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ICELAND



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: The Ministry for Foreign Affairs is responsible for international trade issues and for development aid. International relations and cooperation is generally the task of the central government. Iceland is a member of the World Trade Organization (WTO) and has undertaken and put into law the obligations resulting from that membership. Recently, the Foreign Ministry concluded an agreement with the New Business Venture Fund in Iceland and the Icelandic Development Agency on what is called trade development. The idea is to assist Icelandic companies in discovering business and investment opportunities in developing countries. This work is connected with Iceland's cooperation with the World Bank that has expressed an interest in cooperating with enterprises in Iceland on economic development in developing countries.

Programmes and Projects: Iceland participates in the Nordic Development Fund, financing projects in developing countries and in the Nordic Environment Finance Corporation (NEFCO), a risk capital institution financing environmental projects in Central and Eastern Europe. The Icelandic International Development Aid Agency (ICEIDA) has for many years provided Official Development Assistance (ODA) to some southern African countries in managing their living oceanic resources and determining the sustainable yield of fisheries resources in their waters. Fisheries scientists from Africa have been trained in Iceland for this purpose. ICEIDA supports Southern Africa Development Community (SADC) cooperation units in marine and inland fisheries. Among the goals of these units is to secure the sustainable harvesting of fish resources.

Status: The Icelandic Government decided in 1998 to triple its contributions to bilateral aid over a period of 5 years. Multilateral ODA is also increasing slightly, mainly due to participation in more international organizations. Iceland has decided to take full part in the Heavily Indebted Poor Countries (HIPC) initiative despite the fact that Iceland is not and has never been a lender to poor developing countries. Iceland is a party to the recent Nordic Strategy for Sustainable Development. It also takes part in Baltic 21, an Agenda 21 for the Baltic Sea Region. The Icelandic International Development Agency handles cooperation between Iceland and developing countries. Iceland participates in International Development Assistance (IDA) and the Nordic Development Fund.

Capacity-Building, Education, Training and Awareness-Raising: The United Nations University's Geothermal Training Programme (UNU GTP) has operated in Iceland since 1979, under the auspices of the National Energy Authority. Its goal is to assist developing countries with significant geothermal potential to build up or strengthen groups of specialists that cover most aspects of geothermal exploration and development. This is done by offering six months specialized courses for professionals who have minimum of one year's practical experience in geothermal work in their home countries. The UNU Fisheries Training Programme is also located in Iceland since 1997, offering six months of coursework and training working professionals in developing countries.

Information: The Icelandic www-sites most relevant for multilateral cooperation are: ICEIDA: <http://brunnur.stjr.is/interpro/utanr/thssi.nsf/pages/iceida>; UNU Geothermal Training Programme: <http://www.os.is/unugtp/index.html>.

Research and Technologies: Iceland's priorities in transfer of technology for sustainable development are in the sectors in which the country has most technological expertise. These include fisheries technology and fisheries management, as well as know-how in the field of geothermal energy. Iceland's priorities in transfer of technology for sustainable development are in the sectors in which the country has most technological expertise. These include fisheries technology and fisheries management, as well as know-how in the field of geothermal energy.

Financing: The annual ODA of Iceland in the last years has been just over 0.1% of GNP. About one third (approx. 2.5 million US\$) of the State contribution goes to bilateral aid, which is administrated by the Icelandic International Development Agency (ICEIDA). ODA has increased in recent years and it is government policy to increase it further. ICEIDA's policy is to focus its efforts on areas where Icelandic expertise is thought to be most useful and where Icelanders are well advanced. All major projects are related to training and capacity building in fisheries, as well as fisheries research and institution strengthening in the fisheries sector. In all cooperation countries ICEIDA is supporting small projects in the health, education and social sectors. More emphasis is now being placed on such activities.

