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MYANMAR



COUNTRY PROFILE



UNITED NATIONS

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

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

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

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: 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: No information available.

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

Decision-Making: The Cabinet in consultation with the Ministry of Trade and Commerce and the Ministry of Planning and Economic Development.

Programmes and Projects: In accordance with the changing situation and following the introduction of market-oriented economy, the Ministry of Commerce and Trade has set the following trade policies and measures in place to:

1. Support internal and external trade activities for the economic development of the country;
2. Upgrade the commercial efficiency of the public and private trading houses;
3. Increase the foreign exchange earnings of the country by export promotion; and
4. Encourage the trading activities of Co-operative and private entrepreneurs.

The Myanmar Investment Commission (MIC) also issued a notification in June 1994 to protect the environment while promoting investment in the country. This notification requires investors to install wastewater treatment facilities to prevent environmental pollution.

Status: Implementing and achieving sustainable development objectives laid down by the Rio Agenda 21 and numerous international environmental conventions, regional environmental agreements and national sustainable development programmes, is a mammoth task that requires technical and financial resources. Developing countries have limited domestic resources and without external assistance it would not be possible to meet those objectives. In the past decade Myanmar received little or no assistance from multilateral institutions including the World Bank and Asian Development Bank and from the EU countries. In view of the ever-increasing demand and obligations from various environmental convention secretariats and other institutions, there is a need for more international cooperation and collaboration to enable Myanmar to undertake the obligations. Moreover, as trade is also an important factor for sustainable development, the developed countries should create a better trade climate conducive to promoting sustainable development.

Capacity-Building, Education, Training and Awareness-Raising: Trade promotion exhibitions, seminars and workshops are being organized by the Ministry of Trade and Commerce.

Information: The e-mail address of Ministry of Commerce is myan.com@mtpt400.stems.com.

Research and Technologies: Needs external assistance.

Financing: Needs external funding.

Cooperation: Bilateral trade partners are providing technical Assistance.

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CHAPTER 3: COMBATING POVERTY

Decision-Making: The ministries concerned on the basis of proposals made at local, districts, states and division levels draw up Plans.

Programmes and Projects: The comprehensive programme to combat poverty involved activities such as infrastructure building through the provision of power generation, hydro-electric power, communications links, roads and bridges, the introduction of sustainable agricultural practices; income generation schemes; provision of agricultural extension services, health services, the building of hospitals and dispensaries; and provision of education facilities through the building of schools. Moreover, in order to eliminate production of narcotic drug, and cultivation of opium, substitution of commercial food crops for opium poppy are being intensively introduced since the launching of the Poverty Alleviation Programme in the country in 1992. The Ministry of Progress of Border Areas and National Races and Development Affairs are the focal agency for poverty alleviation programmes.

Status: In Myanmar, the border areas mostly populated by ethnic national races are economically & socially the least developed areas in the country. It is in these areas that poverty is the greatest problem. Poverty is also widely prevalent among large segment of the urban population. The Government launched a programme for the development of border areas and national races since 1992 and this programme or strategy gave special focus on the rural poor in the remote border areas. An important aspect of the programme is the eradication of cultivation of opium poppy and other narcotic plants, and the provision of alternative commercial crops for the farmers. Additionally, integrated rural development programmes are being undertaken in states and divisions across the country by the ministries concerned to eradicate poverty among the poor segment of the population.

Capacity-building, Education, Training and Awareness-Raising: Presently, infrastructure development as well as training facilities is being met with Government own resources. International assistance can greatly enhance national efforts to eradicate poverty.

Information: The Ministry of Progress of Border Areas and National Races and Development Affairs collect and compile statistics and information on rural poverty. Department of General Administrative also have branch offices at various levels namely district, township and village in all States and Divisions which are important sources of information on economic and social conditions of the poor segment of the populations.

Financing: Government own resources plus assistance from UN bodies such as UNDP, UNICEF, UNDCP and WHO.

Cooperation: No information available.

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CHAPTER 4: CHANGING CONSUMPTION PATTERNS

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: No information available.

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CHAPTER 4: CHANGING CONSUMPTION PATTERNS-ENERGY

Decision-Making: Each ministry has its specific responsibilities in respective sectors of energy, and has their own environmental conservation and protection guidelines. The Cabinet and the National Commission for Environmental Affairs (NCEA) are the main government bodies that are responsible for making decisions relating to environment. The National Commission for Environmental Affairs (NCEA) coordinates the work of the various governmental agencies and departments and also acts as the focal point for environmental matter vis-à-vis other countries and international organizations. It reports directly to the Cabinet. The Cabinet and National Commission for Environmental Affairs (NCEA) have the main authority for decision-making on environmental affairs and each ministry has responsibilities in each sector concerning energy.

Programmes and Projects: The main elements of the country's energy strategy regarding production, distribution and consumption are mainly to:

- Save non-renewable energy for future energy sufficiency of the nation;
- Promote efficient utilization of energy and energy conservation;
- Prevent deforestation caused by excess use of fuel wood and charcoal;
- Develop all available energy resources of the country with own means and resources;
- Cooperate with international companies and acquire technical and financial assistance; and
- Conduct energy related operations in accordance with international industry practices.

As an alternative to firewood utilization, plans are underway to enhance the usage of briquettes and fuel sticks made from petroleum coke, saw dust and rice husk instead of firewood and charcoal, as a measure on preventing deforestation. Also, efforts are being made to encourage the use of efficient stoves utilizing briquettes and fuel sticks. In addition, solar cookers are now being introduced. Presently, no special programmes or measures are undertaken to supply energy to low-income households.

Up to the present period, no major problems have been encountered from emission of greenhouse gases from energy facilities in the country. The energy sector does not follow safety codes and standards of international petroleum industries' practices and therefore, neither programmes nor projects are urgently required to reduce the GHG concentration in the atmosphere. However, as a state of awareness to reduce emission of greenhouse gas, increased vigilance is being made, so that it is within the acceptable international environmental standards. Presently, there is no main programme or projects to reduce emissions from the usage of petroleum-based fuels for transportation, as the emission does not pose any problem and with allowable level. However, as a state of awareness to reduce the emissions, increased vigilance are being made so that emission is within acceptable international environmental standards.

Status: Proved Recoverable Crude Oil and Natural Gas Reserves as at 1-4-2000 are 203.584 MMBBL and 12111.138 BSCF. Potential Coal Reserves is 235.162 Million Tons, Hydro Power Potential is 108,000 Mega Watt, Potential Available Annual Sustainable Yield of Wood fuel is 51.000 Million Cubic Ton, Potential Available Solar Energy is 365.1 TWh/Yr and Potential Geothermal Sites are in 92 locations. Myanmar has become an importer of Crude Oil and Petroleum Products, and also a major exporter of natural gas. The current status of access to electricity is as follows:

1. Urban households	-	50%
2. Rural households	-	10%
3. Industrial use	-	40%

As for Crude Oil, Natural Gas and Petroleum Products consumption, it is estimated to increase by about 25% from 1995 to 2000 and will increase by about 10% from 2001 to 2010. After 2005, it will level off and steady onwards. The consumption of electricity is increasing by about 7%, as it is supply oriented. There are many constraints in the generation and distribution of electricity. As for Coal, the production and consumption are

steadily increasing. In the case of Solar / Wind and Nuclear energy, it is now at research and development stage and actual usage will take some time to come.

Capacity-Building, Education, Training and Awareness-Raising: TV and Radio commercials and interviews are most used for the promotion of environmental matters, to preserve the degradation of environment and to promote the sustainable use of resources. Also, Posters and Slogans on environmental education are being distributed among populace. Textbooks and readers contain material on the need to protect the environment and on the consequences of degraded environment and on the consequences of degraded environment. Youths and students participate en masse in the annual Tree Planting Week so that they come across nature not only in their books but also meet with and experience the joy and benefits of natural growth. Youths are also encouraged to participate to spread the message of environmental health. Presently, no training programmes or measures being implemented to educate consumers on energy and environmental related issues.

Information: Each respective ministries and departments concerned gather Energy and energy-related information. Also, Central Statistical Organization under the Ministry of National Planning gathers information. Government issue publications, booklets and pamphlets on information of the country to domestic as well as international levels. Also, information on each sector is published by respective government agencies.

Research and Technology: Presently, no new technologies have been developed, but plans are underway to introduce and implement clean coal technology throughout the country. Liquefied Petroleum Gas in household, Industry and transportation is used as a mean to improve fuel efficiency and promotion of cleaner environment. In addition, Compressed Natural Gas has been introduced and implemented as a substitute fuel for vehicles. Each energy related departments have been doing research and development programmes on various sectors of energy. Active participation has been made at Seminars, Presentation and Workshops on Energy. Also, cooperation and joint venture schemes have been implemented in together with international energy companies.

Financing: The main source of funding in energy projects and programmes is from the Government and for Joint Venture operation with foreign companies; the funding is from sources from outside the country. Invitations are being made to foreign investor to participate in energy sector development projects. Presently, Production Sharing Contracts, Joint Venture, Partial Independent Power Producer and BOT schemes are being implemented with foreign interested companies. As for energy conservation, interacting have been made with United Nation agencies and other private organization related to energy conservation matters.

Cooperation: Myanmar hosted a number of regional seminars in the country. Since the formation of National Commission for Environmental Affairs, Myanmar has held many workshops, conferences and seminars on environmental issues for instance seminars on: Combating Desertification; and Land Use and Sustainable Forest Management. Myanmar actively participates in Ministerial Conferences on Environmental and Development and also in United Nation's Conferences on Environment. Myanmar is active participant in many international treaties and formal/ informal cooperation including technical cooperation has been made at sub-regional, regional and international levels.

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CHAPTER 4: CHANGING CONSUMPTION PATTERNS – TRANSPORT

Decision-Making: The responsibility is with the Ministries of: Transport, Ministry of Rail Transportation; Construction; Progress of Border Areas and National Races and Development Affairs; and National Planning and Economic Development; and agencies of: Yangon City Development Committee (YCDC); and Mandalay City Development Committee, (MCDC). The country has a Central Supervisory Committee for Ensuring Smooth and Secure Transport coordinates the designated bodies.

