a tourist arrivals growth rate of 10 percent annually, bringing arrivals to 676,000 by 2002;
- increase in tourism earnings by 20 percent during the plan period;
- increase in tourism related employment from 257,000 to 371,000 during the plan period;
- increase in per tourist per day expenditure to \$ 60; and
- duration of stay to 13 days, during the plan period.

Status: A little over 6000 tourists came to Nepal in 1962. In 1999 nearly 492,000 tourist arrivals were recorded. Tourism earnings totalled 168.1 million US dollars and comprised 15.9 percent of total foreign exchange earnings. The contribution of tourism to GDP was 3.6 percent. Average income per tourist was \$479.1. Average income per visitor per day was \$39, and the length of stay per visitor was 12.3 days. Length of stay per visitor has not changed much over the years. Nature and culture are Nepal's major tourism attractions. In 1999 about 59 percent of tourists came for pleasure and sightseeing, and about 22 percent for trekking. A very small percent of this figure were involved in mountaineering. Seasonality in tourist arrivals is quite pronounced. About a third of the tourists come in the months of September- November and about 27 percent between February-April. About 30 percent of tourists come from India, and another 30 percent from Western Europe. Sixty percent are between the ages 16-45. Almost 85 percent come by air. Over 80 percent of tourists arriving in Nepal enter the country through Kathmandu. In 1999 a little over 105,000 non-Indian tourists visited Pokhara. Pokhara is also estimated to attract almost half this

number of Indian tourists. About 70,000 foreign tourists are estimated to visit Lumbini, the birthplace of Lord Buddha. In 1999 visitors to National Parks and Protected Areas numbered 120,436 of which about 65 percent visited the Royal Chitwan National Park.

About 108,000 tourists came for trekking in 1999. Trekking and mountaineering in Nepal is confined to three major areas, all of which are either National Parks or Conservation Areas. In 1999 about 62 percent of the total number of trekkers visited the Annapurna area. About 25 percent went to the Everest area and 8 percent to the Langtang area. Controlled trekking areas were visited by 2.5 percent of trekkers.

The above facts indicate that tourism in Nepal is characterized by:

- Low earning per visitor and small length of stay;
- High dependence on Western tourists;
- High seasonality;
- Concentration in a few areas; and
- Very little product and market diversification.

In terms of world tourism, tourist arrivals in Nepal account for only 0.09 percent of international tourist arrivals, and tourism earnings account for a mere 0.023 percent of international tourism receipts. This indicates the gap between the potential and the reality in the tourism sector.

Capacity-Building, Education, Training and Awareness-Raising: Ministry of Industry, Commerce and Supply is working towards institutional capability building to provide environment friendly certificates for tourism related organizations including Hotels, Travel Agencies, Trekking Agencies etc. Also this is aimed to create awareness for running tourism sector in an environment friendly manner.

Information: In order to keep population and concerned parties informed about the issues and activities, the government has adopted several means of information dissemination such as advertising through Radio/T.V., posters, pamphlets, official reports, etc.

Research and Technologies: No information available.

Financing: HMG allocates limited financial resources from budgetary process. Donor supports are also mobilized when available. In addition credit facilities are provided through banking institutions and NGOs.

Cooperation: Nepal government has cooperated with UNDP for sustainable tourism development. Tourism for Rural Poverty Alleviation Programme is recently working in close cooperation with Nepal Tourism Board.

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