Cooperation: Iceland is an active member of the International Council for the Exploration of the Sea (ICES) and other international bodies to protect the marine living resources and secure their sustainable utilization. ICEIDA is providing support to developing countries in Africa in fisheries biology and fisheries management. Presently ICEID is engaged in development cooperation with three countries in Africa; Malawi, Namibia, and Mozambique. Also, a long-standing cooperation with Cape Verde is being phased out. Iceland supports debt reduction for the poorest countries as part of the policy to enable them to build a sustainable economy. Iceland's contribution to the HIPIC initiative is expected to be approximately US\$ 3 million.

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

Decision-Making: The Ministry for Foreign Affairs is responsible for international trade issues and for development aid. The Ministry of Industry and Commerce is responsible for issues concerning foreign investment. Iceland is a member of the WTO and has undertaken and put into law the obligations resulting from that membership. Comprehensive legislation reflecting the environmental and economic character of the country - using environmental impact assessments very similar to those in the European Union (EU) - plays an important role in regulation of planning procedures for industrial and power developments. This legislation offers clear principles for arbitration, simplified licensing procedures and benefits for the environment, for Iceland and for developers alike. Environmental policy does not serve to deter investment, but rather to harmonize it along progressive and imaginative lines, by cooperation between environmental authorities and developers.

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

Status: Iceland is highly dependent on international trade. Iceland trades primarily with Europe and North America. However, Iceland has taken steps to increase trade relations with the developing countries and the countries with economies in transition. Iceland's imports from the developing countries, namely Asia, Africa and Latin America exceed its exports to these countries. The main products imported from developing countries are fruit and textiles, and there are no customs duties or other charges levied on them. Iceland has stressed the importance of linking international trade and environment. In this work, particular emphasis should be placed on: encouraging trade practices which are consistent with environmental conservation; ensuring that unjustifiable, arbitrary or unilateral trade restrictions are not applied to further obscure environmental objectives; adjusting the international trading system to the needs of the developing countries; and, building win-win-win strategies that bear positive results for trade, environment and sustainable development.

Iceland has in the various fora, including the Comisión on Sustainable Development (CSD), WTO and Food and Agriculture Organization (FAO), drawn attention to the importance that the global market be conducive to sustainable fisheries. Given the fact that the industrialized countries are responsible for the bulk of the subsidies granted to the global fisheries sector, the negative trade distorting effects of these subsidies affect first and foremost the fish-exporting developing countries. The removal of these subsidies would therefore benefit the developing countries most and their prospect of sustainable development.

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

Information: Information related to trade, investment and economic growth is made available to potential users through publications, by request and through the Internet by Statistics Iceland, the National Economic Institute, and the Trade Council of Iceland and by Invest in Iceland Bureau. The World Wide Web Sites of these are the following: Statistics Iceland <<http://www.statice.is>>; National Economic Institute: <<http://www.ths.is/eng/english.htm>>; Trade Council of Iceland: <<http://www.icetrade.is>>; Invest in Iceland Bureau <<http://www.invest.is>>; the Foreign Ministry of Iceland <<http://www.utn.stjr.is>>; ICEIDA <<http://brunnur.stjr.is/interpro/utandr/thssi.nsf/pages/iceida>>.

Research and Technologies: No information available.

Financing: No information available.

Cooperation: Iceland reports on issues related to trade, investment and economic growth to various intergovernmental bodies, including the UN Statistical Division, UN-ECE, WTO, IMF, IBRD, OECD and EFTA.

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CHAPTER 3: COMBATING POVERTY

Decision-Making: The Ministries of: Health and Social Security; and Social Affairs deal with matters related to social security and social assistance. The Social Assistance Act No. 118/1993 and the Social Security Act No. 117/1993 deal with pension insurance, health insurance, injury insurance, motherhood and fatherhood allowance, child pension, home care benefits, rehabilitation pension, spouse's benefits, widows' and widowers' benefits, household supplement, special household supplement, supplements arising from special circumstances and other aspects of social security.

Programmes and Projects: See under **Decision-Making**.

Status: Poverty is not an issue of major concern in Iceland and absolute poverty does not exist. Unemployment is low and the whole population has access to primary health care and education.