Programmes and Projects: The programmes and projects are laid down for the expansion of transport infrastructure (road networks, railways, etc.):

- Sustainable fuel consumption;
- Reduction of vehicle emissions;
- Development of alternative transport modes;
- Upgrading of vehicle fleet.
- Better meeting the commercial, private, and public needs for mobility in both urban and rural areas;
- Promoting traffic efficiency, such as reduction of heavy traffic hours, provision of mass transport modes, etc.;
- Improving efficiency in fuel consumption;
- Reducing emissions from transportation, such as carbon dioxide, carbon monoxide, nitrogen oxides, particulate matter and volatile organic compounds;
- Reducing traffic-related accidents and damages; and
- Promoting non-motorized modes of transport, such as cycle ways, footways, etc.

Capacity-Building, Education, Training and Awareness-Raising: The Road Transport Administration Department (RTAD), under the Ministry of Rail Transportation is responsible for road safety measures and preventive safety measures and preventive safety regulations. RTAD is in deep cooperation with and give necessary advices to the Traffic Rules Enforcement Supervisory Committee, which is cooperating, and coordinating road safety measures with other related departments and organizations. In addition, in Yangon City, Officials concerned from RTAD, accompanied with the Officials from Traffic Control Branch of the Myanmar Police Force, Ministry of Home Affairs, distribute information and knowledge of traffic safety to the persons of bus lines in every month. In States and Divisions, the Officials concerned from these departments also distribute to the public and at schools, at convenient times.

Information: Respective departments under the Ministry of Rail, Transport gathering and update information.

Research and Technologies: Introduction of LPG and CNG are quite successful. For promoting more efficient traffic management the following schemes are laid out and the include:

- Upgrading of road related facilities;
- Updating of road sign, signal and marking;
- Replacing of old buses with new buses; and
- Establishing of prohibited areas for certain type of vehicles.

Financing: The main source of funding is the national budget.

Cooperation: Concerning bilateral agreement on road transport is under negotiation with China. It has already signed the agreement of the ASEAN Framework Agreement on the Facilitation of Goods in Transit. There are 41 bilateral agreements by air with different countries.

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CHAPTER 5: DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

Decision-Making: The cabinet in consultation with the ministries concerned includes the Ministry of population and the Ministry of Health.

Programmes and Projects: Birth-spacing programmes and Primary Health Care programmes are continuously being promoted.

Status: The population in the year 2000 is estimated at 50.1 million with an annual rate of increase of 2.02%. Population density in 2000 is 75 persons per square kilometre. The population is concentrated in the central areas, particularly in and around the cities of Yangon and Mandalay. The Yangon metropolitan area accounts for about 11 percent of the population. There is a stark contrast in population density between the south delta region and remote northern hilly regions. The uneven distribution of the population is expected to continue with heavy concentration of population in the urban areas where there are greater opportunities for jobs and employment. The Government's view on population growth is that of satisfactory. However, it also aims to have a harmonious balance between population growth, economy and environment.

Capacity-Building, Education, Training and Awareness-Raising: Activities and advocacies for birth-spacing are being promoted.

Information: Information is available at the Ministry of Population and the Ministry of Health.

Research and Technologies: The Department of Medical Research under the Ministry of Health is doing necessary research.

Financing: Government Budget plus WHO and NGO's financial assistance.

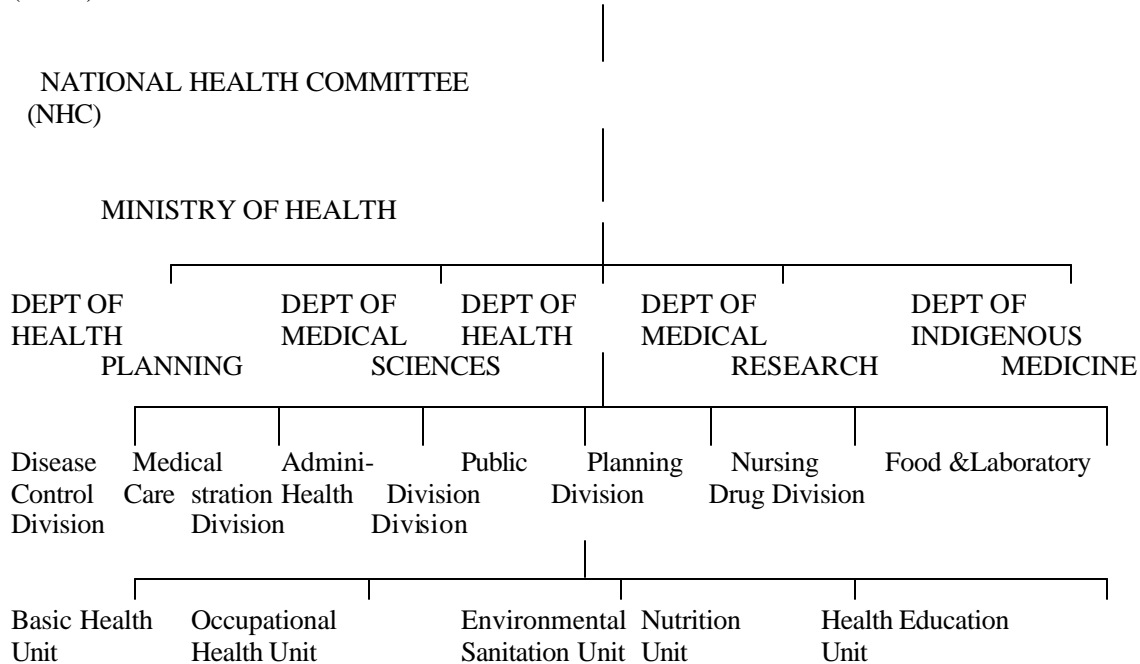
Cooperation: NGO and people's participation is growing gradually.

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CHAPTER 6: PROTECTING AND PROMOTING HUMAN HEALTH CONDITIONS

Decision-Making: As a higher-level policy making body, the National Health Committee (NHC) developed the National Health Policy (NHP) in 1993. In implementing the NHP, the Ministry of Health has taken the responsibility of improving the health status of the people, promoting the preventive and curative measures and health rehabilitative activities. The decision making three is as follows:

STATE PEACE AND DEVELOPMENT COUNCIL
(SPDC)



Programmes and Projects: The Union of Myanmar has been implementing the Peoples' Health Plan since 1978 and the National Health Plan since 1990. The Community Health Care Program is one of the main programs under this plan. It provides health care activities to the rural and urban population and consists of the following sub programmes and projects on:

- Primary Medical Care and Referral of Patients;
- Mother and Child Health Care and Birth Spacing;
- Nutrition Development;
- Primary Oral Health Care;
- Health Care of the Elderly;
- School Health;
- Mental Health and Drug Abuse Control;
- Disaster Preparedness.
- Community Health Promotion through Sports and Physical Education; and
- Community Nursing.

The Primary medical Care and Referral of Patients Project will be directly involved in providing health care facilities, staff including voluntary health workers and supply of necessary equipment and drugs for providing health services to the rural and urban population. The Mother and Child Health Care and Birth Spacing Project and the Child Survival Project are being implemented in the whole country to reduce the morbidity and mortality of mothers and children. In addition, the following programmes and projects are being implemented: the Environmental Health (Air & Water Pollution) Programme, the Leprosy Control Programme, the Malaria Programme, the Communicable Diseases Control Project, the Control of Diarrhoeal Diseases Project, the

Expanded Programme on Immunization, the health Education Programme, the Ensuring Safe Blood Supply Programme, the Prevention of HIV Infection Programme, the Sentinel Surveillance Programme, the AIDS Management and Counselling Services Programme, the Health Care Workers Training and Research Programme. All activities are being implemented in an integrated way at all levels. Difficulties have been met in placement of health staff to serve in underdeveloped rural areas for an extended period of time. Offering financial and career advancement incentives are solving this problem.

Status: Life expectancy at birth (1999)

	Male	FEMALE	Total
Urban	61.0	65.1	62.6
Rural	60.1	62.3	61.2

Infant Mortality Rate (per 1000 live births) (1997)

	Male	FEMALE	Total
Urban	49.0	45.2	47.1
Rural	48.1	49.1	48.6

Child Mortality Rate [1-4 years per 1000 (1-4 yrs) populations] (1997)

	Male	FEMALE
Urban	15.3	14.7
Rural	16.7	17.0

Infants Reaching their first birthday full immunized

	Fully Immunized %
Urban	78.8
Rural	77.3

Percentage of children 3 yrs & under, with severe & moderate malnutrition

	Male		Female	
	Severe	Moderate	Severe	Moderate
Urban	12.2	18.8	9.6	18.5
Rural	13.6	25.7	11.8	23.4

Maternal mortality rate (per 1000 population live-births)

	Urban	Rural
MMR	1	1.7

Births attended by trained personnel by type of training

Births attended by	Percentage
Midwife	39.37
Auxiliary midwife	11.56
Trained birth attendance	6.80
Physician	17.40
Others	24.87

Pregnant women immunized with Tetanus Toxin

Tetanus Toxin	
First Dose	89.89
Second Dose	87.88

Anaemia Prevalence in pregnancy

	%
National	58

Iodine deficiency disorder

	%
National	12.80

Workplace accident rate

	Male	Female
National	517	175

Ratio of abortions to deliveries

	%
National	3.4

Percentage of low birth weight

	%
National	2.81

Health professionals by occupation

	Male				Total
	No.	%	No.	%	
Dental Surgeon	213	83.86	41	16.14	254
Assistant Surgeon	1028	45.87	1213	54.13	2241
Specialist	638	47.83	696	52.17	1334
Professor	47	55.29	38	44.71	85
Total	1926	49.23	1988	50.77	3914

Access to safe drinking water and sanitation facilities

	Urban	Rural
Safe drinking water	87.90	59.90
Sanitation facilities	79.10	70.40

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

- Mid managerial personnel from the Occupational Health Unit, Medical Officers from factories with potential toxic chemical hazards from industrial effluents, a laboratory technician from Occupational and Toxicological laboratory were sent abroad to attend various training courses viz. Environmental Assessment and Management, Pollution Control and Management, Environmental Toxicology and Air Quality Management;
- Exchange of technical knowledge between World Health Organization technical advisors and staff of the Occupational Health Unit regarding the "Healthy City" activities;
- Teaching Environmental Health in undergraduate medical students and postgraduate training courses e.g. Master of Public Health, Diploma in Environmental Engineering;

- Teaching of undergraduate medical students and postgraduate Master of Public Health students, training of all levels of pre and in-service health personnel on Environmental Sanitation; and
- Training and teaching of rural communities for the widespread dissemination of knowledge, perception and participation in environmental activities.