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

Decision-Making: The Ministry of Environment is the body mainly responsible for this topic. Consumer affairs are the responsibility of the Ministry for Industry and Commerce. The national environmental strategy, Towards Sustainable Development (1993), emphasizes that environmental problems should be resolved at source and by adopting sustainable consumption and production patterns. Several economic instruments have been used to promote recycling of solid wastes. Since 1993, Environmental Impact Assessment has been, by law, an integral factor in physical planning, Pollution Control Regulations have been implemented, and a standard for environmental management systems has been developed. Polluting industries are required to obtain individually designed operating licenses. The companies are inspected regularly. Iceland is a member of the Nordic Eco-Labeling Scheme, designed to provide consumers with guidance to help them choose products and services less harmful to the environment.

Programmes and Projects: In February 1997, the government adopted a policy paper entitled “Environment Policy in Government Operations.” The policy includes principles related to waste minimization, preference for environmentally sound goods and services, and maximum recycling and reuse. Areas covered are procurement, paper use, office equipment, use of information technology, chemicals and cleaning, packaging and recycling, energy use, buildings (design, building and repairs), transport, participation and education. See also under **Decision-Making**.

Status: Economic growth in recent years has caused an overall increase in consumption. Government efforts, as well as several initiatives by local authorities, industry and NGOs have, however, helped to reduce many environmentally harmful effects of consumption. The introduction of the polluter-pays principle in waste management and many fields of industry, the introduction of return fees on many types of waste, and the launching of many voluntary schemes in the field of consumer awareness and greener consumption have all contributed to this goal.

Capacity-building, Education, Training and Awareness-Raising: Measures have been taken within both the education system and businesses to raise public awareness. Booklets have been published and information campaigns held to publicize the Nordic Eco-Label. In accordance with the Act on the Obligation of the Government to Provide the Public with Information on Environmental Affairs, the Government of Iceland publishes a report on the state of the environment annually. The government has supported a Non-Governmental Organization (NGO), Landvernd, in launching a consumer awareness programme (Global Action Plan), aimed at getting individuals and families reduce their consumption and make it more environmentally friendly. The programme is run in cooperation with Local Agenda 21 in several municipalities.

Information: In 2000, the Ministry for the Environment published a booklet on Environmentally Sound Procurement. The booklet was distributed to all major government agencies, as well as many companies. The booklet is also available on-line: <http://www.rikiskaup.is/umhverfi/>.

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: The Ministry of Industry is responsible for energy issues in general. It also deals with energy-related aspects of atmosphere, in coordination with the Ministry for the Environment. The Ministry of Communications is responsible for energy-related aspects of transport. Iceland's policy is to further use its abundant domestic energy resources for economic development, diversification of the economy, regional development and environmental benefits derived from using clean and renewable energy. The Government Working Group addressing this issue has submitted policy proposals, which will be included in the National Agenda 21 (National Programme of Action). See also under **Programmes and Projects**.

Programmes and Projects: A task force composed of the secretary-generals of eight government ministries is in charge of formulating and implementing policy with regard to the UN Framework Convention on Climate Change and Iceland's national programme to halt emissions of greenhouse gases and sequester carbon from the atmosphere. Among the projects that have been undertaken to combat climate change are: the reduction of fluorocarbons emissions from the main aluminum smelter; the provision of electricity to ships in harbours, a change from oil to electricity as an energy source for fishmeal factories; a further expansion of geothermal heating for houses; the collection of methane from landfills; and a project aimed at increasing carbon sequestration in trees and vegetation.

In 1998, the Ministry of Industry, the Energy Fund and the Rural Development Agency launched a programme to increase the use of geothermal water. The programme will at least be in force throughout the year 2002. The Ministry of Industry is preparing a "Master Plan for Hydro and Geothermal Energy Resources in Iceland," in cooperation with the Ministry for the Environment. The master plan will be based on the best available scientific information. One hundred energy project proposals identified by the National Energy Institute will be evaluated. Projects will be judged on the basis of: profitability, benefits to the economy, impact on the environment, employment and regional development.

Status: The utilization of hydro, geothermal and other energy sources should be made by taking into account nature conservation concerns, which limit their overall utilization and call for modification of specific projects. Iceland aims to be the first or one of the first countries in the world to account for all its energy use from clean and renewable energy sources.