Information: The Department of Health Planning and Statistics under the Ministry of Health collect and compile health statistics. Central Statistical Organization also collect & compile statistics on health.

Research and Technologies: Department of Medical Research is responsible for undertaking medical research.

Financing: The financial assistance is obtained from the government contributing the major share as well as from WHO and Non Governmental Organizations.

Cooperation: Myanmar cooperates with the following international and regional organizations: WHO, UNICEF, UNDP, UNEP, UNFPA, Sasakawa Memorial Foundation, the Netherlands Leprosy Relief Association, International Federation of Leprosy Association, American Leprosy Mission, Rotary International and the Nippon Foundation. Myanmar cooperates with national NGOs such as the Myanmar Maternal and Child Welfare Association, Union Solidarity and Development Association, The Myanmar Red Cross Society, the Myanmar Medical Association and the Myanmar Nurses Association. International NGOs like World Vision International started to support health care activities in 1993 and other NGOs such as ADRA, AMDA and AZG.

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CHAPTER 7: PROMOTING SUSTAINABLE HUMAN SETTLEMENT DEVELOPMENT

Decision-Making: Ministry of Construction, Department of Human Settlement and Housing Development, and Public Works are responsible for promoting sustainable human settlement development.

Programmes and Projects: In order to cope with the growing urban population and urban congestion, the government over the past decade is implementing numerous human settlement and housing development programmes. These include new satellite towns for squatters, and housing schemes for the government employees. In Yangon, the capital of Myanmar alone, four new satellite towns have been established since 1989. Many housing projects are also being carried out by the private sector, which have helped ease the housing problems in many of the big cities in the country.

Status: In Myanmar, 25 percent of the population live in urban areas. Due to economic reasons, considerable migration has taken place in major cities such as Yangon and Mandalay and is expected to grow at a rapid rate over the next four years. This poses an increasing challenge for urban and regional planners in terms of the provision of housing and basic services to the growing urban population. A number of measures have been undertaken to deal with the expansion of the urban population. These include resettlement schemes in the suburbs of the cities. The resettled population in these schemes were provided with water, electricity, schools, clinics and other urban amenities. Despite these measures, the country needs to make continued efforts to raise the living standards of the urban population. Promotion of sanitation facilities, provision of adequate safe drinking water, and public transportation are some of the major challenges posed by urban human settlement.

Capacity-Building, Education, Training and Awareness-Raising: Human, financial and technological resources are not adequate to cope with the growing demand for basic infrastructural development resulting from increased population and urbanization.

Information: Department of Human Settlement and Housing Development, and Public works are the main sources of information on human settlement development.

Research and Technologies: There is a need to promote research and technologies.

Financing: Government Budget plus private contribution.

Cooperation: Regional/International Cooperation is greatly needed.

STATISTICAL DATA/ INDICATORS			
	1990	1995	
Urban population in % of total population	28.20	28.68	
Annual rate of growth of urban population (%)	2.2	2.2	
Largest city population (in % of total population)	7.2	7.2	
Other data			

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CHAPTER 8: INTEGRATING ENVIRONMENT AND DEVELOPMENT IN DECISION-MAKING

Decision-Making: The National Commission for Environmental Affairs (NCEA) is the key co-ordinating mechanism for sustainable development. Its mandate is: to provide advice to the Cabinet on the formulation of Environmental Policies; to issue guidelines for the implementation of environmental policies; to provide guidance and advice to the regulatory agencies on such matters as legislation, regulations and environmental standards; and to formulate short, medium and long term environmental policies and strategies that take into account both the environmental needs and development requirements. All related ministries and agencies participate, including the Ministries of Forestry, Agriculture and Irrigation, Industry 1 and 2, Energy and National Planning and Economic Development. The NCEA is assisted by the Committee on Conservation of Natural Resources, Committees on: Control of Pollution; Research, Education and Information; and International Cooperation. The Forest Resource and Environment Development Association (FREDA), a non-governmental organization, also participates.

Programmes and Project: The National Environment Policy of Myanmar formulated by the NCEA has been proclaimed through the Gazette in accordance with Notification No. 26/94 dated 5 December 1994, of the Government of the Union of Myanmar. The Establishment of Environmental Database Unit in NCEA only began in April 1994 and the collection of environmental data is being undertaken by NCEA to provide information for decision-making. The Government in June 1997 approved the Myanmar Agenda 21. The main purpose of formulating the agenda is to provide a framework of programmes and action for achieving sustainable development in the country. Building on the National Environment Policy of Myanmar, the Myanmar Agenda 21 takes into consideration, the programme guidelines contained in the Global Agenda 21.

Status: The national decision-making structures are being adjusted to be integrated for sustainable development, but not yet in the local/regional level and major groups involvement. For the issues such as poverty, consumption, atmosphere, forest, desert/ drought, mountain, agriculture, biodiversity, biotechnology, oceans, freshwater, solid waste, energy, transport, and sustainable tourism, there are in process or established national policy, programme, and/ or legislation consistent with agenda 21. However, there are no such institutional actions for other issue such as toxic chemicals, hazardous waste, and radioactive waste.

Capacity-Building, Education, Training and Awareness-Raising: For national instruments and programmes, incorporation of sustainable development or environment into school curricular, recycle/ reuse program, access to Internet and World Wide Web, and national World Wide Web site for sustainable development, are in process to be established.

Information: Other instruments and programmes such as sustainable development indicators programme, Eco-label regulations, and Green accounting programmes are not preceded yet.

Financing: Limited.

Cooperation: Needs more support from international community for capacity building and environmental management.

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CHAPTER 9: PROTECTION OF THE ATMOSPHERE

Decision-Making: The National Commission for Environmental Affairs under the guidance of the Cabinet.

Programmes and Projects: AIJ projects and CDM project under UNFCCC are being proposed by bilateral organisations and some NGOs. Asian Least cost GHG Abatement Strategy Project was carried out in 1996 with UNEP/ADB funding for 12 Asian countries including Myanmar.

Status: GHG emission in Myanmar is still insignificant.

STATISTICAL DATA/INDICATORS			
	1980	1990	Latest 2000
CO ₂ emissions (eq. million tons)		29592.3 Gg	
SO _x emissions (eq. million tons)			
NO _x emissions (eq. million tons)		16.15 Gg	
CH ₄ emissions (eq. million tons)		3638.5 Gg	
Consumption of ozone depleting substances (Tons)			
Expenditure on air pollution abatement in US\$ equivalents (million)			
Other data			

Capacity-Building, Education, Training and Awareness-Raising: Yet to be promoted.

Information: Data on air pollution is not yet available due to lack of air pollution monitoring system.

Research and Technologies: Need to be promoted.

Financing: Inadequate.

Cooperation: International cooperation is needed for capacity building, education, training and awareness-raising.

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

Decision-Making: 62 civil districts covering the whole country were recently reformulated and updated based on sustainable forest management principles in order to manage lands under forest cover in an integrated approach forest management plans. The main emphasis is on environmental conservation and improvement of soil fertility status, a new institution entitled "Dry Zone Greening Department " was recently set up to implement the major tasks of protection, reforestation, water resources development and fuel wood substitution in the desert-like dry zone of central Myanmar. In Myanmar Forestry was also made in 1995 by issuing Community Forestry Instructions to promote and encourage people participation and decentralization in forest management in addition to policy, legislative and institutional updating and reforms in the 1990s. In 1993, Forest Conservation and Management Committees at all administrative levels were formed to implement integrated forestland management to prevent and check land degradation, deforestation as well as to strengthen multi-sectoral planning, decision-making and participation. The government's endeavours for the promotion of the best possible land use and sustainable management of land resources since the United Nations Conference on Environment and Development (UNCED) include: to facilitate the development of a market-oriented economy, "the Privatization Commission" to oversee and ensure the successful implementation of the privatization process was formed in January 1995; in forest sector, the Government is inviting foreign investments in forestry either in joint ventures or 100% investment, making agreements with Forestry Department; and Forest Law of 1992 has provisions for private sector involvement and investment in establishing forest plantations.

While agricultural land use is still manageable outside forestlands, Forest Department is in the process of increasing the existing permanent forest estate from the present status of about 18% to 40% as stipulated in Myanmar Forest Policy. The objectives of the Myanmar Forest Policy were revised in 1995 to ensure sustainable development of forest resources while conserving wildlife, wild plants, and enhancing the ways of living of local people. It focuses on food security, rural development and viability of rural areas, and environmental aspects and social aspects, in forest protection and conservation and management, reforestation, community forestry for local communities, forest harvesting, processing and marketing, research and development, extension and education and trainings, and establishment and management of protected areas system. Myanmar is increasing its Permanent Forest Estate (PFE) according to the Myanmar Forest Policy, 1995. In Myanmar, all lands are owned by the State. But Community Forestry Instructions 1995, could grant the use of forestland to the community for an initial period of 30 years, which is extendable upon conditions. In planning, formulating and implementing forest management plan at forest management unit level; all the township and district-level forest officials are being involved. The township in-charge of Forest Department is the local-level responsible official, having decision-making and implementing authority delegated by the Forest Department, but within the context and prescriptions of the management plan. In forest sector, local communities are encouraged and assisted to apply for forestlands for the exercise of community forestry either for natural forest management or plantation establishment. The land use right of forestland for community forestry is initially granted for a period of 30 years, which is extendable.