Iceland has an abundance of hydro and geothermal energy. It is estimated that less than 10% of the potential energy potential is currently harnessed. Practically all Icelanders enjoy access to the electrical grid. In some fish meal plants and other industrial sectors, secondary power has already replaced oil for steam production. A review of energy supply mixes shows that 64% of primary energy consumption is covered with hydro-energy and geothermal sources. Eighty-five per cent of oil is used for transport. Coal is only used as reduction material in aluminum and ferrosilicium production. So far, Iceland has not introduced energy- or emission-related taxes. Only a fraction of the hydro- and geothermal energy potential in Iceland has been harnessed. Through an extensive effort it has been possible to supply 85 percent of households with geo-thermal heating and close to 100 per cent of stationary energy in Iceland is based on clean and renewable sources. This achievement stands out as an example of a successful implementation of sustainable development policies in the past.

The utilization of renewable hydro and geothermal energy sources faces some opposition in Iceland because of nature conservation concerns. Paradoxically, the implementation of the Kyoto Protocol could also be a barrier to the utilization of Iceland's renewable energy sources. Further utilization of these energy sources would be mainly used by metal smelting or other energy-intensive industries, which emit greenhouse gases in industrial processes. The Icelandic economy's small size means that such industrial emissions from even a single project could significantly increase national emissions. Iceland has argued that the utilization of the country's clean energy for industry can bring a global benefit for the atmosphere, as most of the emissions in metal smelting usually come from the energy production, not industrial emissions. The Icelandic government has suggested provisions to account for this problem in post-Kyoto negotiations, and is confident that a solution can be found on the basis of existing proposals.

Capacity-Building, Education, Training and Awareness-Raising: The Ministry for the Environment, in cooperation with car importers and the Car Owners Association, sponsors a programme to publish and disseminate information on car mileage and pollution, which is available at car sales. Iceland is a member of the European Economic Area and as such has adopted a number of directives on labelling and standard product information of the consumption of energy and other resources by household appliances. Furthermore, Iceland has adopted a directive on the energy efficiency requirements for household electric refrigerators, freezers and combinations thereof.

Information: The National Energy Authority, an agency under the auspices of the Ministry of Industry, is responsible for this task.

Research and Technologies: Iceland has developed transportation technologies and considered the relative cost-effectiveness of alternative energy systems. Iceland has continued to utilize its hydro and geothermal energy resources. Constant research is carried out by the energy utilities, in cooperation with the National Energy authority, on how to optimize the utilization of both hydro and geothermal resources with good results not least in the field of geothermal where Iceland has developed high technology methods. Projects have been set up to use methane from landfills and hydrogen as fuel for vehicles. Hydrogen has great possibilities to be used as fuel in Iceland. The abundant and relatively cheap hydro and geothermal energy in Iceland could be used to produce hydrogen in a non-polluting way. Hydrogen technology (fuels cells) is currently too expensive to be a commercially viable alternative to engines using fossil fuels, but this could change in coming years and decades.

In industry, especially new energy-intensive industry, there has been an emphasis on demanding the Best Available Technology (BAT) with regard to pollution control. There have also been government programmes on integrating “Cleaner Production” methods in industry, especially in the fish and food industries. See also under **Status**.

Financing: No information available.

Cooperation: The United Nations University’s Geothermal Training Programme (UNU GTP) has operated in Iceland since 1979, under the auspices of the National Energy Authority. Its goal is to assist developing countries with significant geothermal potential to build up or strengthen groups of specialists that cover most aspects of geothermal exploration and development. This is done by offering six months specialized courses for professionals who have minimum of one year’s practical experience in geothermal work in their home countries. Iceland has a programme to implement the Montreal Protocol and has to date conducted the planned phase-out of ozone-depleting substances within the deadlines set in the Protocol. Iceland has an Action programme to implement the UN Framework Convention on Climate Change, and has to date undertaken several measures to curb emissions of greenhouse gases and to increase sequestration of carbon in sinks. Iceland has not yet signed the Kyoto Protocol. Iceland signed the Energy Charter Treaty in 1991 and the Energy Charter Treaty in 1994 as well as the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects. Iceland is engaged in bi- and multilateral cooperation in the field of energy, especially geothermal. In the year 2001 an agreement on cooperation between Iceland and Greenland was signed as well as an agreement between the Government of Iceland and the State Governor of California.