Programmes and Projects: For conservation of biological diversity, mangrove, ecosystems and fragile mountain ecosystem: about 23 sanctuaries and 5 parks under Protected Areas System (PAS) were established. Environmentally Sustainable Food Security and Micro-income Opportunities in Delta Area of Lower Myanmar is being implemented jointly by the Forest Department and the United Nations Development Programme/Fiji Field Office (UNDP/FFO) in addition to Forest Department's routing activities for the conservation of mangrove ecosystem. Forest Department in cooperation with International Centre for Integrated Mountain Development (ICIMOD) has been demonstrating agro forestry farms using Sloping Agriculture Land Technology (SALT); formation of natural protected areas such as the Natma Taung National Park in the northwest Chin Hills and the Khakarborazi Nature Park in the far north are also being undertaken by the Forest Department. Apart from these conservation measures, the Myanmar government is also undertaking activities for the development of border areas and national races. In poverty reduction activities and current land management policies, there are: reclamation of cultivable wastelands; construction of dams for irrigation; environmental protection and conservation; vertical expansion of agriculture; production of agro

forestry/community forestry; creation of income-generation opportunities; and restoration of degraded forestlands for soil improvement. In Myanmar, forestry (about 51% of the total Land area) and agriculture (about 27%) are the two main sectors with regards to the management of land and land-based resources. The State is reclaiming cultivable wasteland and fallow land into agriculture farmlands, while measures are being undertaken to increase per unit yield. Regarding vast areas of cultivable wasteland, it is possible to undertake land reclamation without sharing with forestlands. However, there exists agricultural encroachment into forestland. Some 151,420 ha of permanent agriculture are found to have cultivated in forestlands. In Myanmar, intrusion of permanent agriculture into forestlands is not a significant issue.

Status: Total land area of Myanmar is 676,577 km², of which about 51% is covered by forests and about 13% under net area sown, 14% under cultivable wasteland and fallow land. Existing farmlands are protected against changes to other uses. In the case of dam construction, existing settlements are to be shifted to new areas where new form lands are to be developed. Widespread deforestation and unplanned land use change can harm the landscape. Forestlands are vulnerable to encroachment due to expansion of human settlements and the intensity is directly- related to population of the expanded or newly located settlement. Ecosystem of wetland areas is expected to have a significant change due to expansion of human settlement. Inlay Lake ecosystem in the eastern part of the country is a significant example that shows water pollution and sedimentation in the water body due to human settlement in uplands of the lake. It is rational that biological diversity in coastal areas would be adversely affected by the expansion of human settlement. These implications that would be experienced in any expansion of human settlement are well given due consideration for minimizing the unintended consequences. Challenges facing integrated land management still remain and they include, among others, inadequate inputs, low level of inter-and intra-agencies related with the utilization of land resources, the need for urgent economic returns and absence of comprehensive land use policy respected by all parties.

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

Information: Myanmar government provides very good and sufficient access to information on land resources, regardless of the sectoral responsibility. At the local level, information dissemination used to be at the meetings through reports or at the request or personal curiosity of the official who wants to understand the issues. Information on land management and sustainable use of land is made available to potential users by: reports, workshops and seminars by producing technical documents; study tours, demonstrations and through various media; and extension services. Evaluation systems for land and land resources by the year 2000 are: annual and routine forest inventory undertaken by the Forest Department; and extensive use of Remote Sensing/Geographic Information System/Global Positioning System (RS/GIS/GPS) facilities for the construction of land use and forest cover database for Year 2000 Forest Resources Assessment. Types and methods of land inventories used in Myanmar are: forest resources inventory using systematic sampling techniques; land and forest resources assessment using RS/GIS/GPS technologies; and social and economic surveys in selected localities. Myanmar has drafted criteria and indicators for both national and field levels for Sustainable Forest Management (SFM).

Research and Technologies: Being the resource manager for more than half of the country's total land area Forest Department has been producing land use and forest cover maps using RS/GIS/GPS technologies to assess forest resources. Production of these maps has covered about 350,000 km² by the end of 1998.

Financing: No information available.

Cooperation: No information available.

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CHAPTER 11: COMBATING DEFORESTATION

Decision-Making: As major post-UNCED (the United Nations Conference on Environment and Development) achievements related to sustainable forest management, Myanmar has reformulated and adopted new policy and legislative measures: Forest Law in 1992; Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law in 1994; Myanmar Forest Policy in 1995; and Forest Rules in 1995. Forest Department issued "Community Forestry Instructions" in 1995 to promote community participation in forestry. In order to arrest the process of desert-like formation, a new institution namely "Dry Zone Greening Department" was set up in 1997 and environmental rehabilitation measures are being undertaken. Myanmar Forest Policy has identified six imperatives in its text for Sustainable Forest management (SFM). One of the six imperatives is to satisfy the basic needs of people for timber, firewood, food, shelter and recreation. Moreover, Myanmar's effort to protect and conserve forestlands and resources will result in environmental balance, which, in turn will support the improvement of food production and social setting. Forestry sector of Myanmar is now in the process of developing National Forestry Master Plans (NFPs) for the whole country and for the Central Dry Zone greening within the context of the national sustainable development strategy. In NFP, the existing 50% coverage of forests over the total land area of the country are to be maintained, of which 40% would be designated as Permanent Forest Estate (PFE) and the rest, 10% would be assigned as conversion forests for possible needs for agriculture and other uses for the State.

Forest Conservation Committees at all levels of civil administration were formed so that any land use change in forest lands had to be planned with the involvement and participation of personnel from related sectors. In Myanmar, all forestlands are State-owned. However, community forests are managed, owned and utilized by the communities concerned. Customary and traditional right of indigenous people and local communities with regards to forestland are much respected. However, all lands are, in Myanmar, owned by the State and therefore land use rights are granted on specified conditions. Myanmar has one forest-related non-governmental organization (NGO), namely Forest Resource Environment Development and Conservation Association (FREDA), which is participating forest certification scheme for Myanmar.

Programmes and Projects: Myanmar has developed "Issues and Opinions Paper" as an initial step of the Indicative Planning Figure (IPF) exercise. The Pro-Ecology institute (IPE) proposals for action contain 5 program elements, all of which are assessed to be in line with Myanmar's endeavours to achieve progress towards SFM. Therefore the relevance of IPF's proposals with Myanmar's forestry activities is quite strong. Major points in implementing the IPE's proposal for actions include, among others, two NFP exercises are being undertaken: for forest sector of the whole country, and also for environmental conservation and restoration in Center Dry Zone of Myanmar. Fuel wood consumption is one of the main causes of deforestation, and excessive cutting of trees for fire-wood before they are fully grown, leads to the loss of growth potential of the forest stands. Therefore, Forest Department had launched fuel-wood substitution programme to reduce pressure on the utilization of wood for fuel. Apart from that the government has also made continuous efforts to sustain forest productivity in cooperation with FAO (Food and Agriculture Organization), aiming at not only to improve environment and food security, but also to efficiently utilize rural energy through establishment of community wood lots.

Status: Recent developments in Myanmar forestry regarding SFM include, among others: identification of criteria and indicators for SFM based in the International Tropical Timber Organization (ITTO)'s initiative; formulation and write-up of national forest programmes; updating and reformulation of forest management plans covering the whole country; establishment of model forests using partnership approach; and formulation of National Code of Practice for forest Harvesting in Myanmar. Shifting cultivation and rigorous use of tree and other forest resource and unplanned management of forestlands are seen to be attributable to poverty. Much of deforestation stems from social disadvantages, mainly caused by poverty and shifting cultivation is the striking example in Myanmar. Major challenges facing SFM are limitation of resources, primarily funding.

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: Myanmar participates in the Criteria & Indicators (C&I) for SFM initiative of ITTO. Myanmar intends to use C&I as a tool for policy monitoring and reporting. ITTO's C&I as well as the Association of South East Asian Nations (ASEAN)'s Regional C&I would be the most useful ones to access progress towards SFM at the international level.

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CHAPTER 12: MANAGING FRAGILE ECOSYSTEMS: COMBATING DESERTIFICATION AND DROUGHT

Decision-Making: The Ministry of Forestry, the Ministry of Agriculture and Irrigation are the main agencies responsible for combating desertification and drought. Plans for combating desertification drought are drawn up by the ministries Concerned in collaborate with the stakeholders at the local levels. Decision- making is on interactive process.

Programmes and Projects: The Greening programs and Integrated and development projects are being carried out intensively in the dry zone area of Myanmar which is the area most affected by drought. Due to very low rainfall and deforestation the majority of rural population in the area have been facing the problem of soil program and land degradation. In order to address the problems, reforestation and afforestation the Governments on an unknown basis are implementing programs, irrigation and water supply projects.

Status: Land degradation problems and the resulting rural poverty in the Seri-arid land in Myanmar is now being addressed by the Governments through prating sustainable agriculture and forestry management.

Capacity-Building, Education, Training and Awareness-Raising: A National Awareness Seminar or CCD was held from 24 to 25 October in Yangon, Myanmar. This Seminar aimed at enhancing greater appreciation of the convention by promoting government and public awareness on desertification issues and fostering effective participation of local communities in the preparation of National Action Programme (NAP). NCEA was designated as focal institution for CCD. Currently NCEA is organizing to establish a national coordination committee to combat desertification in Myanmar. Ministry of Forestry as a main actor for the Implementation Phase, has given utmost importance to the convention and established a new department to be responsible for the environmental rehabilitation of the Dry Zone in Myanmar. The National Report on the UNCCD implementation was submitted to the UNCCD Secretariat in December 2000. A national workshop for preparing the National Action Programme (NAP) was held in December 2001. Funding was requested to UNCCD and Global Mechanism for the Workshop.

Information: Information is obtainable from the Ministry of Forest & the Ministry of Agriculture and Irrigation.

Research and Technologies: The Ministry of Forestry and the Ministry of Agriculture have research departments to undertake research on sustainable agriculture and forestry.

Financing: Government own resources mainly UNDP and FAO provide some to chemical assistance.

Cooperation: Some UN organizations and NGOs collaborate with the Governments in its efforts to combat desertification.

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CHAPTER 13: MANAGING FRAGILE ECOSYSTEM: SUSTAINABLE MOUNTAIN DEVELOPMENT

Decision-Making: Ministry of Forestry, the National Commission for Environmental Affairs and The Ministry for the Progress of Border Areas and National Races Development are the lead agencies in decision making relating to sustainable mountain development.

Programmes and Projects: Some technical assistance projects are being provided by ICIMOD.

Status: In Myanmar as in all developing countries mountain ecosystems are susceptible to soil erosion, land slides and rapid loss of habitat and genetic diversity. Unemployment, poverty, poor health and poor sanitation also prevail among mountain dwellers. Most mountain areas are experiencing environmental degradation. Proper management of mountain resources and socio-economic development of people need immediate action. It should aim at preventing soil erosion, increasing the amount of tree and plant life, and maintaining the ecological balance in mountains. For local communities and indigenous people, education, health care and energy should be provided. The people also need more opportunities to earn livelihood from such activities as tourism, fisheries, environmentally sound mining, cottage industries, and processing of medical plants.

Myanmar's major mountainous areas as part of Hindu Kush-Himalayas are found in Chin, Kachin and Shan States. Myanmar has been the member country of International Mountain Development (ICIMOD) since the early 1990s. Biodiversity study in Pi-daung Nature Reserve in Upper Most Myanmar of the Kachin State is being undertaken jointly by Myanmar and ICIMOD. An experiment on slope land agriculture technique is also underway in Northern Shan State, which is financed by ICIMOD. Furthermore, a project proposal for the management of mountain biodiversity in the Hindu Kush-Himalayan Region has been submitted to the Myanmar Government by ICIMOD. In sum, Myanmar is placing emphasis on the sustainable development of mountainous areas in close cooperation with ICIMOD.

Capacity-Building, Education, Training and Awareness-Raising: Capacity-Building is required for the following reasons.

- To work with all levels of institutions;
- To deal with the problems of increasing poverty;
- Providing training and institutional support and networking and information exchange;
- Training primarily in the fields of sustainable agriculture, participation of indigenous people, including women, organizational development for land use, and GIS and computer applications; and
- Identification, collection and dissemination of existing information.

Information: Limited information is available.

Research and Technologies: Research and Technologies need to be promoted to address the following issues:

- Supporting livelihoods in a difficult environment;
- Urgency to find workable solutions;
- Differentiation of mountain areas, i.e. developing and depressed, ecological and locational variations, land use options;
- Institutionalizing mountain development;
- Learning and working together;
- Pro-poor, pro-women, pro-environment and pro-capacity building;
- Breaking the vicious cycle of poverty;
- Correcting gender blindness;
- Building the natural capital;
- Promoting self reliance;
- Documentation and dissemination of information and data base; and
- Establishing partnership and strategic alliances.

Financing: Government Budget with some assistance from UN bodies.

Cooperation: More international cooperation is needed. Presently there is some cooperation from ICIMOD and UNDP/FAO.

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CHAPTER 14: PROMOTING SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT

Decision-Making: Under the Guidance of the National Health Committee, the Ministry of Health has formed a Central Food and Nutrition Committee (CFNC) with personnel from various ministries concerned. Under the CFNC, one supervisory committee and 6 working groups were formed to oversee and implement activities relating to improving household food and nutrition security for Myanmar people. In 1997, the Government of Myanmar enacted the National Food Law since with a view to guaranteeing the availability of generic quality, safe and hygienic food. In addition, the Government is in the process of preparing The Union of Myanmar Environmental Protection Law. Myanmar national legislation strictly restricts the transfer of productive available land to other uses. Aiming to utilize irrigation water effectively and efficiently, the government enacted water tax and embankment law, which has been in force since 1982. If unlawful manners were observed, the Water Utilization Association formed at grass root level will take action according to rules and regulations. The priority is to eradicate rural poverty focusing on vulnerable and disadvantaged groups of the entire country. The programmes aim at pursuing poverty eradication, sustainable food security within household and income generation at least to fulfil the minimal requirement of the individual household. The Ministry of Agriculture and Irrigation is making great efforts to ensure food security within the country and the step up export volume so as to generate foreign exchange, which is needed for further investment to develop the overall economy of the nation. For this, cropping area expansion and increase per unit area yield by mobilizing all available resources have been implemented. The government is also making efforts to development land resources, irrigation, and agricultural mechanization, transfer of improved new technologies. Regular survey on socio-economic condition, the adoption of recommended agro-technology and farmgate prices of agricultural produces are conducted throughout the country so that the opinions of the key major groups in this sector be reflected in national decision making related to sustainable agriculture. Occasional meeting of regional authorities of township and divisional/state levels with the key major groups are also important occasion to acquire information on the actual condition of these communities.

Programmes and Projects: Water is crucial in agriculture, so a number of irrigation-related projects are being undertaken. The Integrated Pest Management (IPM) Programme in many crops, is the main strategic approach, since the volume of pesticide use are still minimal and beneficial insects and natural enemies of plant pest are abundant—this is possible because pests and diseases incidence are still low. For the IPM programme, training for the trainers for agricultural extension worker are occasionally conducted, who will educate the farmers, and attempts have been made for the production and use of organic pesticides. Myanmar plans to open up new land with improved irrigation and technology. Food production is sufficient for domestic consumption, however food security situation varies among regions, for which various projects have been implemented since 1994, in coordination with UNDP (the United Nations Development Programme) under HDI (Human Development Index) programmes. In problem soils areas occupying about 7.81% of total cultivable land stock, especially in delta with the assistance of Lower Burma Paddy Land Development Project, farmers grow rice varieties that are moderately tolerant or adjust the sowing time or wash out the soil with rains or irrigation water, or infiltration by planting trees.

Status: The government formally monopolized distribution of chemicals, but private sector is permitted to participate in this activity. As an incentive, importation of agricultural related materials are exempted from duties. Blessed with favourable climatic condition, abundant land and water resources and freedom from natural calamity, Myanmar has been able to produce enough food for the entire nation, but food insecurity exists in some households in some part of country, especially in the dry zone, border areas and remote areas. The use of pesticides is relatively very low, but it is expected that pesticides utilization will definitely increase in the future. In order to provide supplementary irrigation for monsoon crops and full irrigation for winter season sown crops, dams, weirs, reservoirs and pump stations were constructed. The main challenges to sustainable agriculture and rural development in Myanmar, could be: 1) shortage of competent human resources in research and development activities; 2) lack of financial and or physical access of the farmers to the available inputs; 3) development; transfer of appropriate and sustainable agro-technology which are environmentally friendly, and 4) lack of marketing system that guarantee a fair share of benefit for all parties involved in the system. There is widespread land degradation as population increase demands frequent land uses which are not suited to the agro-ecological conditions and due to incorrect land husbandry practices.

Capacity-Building, Education, Training and Awareness-Raising: To increase awareness and participation of private sector in promoting sustainable agriculture practices, the government has initiated a number of activities, through farmers' meeting, pamphlets, radio broadcast, television, field days etc. Myanmar Agriculture Service occasionally provides local trainings on efficient and effective utilization of irrigation water to the farmers and staff.

Information: The National Nutrition Centre occasionally conducts countrywide surveys to assess nutritional status, household and individual food consumption pattern for all different age groups. Finding from these surveys are of great help in implementing food and nutritional programme for improving household food and nutrition security.

Research and Technologies: Research and development activities are being undertaken for integrated pest management, land degradation and rehabilitation, integrated plant nutrition management and plant genetic diversity. For the nutrition of the land, farmers are encouraged to use environment-friendly method and so as to improve the availability of organic based plant nutrients; a campaign on the use of effective micro organism (EM) technology is in great momentum throughout the country. Biocompozer, made from biogases from sugar is being produced by the Ministry of Agriculture and Irrigation. Nitrogen element is provided from pulses and beans through symbiosis process. Moisture conservation is being promoted through the introduction of slopping agriculture land technology, under FAO (Food and Agriculture Organization) 's technical assistance programme. However, Myanmar still lacks a lot of technology and policy guideline for sustainable plant nutrition management to increase food production.

Financing: No information available.

Cooperation: With the technical assistance of FAO / IPPC (International Plant Protection Commission) pest risk analysis could have been carried out. In addition Myanmar is closely working with FAO, WHO (World Health Organization), WTO (World Trade Organization), IPPC and Office International des Epizootices with a view to produce and export high quality farm produces of international market as prescribed in WTO Sanitary 7 Phytosanitary Agreement. Besides Myanmar is under preparation to participate in ASEAN (Association of South East Asian Nations) IPM Knowledge Network to share and exchange knowledge, skill and information. Seed Bank of Myanmar has developed linkages with the International Agriculture Research Centres around the world and with the International Board for Plant Genetic Resources (of International Plant Genetic Resources Institute) since its first establishment and fully operational in 1990. Seed Bank has also collaborated with International Crops Research Institute for the Semi-Arid Tropics in 1992 on joint characterization, multiplication and evaluation of 900 groundnut accessions originating in Myanmar and from other similar environments. Since genetic erosion of wild species is faster than that of cultivated species, collection and conservation of wild rice species was initiated with the assistance from IRRI (International Rice Research Institute) in 1992. Altogether 116 wild rice species were collected so far and their duplicates were sent to IRRI for effective screening for resistance to pests and diseases. As committed in the World Declaration of Nutrition, the Union of Myanmar has drawn up a National Plan of Action on Food and Nutrition (NPAFN) based on the principles and strategies enumerated in the plan of action of the International Conference on nutrition. The NPFAN, was drafted by the multisectoral working group with the coordination of the National Nutrition Centre (NNC) of the Department of Health and with the technical assistance of FAO and the support of FAO, UNICEF (the United Nations Children's Fund), UNDP and WHO.

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CHAPTER 15: CONSERVATION OF BIOLOGICAL DIVERSITY

Decision-Making: The National Commission for Environmental Affairs (NCEA) chaired by Minister, Ministry of Foreign Affairs, is the focal agency concerning with biological diversity in Myanmar. For implementation of activities, Ministry of Forestry is mainly responsible as the forest coverage is about half of the country's total area with abundance of wild life species. Other relevant Ministries are Ministry of Livestock and Fisheries and Ministry of Agriculture and Irrigation.

Programmes and Projects: Genetic diversity is the foundation for all crops improvement programme. Various crop species such as rice, sesame, pulses and citrus have wide genetic diversities in Myanmar. Conservation of these generic resources is of considerable importance for the present and future use in crop improvement programmes. The Seed Bank was established in the Central Agriculture Research Institute (CARI) in 1987 and could have functioned properly on in 1997. The Forest Department under the Ministry of Forestry is responsible for biodiversity conservation in general, and Nature and Wildlife Conservation Division under the Forest Department is responsible for establishment of representative protected areas network and wild life management of the country in particular.