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CHAPTER 4: CHANGING CONSUMPTION PATTERNS - TRANSPORT

Decision-Making: The Ministry of Communications and Transport is the coordinating body for this issue. Organizations under the supervision of the Ministry dealing with transport are: the Public Road Administration; the Icelandic Maritime Administration; and the Icelandic Civil Aviation Administration. Decisions regarding roads and airports are made at the national level. Works relating to harbors are a joint responsibility of the national government and municipalities and local governments as a general rule initiate proposals for work relating to harbors. All government funding for transport has to be agreed upon by the Parliament, where groups and individuals can bring their opinion into the debate. The law on environmental impact assessment ensures that everyone can make suggestions regarding major individual transport projects. The interests of the fishing industry are a prime concern in decision-making on harbors. The building and operation of Iceland's main road tunnel is privately run, while the tunnel will in due time be handed over to the government. It is foreseen that the private sector will get an increasing role in the transport sector in coming years, although decision-making will continue to be a role of the government.

The main laws regarding transport include: the 1994 Public Roads Law; the 1991 Law on the Icelandic Maritime Administration; the 1998 Aviation Law; and the 1987 Law on Airport Construction. The effect of the Rio Summit and its decisions on transport can be seen for example, in that most transport projects now undergo EIA.

Four-year plans are made for construction and repair of roads, harbors and airports, and they are reviewed every two years. The plans are drafted under the auspices of the Ministry for Communications and its specialized agencies, in consultation with municipalities, Members of Parliament, public and private stakeholders. Work has started on an integrated transport plan for Iceland, combining current plans for roads, harbors and air traffic. According to a long-term plan for road transport, it is considered that in the period 2005-2010 all parts of Iceland will have reached the stage of having adequate modern road infrastructure.

Programmes and Projects: There are programmes to increase safety of seamen and road traffic safety. Many of the above concerns will be integrated in the overall transport strategy to be adopted next year. According to law, 1% of government funds for road construction and other transport projects goes to research and development in that field. Over 100 projects in this field are launched each year.

Status: There has been a great influx of people to the capital area from other parts of the country in recent decades. This creates a twofold need for improved transport systems. The capital region needs to invest in improved roads and transport infrastructure to deal with growing population and traffic. Meanwhile, it is understood that a key government priority is to help secure settlement in rural areas. Better road and tunnels can connect small villages with each other and with bigger population centers, thus improving access to services and create a bigger market for jobs and goods. A big increase in tourism in Iceland also creates pressure for better transport.

The road system has improved greatly in recent years and decades. There is, however, still great demand for the improvement of the system, especially for improved roads and new road tunnels. The improvement of roads has resulted in a diminished role of internal aviation, although air travel is still crucial for many areas. Overall, it can be said that the current transportation system in Iceland is efficient, although there is pressure for its improvement.

The estimated use of gasoline in the transport sector is 142.000 tons and the use of diesel oil is 64.000 tons (1999). The use of other fuel types is negligible. In the year 2000, the government doubled its financial contribution to public transport as a measure to reverse the trend of citizens relying more on private transportation verses public. The rugged terrain and sparse settlement in Iceland are obstacles to building railways in Iceland, and make the construction and upkeep of transport infrastructure costly.

The population shift from rural to urban areas creates pressure on traffic infrastructure in and around Reykjavik. The spread-out layout and low population density of the Reykjavik metropolitan area has been cited as an obstacle to developing a more efficient public transportation system. Practically, all stationary energy in Iceland is produced from clean and renewable sources, so mobile sources (vehicles and the fishing fleet) account for about two-thirds of emissions of greenhouse gases and most polluting air emissions. Iceland relies on imported technology for the engines of vehicles and fishing ships, which means that limited progress can be made in those fields through

domestic policy making, although there are programmes to encourage the use of alternative low or non-polluting fuels. Declining services in public transport would primarily affect the young and the elderly.