Status: Myanmar has been divided into 9 bio units, each representing a different agro/ eco-climatic zone. The country is endowed with a diversity of flora and fauna. It has been identified that there are about 7,000 plant species, more than 300 mammals and 400 reptiles, and 1,000 birds species. The major development in biodiversity conservation is the promulgation of the new "Protection of Wildlife, Wild Plants and Natural Areas Law" in 1994. The new wildlife legislation as against the old has assumed the modern approaches in biodiversity conservation. The Law has greatly enlarged the scope of protection accorded to the animals. Among them, birds and mammals are prominently included. The 1994 wildlife legislation declares complete protection for 39 mammals, 50 birds and 9 reptiles species, normal protection for 12 mammals, 43 birds and 6 reptiles species; and seasonally protected species including 2 mammals and 13 birds.

Capacity-Building, Education, Training and Awareness-Raising: For the conservation of biological diversity and the sustainable use of biological resources, the Forest Department is badly in need of institutional strengthening and capacity building of staff in relevant sectors. The main technology issues are lack of trained staff, trained researchers and equipments.

Information: The Ministry of Forestry, the Ministry of Agriculture and Irrigation, the Ministry of Livestock and Fisheries have Planning and Statistics Departments to collect and compile statistics on biodiversity.

Research and Technologies: The Ministries concerned carry out research works.

Financing: Actual costs and financial terms will depend on specific programmes the government decides upon for implementation. Although having some financial constraints, the Forest Department is trying its best in implementing biodiversity conservation activities. Although Myanmar has ratified the Convention on Biological Diversity, it has not yet received any fund provided by Global Environment Facility (GEF) for conservation of Biological Diversity in Myanmar.

Cooperation: Myanmar has already ratified the Convention on Biological Diversity (CBD) and acceded to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). It is in the processing stage to join World Conservation Union (IUCN). Myanmar is also in close collaboration with international scientific organization, such as Smithsonian Institution, Wildlife Conservation Society (WCS), Asian Elephant Specialist Group (AESG), Japan Wild Bird Research Centre (JWRC), International Crane Foundation (ICF), Asian Wetland Bureau (AWB) and Ramsar Convention.

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

Environmentally Sound Management Of Biotechnology:

Decision-Making: No information available.

Programmes and Projects: No information available.

Status: Little or no genetic engineering has been done with forest tree species. However, pertaining to teak, vegetative propagation of teak had been initiated by Forest Research Institute of the Forest Department. Culturing the vegetative cuttings of teak into seedlings and by using plant hormones and other chemicals has done vegetative propagation of teak by branch cutting. These seedlings had been planted in the fields in trail-plantation-establishment. The genetic resources of the important commercial species of Myanmar, particularly teak (*Tectona grandis*), Pyinkado (*Xylia kerri*), Padauk (*Pterocarpus macrocarpus*), Yemane (*Gmelina arborea*), Yinma (*Chukrasia tabularis*), Tamalan (*Dalbergia maymyensis* Craibprazeri Prain), Sha (*Acacia catechu*), Tama (*Azadirachta indica*), etc. and also some medicinal trees, plants, shrubs and herbs have been dwindling by leaps and bounds and there is an urgent need to systematically conserve these which are still available genetic resources for use in the field of Biotechnology for future development. Thus, the need for environmentally sound management of Biotechnology in the field of Forestry in Myanmar has not fully realised as yet at present; but the scope for such management is envisaged in some new future when such technology become more developed in Myanmar Forestry.

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: No information available.

Transfer of Environmentally Sound Technology, Cooperation And Capacity-Building:

Decision-making: No information available.

Programmes and Project: Alternative energy is being promoted in the country. This includes promotion of solar and wind energy, and mini-hydropower. Petroleum refineries are also being upgraded to promote clean production processes. ISO 14000 Series are gradually being introduced in the country. The Myanmar Ivanhoe Company for mining copper has already received the ISO 14001 certificate.

Status: As a member of ASEAN, GMS, BIMST-EC and other regional and sub regional organizations, Myanmar is sharing information on environmentally sound technology as well as taking part in regional and sub regional activities for the transfer and adaptation of cleaner technology. Participation in regional and sub-regional programmes enables Myanmar to receive some financial and technical assistance.

Capacity-Building, Education, Training and Awareness-Raising: Workshops and seminars are being organized in the country to promote awareness and the transfer of ESTs to small and medium enterprises.

Information: No information available.

Research and technologies: No information available.

Financing: No information available.

Cooperation: No information available.

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

Decision-Making: There is as yet no specific decision making body to address cross-sectoral issues.

Programmes and Projects: Myanmar Agenda 21 contains guidelines on programmes and projects relating to sustainable use of marine resources.

Status: The status of marine and coastal environment is still relatively good.

Capacity-Building, Education, Training and Awareness-Raising: The National Commission for Environment Affairs is promoting education and awareness on the protection of seas and oceans. Moderate capacity building and technology upgrading have been carried out by concerned sectors but there is a need to promote integrated management and sustainable development of coastal areas.

Information: No information available.

Research and Technologies: Department of Marine Science under the University of Mawlamying is doing research on marine environment.

Financing: Government own resources.

Cooperation: Limited regional and international cooperation in capacity building and research.

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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: The Ministry of Agriculture and Irrigation and the Municipal Authorities are responsible for decision-making in collaboration with the stakeholders.

Programmes and Projects: There are numerous programmes and projects relating to protection of the quality and supply of freshwater resources, application of integrated approaches to the development, management and use of water resources.

Status: In Myanmar, inland water bodies such as natural lakes, river systems, ponds, etc. and man made reservoirs cover an area of about 8.2 million hectares. The total internal renewable water resources are 1080.5 million km³ in average. Total per capita water withdrawal is 23248.56 m³/capita. Agricultural Sector withdraws 3 percent of total water resources and the percentage of withdrawal from the domestic sector is not significant. Although the country as a whole is endowed with rich water resources, due to the ranging topography and climate conditions, the rainfall is unevenly distributed leaving some regions, especially in the central Myanmar, with shortage of water. The Government has been implementing various rural water supply activities to provide safe and adequate drinking water. With the increase of population and enhanced need for water for economic activities, there is an increasing pressure on extraction of ground water. Control and management of ground water extraction is necessary to assume the safety of ground water.

Capacity-Building, Education, Training and Awareness-Raising: The NCEA and the Ministries concerned are promoting education, training and awareness raising.

Information: The ministries concerned have relevant information.

Research and Technologies: There is limited capacity for research and technology.

Financing: Government budget allocation.

Cooperation: UNDP & UNICEF provide some assistance.

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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 Trade, and the Ministry of Industries are the main agencies dealing with toxic chemicals traffic. The National Commission for Environmental Affairs is the responsible agency to set guidelines for the environmentally sound management of toxic chemicals.

Programmes and Projects: Myanmar Agenda 21 contains programmes and activities for environmentally and management of toxic chemicals.

Status: In Myanmar, some protective, measures already taken in the management of toxic chemicals are as follows: -

(a) At Namatu & Bawdwin mines and Kyauk pahtoe of No. 1 Mining Enterprise, little amount of cyanide, consumed in mineral dressing process of complex ores, has been thoroughly neutralized in water and rejected in the plant without any hazardous effect. The SO₂ gas, emitted by roasting process of sulphide minerals, has been totally, scrubbed by limewater and emitted into atmosphere;

(b) In two Steel Mills of No.3 Mining Enterprise, some input of chemicals, in processing stages, are no injurious chemicals in the products. Only a certain amount of excess Co, coal- tar gas and fume dust, produced in Direct Reduction plant and Steel Making plant, are drawn into the Dust collector by stronger suction Fan and injected with spray- water. Coal-tar gas is collected, as a Condensate in tar pond and Co is recycled in plant as gas-burners. Other toxic gaseous fume, containing H₂, CO₂ and NH₃, emitted in galvanizing plant, are collected by stronger solution Fan and released into atmosphere through high chimney. The final residue waste acid solution is neutralized with lime-water and disposed in the plant; and

(c) To every section, dust marks, heat resistant suits, gloves, goggles, helmets and safety shoes are provided as self protective equipments.

Capacity –Building, Education, Training and Awareness-Raising: The National Commission for Environmental Affairs is promoting environmental awareness on toxic chemicals.

Information: Inadequate.

Research and Technologies: Still inadequate.

Financing: External financing and technical assistance is needed.

Cooperation: Limited cooperation is available.

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CHAPTER 20 to 22: ENVIRONMENTALLY SOUND MANAGEMENT OF HAZARDOUS WASTES, INCLUDING PREVENTION OF ILLEGAL INTERNATIONAL TRAFFIC IN HAZARDOUS WASTES

Decision-Making: The Ministry of Industries, Municipal Authorities, the Ministry of Trade and the National Commission for Environmental Affairs are responsible for sound decision-making regarding management of hazardous, solid and radioactive wastes.

Programmes and Projects: Myanmar Agenda 21 contains programmes for environmentally sound management of hazardous and solid wastes.

Status: In Myanmar, most factories neither produced toxic chemicals nor use them as raw materials in their manufacturing processes. However, a few factories such as paper mills, leather factories and textile factories generate some industrial hazardous wastes. With the opening up of the economy, there is some apprehension that industries generating hazardous wastes may increase. Hazardous wastes and products may be developed. A careful watch needs to be kept over the situation. It may be necessary to examine the need to ratify the Basel Convention on the Transboundary Movement of Hazardous Wastes. Continuous monitoring is very important. Legislation should be drafted to limit the concentration of arsenic, copper, and lead cyanide that may be discharged.

Capacity Building, Education, Training and Awareness-Raising: Human resource development and technical support including instruments and technology are needed to overcome the difficulties in the environmentally sound management of toxic chemical and industrial wastes.

Information: There is limited information on hazardous wastes.

Research and Technologies: Still not adequate.

Financing: External Funds are needed.

Cooperation: Limited cooperation from international community.

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CHAPTER 24 to 32: STRENGTHENING THE ROLE OF MAJOR GROUPS

Women: Decision-Making: Institutional mechanism for the advancement of women is now in place. The present institutional structure is as follows: - Myanmar National Committee for Women's affairs was formed on 3rd July 1996 with the aim to promote the advancement of Myanmar women especially for those at the grass-root level and for those residing at the border areas. The patron of the Committee is the Secretary 1 of the State Peace and Development Council. The Minister chairs the Committee for Social Welfare, Relief and Resettlement as this ministry is designated as the focal point for women's affairs. The Committee comprises deputy ministers from related ministries for women's advancement and presidents of notable women and social NGOs. Programmes and Projects: To implement the activities successfully Myanmar National Working Committee was formed in the later part of the same year. Working Committees are formed at various levels in all states and divisions of the country and at present has identified nine areas of concern for the advancement of women which are as follows: - (1) National mechanism for the advancement of women; (2) Education; (3) Health; (4) Economy; (5) Violence against Women; (6) Girl-child; (7) Environment; (8) Media; and (9) Culture. A National Plan of action is drawn with strategies to implement the activities of the above nine areas. It's activities are complementary to the government's activities and works closely with the NGOs and communities. Status: Myanmar women enjoy the same rights and privileges as men in all aspects of economic and social spheres. Capacity-Building, Education, Training and Awareness-Raising: The activities are being carried out by the Working Committees of the Myanmar National Working Committee for Women's Affairs. Information: Myanmar National Working Committee is in the process of compiling gender statistics. Research and Technologies: There is a need to promote Research and Technology for the advancement of women. Financing: Government budget. Cooperation: There is need to promote international and NGOs' cooperation.

Children and Youth: Decision-Making: No information available. Programmes and Projects: The involvement of children and youth in sustainable development is gaining momentum in recent years due to the environmental awareness campaigns initiated by the National Commission for Environmental Affairs in cooperation with the Ministry of Education, Ministry of Information and Culture and Youth from NGOs such as USDA and MRCS. Status: The following organization is active in involving children and youth in sustainable development activities. 1) Union Solidarity and Development Association (USDA), 2) Myanmar Red Cross Society (MRCS), 3) YWCA/YMCA, 4) Young Men Buddhist Association (YMBA). Capacity-Building, Education, Training and Awareness-Raising: National Environmental Awareness Week, National Sanitation Week and School Environment and Sanitation Day are being held annually with full participation of children and youth. Formal environmental education is being promoted in schools and informal environmental education for the public including children and youth is being promoted through the mass media. Information: No information available. Research and Technologies: No information available. Financing: No information available. Cooperation: No information available.

Indigenous People: Decision-Making: No information available. Programmes and Projects: No information available. Status: The Ministry for Progress of Border Areas and National Races and Development Affairs is the responsible Ministry with mandates to promote the role of indigenous people and their communities in sustainable development activities. 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: No information available.

Non-governmental organizations: Decision-Making: No information available. Programmes and Projects: No information available. Status: Non-Governmental Organization was almost non-existent during the Socialist era except for *Myanmar Red Cross Society* and religious associations such as *Young Men's Buddhist Association*, *YMCA* and *YWCA*. Following the reconstitution of the Market-oriented Economic System in 1989 and more flexible economic and social systems, NGOs have been permitted to establish to promote welfare and well being of the society. Thus, the *Myanmar Maternal and Child Welfare Association* (MMCWA) was established in 1991 as an NGO for promoting health and well being of mothers and children. *The Myanmar Woman Entrepreneurs Association* (MWEA) was formed in 1995 as an NGO to enhance the role of women entrepreneurs. In the environment sector, the Forest Resource, *Environment and Development Association*

(FREDA) was established in 1996 as an environmental NGO to promote sustainable forest management, natural environment and wildlife conservation. 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: No information available.

Local Authorities: Decision-Making: No information available. Programmes and Projects: No information available. Status: Myanmar Agenda 21 formulated and adopted in 1997 clearly defines that role of local authorities and communities' initiatives in support of Agenda 21. 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: No information available.

Workers and trade unions: Decision-Making: No information available. Programmes and Projects: Status: Myanmar agenda 21 spells out the importance of strengthening the role of workers and their trade unions to implement sustainable development activities outlined in the Agenda. 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: No information available.

Business and industry: Decision-Making: No information available. Programmes and Projects: No information available. Status: Union of Myanmar Federation of Chambers of Commerce and Industry (UMFCCI) has been established to strengthen and promote the role of business and industry in the country. UMFCCI interacts with private business society in the country and has close contact with its foreign counterparts. Promotion of cleaner technology and production techniques are gradually being promoted among its members and through them to the business society. 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: No information available.

Scientific and technological community: Decision-Making: No information available. Programmes and Projects: No information available. Status: The Ministry of Science and Technology is the responsible agency in Myanmar to promote cleaner production technology in the country. It liaises closely with the National Commission for Environmental Affairs to enhance public awareness on cleaner technology. 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: No information available.

Farmers: Decision-Making: No information available. Programmes and Projects: No information available. Status: The Ministry of Agriculture and Irrigation is making continued efforts to introduce and disseminate sustainable farming practices and technologies among the farming community. Soil conservation, sustainable use of land and water are being encouraged and promoted in the rural areas to prevent land degradation. 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: No information available.

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CHAPTER 33: FINANCIAL RESOURCES AND MECHANISMS

Decision-Making: The Ministry of Finance and Revenue in consultation with the Ministry of Economic Planning and Development and other sectoral ministries.

Programmes and Projects: Following the economic reforms in Myanmar, a new financial management programme of the State was introduced by using the State Fund Account (SFA) starting in 1989-90, to replace Union Government Consolidated Fund (UGCF). Under the programme, domestic bank credits of State Economic Enterprises (SEEs) were converted into government equity to relieve the SEEs from the burden of previous debts. Administrative organizations and SEEs have to deposit their receipts into the SFA which is the main government account, and their expenditures are met from the SFA according to their budget allotment. Local bodies are operating with their own fund according to the respective City Development Laws. Substantial increase in government expenditure was due to infrastructure development of the country. To support sustainable economic development, the following financial measures were undertaken as new economic instruments:

- Enacting and amending laws for banking and financial fields;
- Making arrangements for the development of financial and monetary system;
- Making arrangements for extensive participation of state and private entrepreneurs in banking and financial activities;
- Increasing insurance schemes paving the way for the establishment of private insurance scheme, both domestic and foreign;
- Facilitating effective collection of tax and reforming taxation system; and
- Carrying out various methods to increase savings and provide financial requirement.

Status: The net services value of the financial sector at 1985-86 constant prices was K 1180 million achieving 112.3 per cent of the plan target and registering a growth rate of 18.2 per cent over 1995-96, according to the provisional data. Due to development of banking services in line with the economic system resulting from the increase accrual of interests on loans disbursement from the state banks, increase income from private banks and wider coverage of insurance schemes, there was a fiscal in the financial sector. The fiscal deficit has now been stabilised at around 5 per cent of GDP and it was largely due to the substantial need to invest in basic economic and social infrastructure works. At this moment public sector development is largely carried out by mobilization of its own resources without much financial assistance. As a result of using interest rate policy measures, saving have increased significantly. On the other hand, in support of a growing private sector, there has been substantial increase in private loans. In macroeconomic performance, the inflation rate subsided to 20 percent in 1996/97 from 25 percent during the previous year. Following the financial sector reform, 20 private local banks and 48 foreign banks representative offices have been opened. Moreover a total of 7 memorandum of understanding between local banks and foreign banks have been signed to date for the establishment of joint-venture banks.

Capacity-Building, Education, Training and Awareness-Raising: In house training programmes for the departmental staff were organized by the Ministry of Finance and Revenue. The government officials as well as the private sector are also taking overseas training organized by the regional and sub-regional groups including ASEAN.

Information: The Economic and Financial Review published by the Planning Department contain information on the financial sector.

Research and Technologies: Needs to be upgraded.

Financing: No information available.

Cooperation: The cooperation of IMF is needed.

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CHAPTER 35: SCIENCE FOR SUSTAINABLE DEVELOPMENT

Decision-making: No information available.

Programmes and Projects: No information available.

Status: Greater cooperation from international scientific community is required to promote national scientific knowledge and research to promote sustainable development in the country. Until now, not much assistance from external sources is received.

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: No information available.

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CHAPTER 36: PROMOTING EDUCATION, PUBLIC AWARENESS AND TRAINING

Decision-Making: The National Commission for Environmental Affairs and The Ministry of Education are the main agencies for decision-making concerning promotion of environmental education and awareness.

Programmes and projects: The National Commission for Environmental Affairs (NCEA) is promoting a campaign to enhance public awareness on environmental matters. Since 1993, nation-wide World Environment Day celebrations were held, aiming at involving local communities in the environmental conservation programmes. Environmental Management Training Workshops and National Environmental Seminars are frequently organized to disseminate environmental information and environmental management techniques. In February 1994, Myanmar hosted the ESCAP/UNEP Regional Seminar on People's Participation in Mangrove Rehabilitation and Management in Asia and the Pacific. In preparation for the 1995 State of the Environment report, Myanmar in July 1995, hosted the ESCAP "Regional Meeting on the State of the Environment in Asia and the Pacific".

The National Commission for Environmental Affairs and the Hanns Seidel Foundation-HSF of Germany jointly organized the National Conference on Environmental Management in August 1995 to promote environmental education among the department personnel. Representatives attended the conference from foreign countries in addition to those of government departments in the country. Similarly, the Commission and the HSF jointly organized the National Conference on Environment, Cultural Heritage and Tourism in April 1996 and the National Workshop on Environmental Legislation organized by the National Commission for Environmental Affairs (NCEA) in cooperation with the United Nations Environment Programme (UNEP) and the Hanns Seidel Foundation was held in October 1998. The Commission and the Asia and the Pacific Regional Office of the UN Environment Programme jointly organized the National Workshop on Environmental Law in July 1996.

In June 1997, the Commission and the Economic and Social Commission for Asia and the Pacific joint organized a National Seminar on Technology Transfer for Wastewater Treatment of Small and Medium Scale Industries (SMIs). Private entrepreneurs were also invited to the Seminar. The ECOTONE VII Regional Seminar for South East and East Asia (Integrated Coastal Zone Management in Southeast and East Asia) organized by the National Commission for Environmental Affairs in cooperation with the Myanmar National Commission for UNESCO and the United Nations Educational Scientific and Culture Organization (UNESCO), was held in June 1998. The National Commission for Environmental Affairs and the Asian Development Bank jointly organized the First National Workshop on Strategic Environmental Framework for the Greater Mekong Sub region in May 1999, the second National Workshop in September 2000 and the Third National Workshop in March 2001. The Second National Workshop on Environmental Legislation organized by the National Commission for Environmental Affairs in cooperation with the Hanns Seidel Foundation was held on 24-25 May 1999 in Yangon. A workshop on the preparation of the National Report on the Implementation of the United Nations Convention to Combat Desertification (UNCCD) was held on 15 June 2000. The promotion of environmental awareness is one of the main areas of concentration of the current activities of the NCEA. The Committee on Research, Education and Information and the NCEA Staff Bureau in co-operation with other government ministries particularly the Ministries of Information, Education and Forestry have been promoting environmental awareness through the mass media. World Environment Day is also celebrated on a nation-wide scale to draw public attention to environmental matters.