Capacity-building, Education, Training and Awareness-Raising: The Ministry for the Environment, in cooperation with car importers and the Car Owners Association, sponsors a programme to publish and disseminate information on car mileage and pollution, which is available at car sales. The use of public transport has been declining in recent years. Public authorities have strived to halt this decline to ensure that certain groups (young people and the elderly) enjoy adequate transportation service.

Information: No information available.

Research and Technologies: Iceland prefers the use and development of: safe technologies; research and development relating to appropriate methodologies; modernization and rehabilitation of power systems; development of new and renewable energy systems; use of endogenous technologies and raising public awareness; and participation, i.e. through environmental impact assessment and product labeling aimed at informing the public about energy and fuel efficiency. Product life-cycle analysis and eco-audits are already under preparation. Icelandic authorities have sponsored a joint venture, which will explore possibilities for using hydrogen as a fuel for vehicles and fishing ships. Another programme, sponsored by local authorities in Reykjavik, runs vehicles on methane gas collected from a landfill. Import tariffs favor non- and low-polluting engines and vehicles.

Financing: A special tax on fuel is used to finance road construction and improvement. Harbor projects are financed 70% by government funds. Total government expenditures for transport and transport-related projects amount to almost 12 billion ISK, which is almost 6% of government expenditures.

Cooperation: Iceland participates in the planning phase of TEN-transport (TransEuropean Transport Network) in the European Union. Iceland is party to a number of aviation-related agreements, and is an active member of International Maritime Organization (IMO).

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CHAPTER 5: DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

Decision-Making: The Ministry of Social Affairs deals with matters relating to relating to family issues. A special Council for Family Affairs has an advisory role to the Government regarding family-related issues, based on a 1997 Parliamentary Decision on ways to improve the status of the family. Iceland does not have a distinct population policy.

Programmes and Projects: No information available.

Status: The total fertility rate in Iceland was 1,99 in 1999, compared with 2,16 in 1986-1990 (annual average).

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 6: PROTECTING AND PROMOTING HUMAN HEALTH

Decision-Making: The Ministries of: Health and Social Security; and Environment hold the main responsibility for health and environment in Iceland. The health sector is regulated according to the Health Service Act of 1990 by which all inhabitants have right of access to the best possible health service at any given time for the protection of their mental, social and physical health. The main objective of the Act on the Rights of Patients of 1997 is to ensure that there is no discrimination against patients on grounds of: gender; religion; beliefs; nationality; race; skin color; financial status; family relation or status in other respect.

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

Status: The public health care service is extensive and modern in Iceland. The most serious diseases in the country are cardio-vascular diseases, cancer and consequences of accidents. In Iceland every citizen has equal access to health care services, which include: primary health care; preventive health care; prenatal care for expectant mothers; child health care; health care in primary schools; social services for the handicapped; secondary screening (screening programmes for the cervical and breast cancer; cardiovascular surveys); dental care; and treatment for alcohol and drug abusers and sexually transmitted diseases such as HIV infection and AIDS. Public health has also been improved by various environmental measures taken during recent years, e.g. by stopping the use of CFCs and halons, by strengthening pollution control regulations on motor vehicle emissions, by improving waste management, and by improving the quality of freshwater supplies.

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

Information: No information available.

Research and Technologies: No information available.

Financing: The health service in Iceland is primarily financed by central government. Financing is mainly based on taxes or 85% and 15% is fee for service.

Cooperation: Iceland is a member of the World Health Organization (WHO) and other international organizations dealing with health issues. Health programmes receive about 6% of total aid delivered by the Icelandic International Development Agency (ICEIDA). The main partner countries are Mozambique, Namibia and Malawi.

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CHAPTER 7: PROMOTING SUSTAINABLE HUMAN SETTLEMENT DEVELOPMENT

Decision-Making: The Ministry of the Environment is responsible for land-use planning and building regulations; the agency that implements policies and regulations on these issues is the National Physical Planning Agency. The Ministry of Social Affairs implements laws and regulations on housing, and is in charge of policy-making. The Civil Defence Committee deals with the issues concerning natural disasters, and it works closely with voluntary rescue teams and experts in volcanology, seismology and meteorology.

In Iceland, land-use and land-use planning, building and construction activities are subject to environmental, health and safety standards defined in physical planning and building regulations. Development in physical planning and enforcement of building regulations have been satisfactory in urban areas, but further measures are needed in the rural areas where land-use practices have changed drastically in recent years.

The National Physical Planning Agency is responsible for the design of district land-use plans for rural communities. The plans cover issues such as urban development, nature conservation, highland areas, agriculture, development of infrastructure and energy efficiency, tourism, recreation and employment. A law on Environmental Impact Assessment was first passed in 1993, and a revised law was adopted by Parliament in 2000.

The 1997 Planning and Construction Act states that all areas of Iceland, not only inhabited areas, are subject to physical planning. The 1998 Municipalities Act subdivided all Iceland into municipalities, thereby extending a subdivision previously focused mainly on coastal areas. Planning is carried out at three levels by the municipalities: local; municipal; and regional. Local plans and municipal plans are mandatory. Each municipality has until 2007 to draw up a land use plan for its area.

Programmes and Projects: No information available.

Status: No information available.

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

Information: The Icelandic national report to HABITAT II in 1996, Settlement and Society in Iceland, provides a comprehensive overview of human settlements in Iceland.

Research and Technologies: No information available.

Financing: No information available.

Cooperation: Iceland participated in the Habitat II process. Furthermore, there is an extensive cooperation within the Nordic Council of Ministers on human settlement issues.

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CHAPTER 8: INTEGRATING ENVIRONMENT AND DEVELOPMENT IN DECISION-MAKING

Decision-Making: The Ministry of the Environment is responsible both for policy cooperation and national coordination of matters related to sustainable development at the national level in Iceland. The Ministry for the Environment has a record of extensive ad hoc consultations with NGOs, business and other major groups with respect to a variety of environmental policy measures. In 2001, the Ministry launched a formal forum for regular cooperation between the Government and NGOs on issues of common concern.

The Environmental Impact Assessment (EIA) Act was adopted in 1993, and implementation of this act is beginning to yield results in the sense that environmental consideration is much more prominent factor in project development. The EIA appears to have increased environmental awareness in the decision-making process in a number of sectors. A new EIA-law was adopted in 2000; one of its aims was to increase public access to, and participation in the decision-making process.

In May 1992 Government appointed a task force led by the Ministry of the Environment to draw up a National Strategy on Sustainable Development known as, "Towards Sustainable Development", which was adopted by the Government in March 1993. To follow up on the Strategy, the Minister of the Environment appointed seven working groups from all sectors of society, Government, Parliament, Business, NGOs, Labor organizations, local communities and women's organizations - a total of over 120 participants. The task of the working groups was to come up with strategic actions towards sustainable development in various sectors. This work was completed in 1996, with the adoption of an Action Plan on Sustainable Development at a special "Environmental Assembly," comprising over 200 participants. The Action Plan was reviewed in 1999, and it was found that a great majority of its provisions had been implemented in full or in part. In 2001, a new process was launched to draft a Second National Strategy for Sustainable Development, with a view to complete it in time for the World Summit for Sustainable Development in Johannesburg. NGOs, business and other partners were invited to submit comments on the first draft of the strategy and will be consulted in further work on the Strategy.

Programmes and Projects: In addition to the National Strategy for Sustainable Development, the Government has published several plans and programmes related to sustainable development, including a regular programme of work published by the Minister for the Environment.

Status: Much of the work has been devoted to revising and strengthening the existing institutional framework for environmental research, monitoring, protection and conservation. Environmental concerns have been gradually integrated into governmental decision-making for the economic sectors, such as energy, agriculture, fisheries and tourism. Awareness has also been raised among the general public, media, local authorities and the business community.