Status: Public environmental education and awareness has increased significantly over the past decade.

Information: Information on environmental education is being compiled by the NCEA.

Research and Technologies: Upgrading of research and technologies is needed.

Financing: Government own budget.

Cooperation: Needs technical and financial cooperation from the International community.

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

Decision-making: No information available.

Programmes and Projects: The Government initiates human Resources Development (HRD) Programmes. HDI (Human Development Initiation) programmes are being initiated by the UNDP.

Status: Myanmar is in need of technical and financial support from the international community to implement its national Agenda 21.

Capacity-Building, Education, Training and Awareness-Raising: Human Resources Development Programmes are being promoted in the country.

Information: Government reports and UNDP country reports.

Research and Technologies: Needs to be upgraded.

Financing: Government own budget. Some technical assistance is provided by UNDP.

Cooperation: No information available.

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CHAPTER 38: INTERNATIONAL INSTITUTIONAL ARRANGEMENTS

Decision-Making: The suspension of loans and grants from the World Bank, IMF and ADB is affecting the country in its efforts to implement the National Agenda for sustainable development.

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: No information available.

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CHAPTER 39: INTERNATIONAL LEGAL INSTRUMENTS AND MECHANISMS

Decision-Making: The Cabinet in consultation with the National Commission for Environmental Affairs and other concerned ministries.

Programmes and Projects: The drafting of National Environmental Protection Law is in the final stage.

Status: Environmental legislations and institution are still inadequate. The environmental management pattern in Myanmar is largely sectoral with existing policies and regulations relating to environmental management being formulated and administered by sectoral ministries and departments concerned. At present, there are 56 legal instruments in Myanmar shown in the following list that can be termed as environmental.

Myanmar Laws Relating To Environment

A. *Administrative Sector*

1. The Territorial Sea and Maritime Zones Law, 1977
2. The Emergency Provisions Act, 1950
3. The Essential Supplies and Services Act, 1947
4. The Police Act, 1945
5. The Poisons Act, 1919
6. The Explosive Substances Act, 1908
7. The Towns Act, 1907
8. The Village Act, 1907
9. The Yangon Police Act, 1899
10. The Explosives Act, 1887
11. The Penal Code, 1861 of Offences Affecting the Public Health, Safety, Convenience, Decency and Morals.

B. *Agriculture and Irrigation Sector*

12. The Plant Pest Quarantine Law, 1993
13. The Pesticide Law, 1990
14. The Embankment Act, 1909

C. *Culture Sector*

15. The Protection and Preservation of Cultural Heritage Region Law, 1998

D. *City Development Sector*

16. The Development Committees Law, 1993
17. The Mandalay City Development Law, 1992
18. The City of Yangon Development Law. 1990(Amended in 1995 and again in 1996)
19. The Underground Water Act, 1930
20. The Water Power Act, 1927
21. The City of Yangon Municipal Act, 1922
(The Law Amending the City of Yangon Municipal Act, 1991)
22. The Yangon Water -works Act, 1885

E. *Finance & Revenue Sector*

23. The Myanmar Insurance Law, 1993

F. *Forestry Sector*

- 24. The Protection of Wild Life and Wild Plants and Conservation of Natural Areas Law, 1994
- 25. The Forest Law, 1992

G. *Health Sector*

- 26. The National Food Law, 1997
- 27. The Traditional Drug Law, 1996
- 28. The Prevention and Control of Communicable Diseases Law, 1995
- 29. The National Drug Law, 1992
- 30. The Union of Myanmar Public Health Law, 1972

H. *Hotels and Tourism Sector*

- 31. The Myanmar Hotel and Tourism Law, 1993

I. *Industrial Sector*

- 32. The Private Industrial Enterprise Law, 1990
- 33. The Factories Act, 1951
- 34. The Oilfield (Workers and Welfare) Act, 1951
- 35. The Petroleum Act, 1934
- 36. The Oilfields Act, 1918

J. *Livestock and Fisheries Sector*

- 37. The Animal Health and Development Law, 1993
- 038. The Freshwater Fisheries Law, 1992
- 39. The Myanmar Marine Fisheries Law, 1990
(The Law Amending the Myanmar Marine Fisheries Law, 1993)
- 40. The Law Relating to Aquaculture, 1989
- 41. The Law Relating to the Fishing Rights of Foreign Fishing Vessels, 1989
(The Law Amending the Law Relating to the Fishing Rights of Foreign Fishing Vessels, 1993)

K. *Mining Sector*

- 42. The Myanmar Gemstone Law, 1995
- 43. The Myanmar Pearl Law, 1995
- 44. The Myanmar Mines Law, 1994
- 45. The Salt Enterprise Law, 1992
- 46. The Land Acquisition (Mines) Act. 1885

L. *Science and Technology Sector*

- 47. The Science and Technology Development Law, 1994

M. *Transportation Sector*

- 48. The Highways Law, 2000
- 49. The Motor Vehicles Law, 1964
(The Law Amending the Motor Vehicles Law of 1964 enacted in 1989)
- 50. The Myanmar Aircraft Act, 1934
- 51. The Inland Steam Vessels Act, 1917
- 52. The Ports Act, 1908
- 53. The Defile Traffic Act, 1907

54. The Yangon Port Act, 1905
55. The Canal Act, 1905
56. The Obstruction in Fairways Act, 1881

Capacity-Building, Education, Training and Awareness-Raising: National workshops are being organized. Officials from the Attorney General's Office and the Law Department from the Yangon University are being sent abroad for training conducted in UNEP.

Research and technologies: No information available.

Financing: Government own budget. UNEP also provides some technical assistance.

Cooperation: No information available.

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CHAPTER 40: INFORMATION FOR DECISION-MAKING

Decision-Making: Interactive process among various levels of administration for making decisions. Grass root level participation is being promoted.

Programmes and Projects: UNEP and ADB/GMS are providing technical assistance for strengthening the environmental data-base units for informed-decision-making.

Status: There is limited information on the state of the environment especially on environmental pollution.

Capacity-Building, Education, Training and Awareness-Raising: The National Commission is organizing Activities in these areas for Environmental Affairs such as holding of national workshops and seminars.

Financing: Limited Funds are available from Government budget.

Cooperation: More cooperation is needed for international and bilateral agencies.

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INDUSTRY

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: No information available.

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SUSTAINABLE TOURISM

Decision-Making: At the national level, the Ministry of Hotels and Tourism is responsible for decision-making in this area. At the local level, it is the Directorate of Hotels and Tourism and the Forestry Department of the Ministry of Forestry. The Myanmar Tourism Law was enacted in 1990 to ensure the development of sustainable tourism. This Law contains some penalties to businesses for practices that damage the environment. Eco-tourism and nature based tourism are being promoted by undertaking projects in locations which are more or less close to existing tourist destinations so that more opportunities for tourism promotion are expected. For example, Fopa Mountain Park, Sein Ye Camp and Inlay Water Birds Sanctuary are new sites for Eco-tourism. The National Commission for Environmental Affairs (NCEA) has formulated and published the *Myanmar Agenda 21*, which is the plan of action for sustainable development in the country. Among other issues, this national Agenda 21 addresses: maintenance of cultural integrity and essential ecological process; conservation of biodiversity for the life support system; and development of a Greening operation with mass participation. Both eco-tourism and nature-based tourism are integral parts of the national Agenda 21.

Programmes and Projects: No information available.

Status: Tourism plays a pivotal role in the Myanmar Economy, creating employment opportunities and having a multiplier effect within the economy. In terms of foreign exchange, Myanmar received US \$34 million from the tourism sector in 1997-98. Visitor arrivals have shown a significant growth in recent years. In 1987-88, there were 41,000 visitors. During 1998, tourism arrivals through Yangon gateway stood at 200,000 and 300,000 through the border checkpoints along Thai-Myanmar and China-Myanmar, totalling 500,000. The projection in the future is 500,000 through Yangon gateway alone. Priority constraints include a limited budget allotment for infrastructure development and the lack still of a worldwide awareness of Myanmar.

Capacity-Building, Education, Training and Awareness-Raising: Training that is available for employees in the tourism industry to assist them in understanding, applying and promoting sustainable tourism includes: basic guide course (just to give the idea of sustainable tourism); tourism marketing short courses; and eco-tourism courses in foreign countries according to the offers. In addition, the Directorate of Hotels and Tourism is negotiating with Lincoln University of New Zealand to implement a tourism-training project to educate policy-makers in the concept and development of sustainable tourism. To promote sustainable tourism, the Ministry of Hotels and Tourism publishes brochures, pamphlets and other literature.

Information: The following information is available to assist both decision-makers and the tourist industry in promoting sustainable tourism: the inventory published by the central statistics; reports of the conferences and seminars held abroad on Eco-Tourism attended by Myanmar government officials; reports on Cultural Heritage and Tourism Conference organized by NCEA in Yangon, including interrelationship between Protection of Cultural and Natural Heritage, Tourism Development and Environmental Conservation, tourism promotion by Enhancement of the Image of Myanmar as Cultural Destination, and a new approach to Green-based Travel in Myanmar; the Potentials and Opportunities.

Research and Technologies: The Yangon City Development Committee, chaired by the Mayor of Yangon, sends directives to Hotel and Tourist establishments for environmental management.

Financing: No information available.

Cooperation: Encouragement is given to private sector to participate in Pacific Asia Travel Association (PATA), World Travel Market (WTM), International Tourism Exchange (ITB), ASEAN Tourism Ministers (ATM), Cultural and Travels in South East Asia and Pacific. Myanmar is a Member of the Association of South East Asian Nations (ASEAN) and BISMT-EC and participates in bilateral agreements on tourism cooperation with Thailand, Laos, Cambodia and Vietnam.

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