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: In 2001, a Nordic Strategy for Sustainable Development was adopted at a Ministerial level. The Strategy is based on a 1998 Declaration on a Sustainable Nordic Region, adopted by the Nordic Prime Ministers, and outlines long-term goals up to 2020, as well as objectives and initiatives for the period 2001-2004 for a number of sectors and action areas.

CHAPTER 9: PROTECTION OF THE ATMOSPHERE

Decision-Making: The Ministry for the Environment is responsible for making decisions for protecting the atmosphere. The Environment and Food Agency is responsible for monitoring air pollution and emissions. Decision-making on protecting the atmosphere is generally a matter of the national government. To formulate and implement the policy with regard to the UN Framework Convention on Climate Change and Iceland's programme to halt emissions of greenhouse gases and sequester carbon from the atmosphere, the government created a task force composed of secretary generals of eight government ministries. This Task Force is headed by the Ministry for the Environment, and other participating ministries include: Finance; Foreign Affairs; Agriculture; Fisheries; Industry; Communications; and Office of the Prime Minister. Major Groups have been consulted in the preparation of legislation and regulation in this area.

The main law addressing the protection of the atmosphere is the 1998 Law on Pollution Control and Hygiene. Numerous regulations exist on the basis of this law, aimed at specific emissions and emission sources. A reduction in tariffs for low- and zero-emissions vehicles (electric, hydrogen fuel cell, hybrid etc.) has recently been introduced. A law introducing a special fee on hazardous waste, including ozone-depleting substances, was adopted in 1996; it has helped spur greater recovery of ozone-depleting substances for recycling or safe disposal. Iceland's strategy in phasing out ozone-depleting substances is spelled out in regulations from 1993 and 1997. The import and sale of halons was banned in 1993 and that of methyl bromide in 1994. The sale of CFCs and other ozone-depleting substances was limited or halted completely in 1995-1996, with the exception of HFCs. The use of HFCs is now restricted and will be completely banned in 2015.

To protect the atmosphere, the Government of Iceland has designed programmes and policies on; household energy efficiency; industrial pollution control; sound land-use practices; sound management of marine resources; and management of toxic and other hazardous wastes. Policies for environmentally sound and efficient transportation are under consideration. The government's aim has been to halt net greenhouse gas emissions, excluding new and expanded energy-intensive industry that uses non-polluting energy (hydro and geothermal), at 1990 levels until the year 2000 and this goal was met. The Government, in accordance with the UNFCCC, has adopted a plan of action for reducing emissions of greenhouse gases in Iceland.

Programmes and Projects: Iceland has for decades aimed at reclaiming soil and vegetation lost to extensive soil erosion and to increase the amount of forest cover in the country. In 1997, the government adopted a programme aimed at increasing carbon sequestration by afforestation and revegetation by additional 100.000 tons a year until the year 2000. See also under **Decision-Making**.

Status: It is very hard to assess the likely impact of atmospheric changes in Iceland, as natural fluctuations in climate in the North Atlantic are unusually large, and could therefore mitigate or exacerbate global climate changes. While a cooling in local climate is possible, some warming is the most likely outcome, according to a scientific assessment published in 2000. This could have a positive outcome for some economic activity, including fisheries and agriculture. The outcome for fisheries and the ecosystem in the waters around Iceland, is, however, very uncertain. It is believed that the effect of climate change on human health in Iceland would be minimal.

In some fish meal plants and other industrial sectors, secondary power has already replaced oil for steam reduction. A review of energy supply mixes shows that 64% of primary energy consumption is covered with hydro-energy and geothermal sources. Eighty-five per cent of oil is used for transport. Coal is only used as reduction material in aluminium and ferrosilicium production. So far, Iceland has not introduced energy- or emission-related taxes. Since January 1995, the use of CFCs has only been permitted in medical dose inhalators (until December 31, 1996). Halons (Me Br, HBFC, CCI and I.II trichloroetan) are no longer permitted, and HCFCs are allowed only until 2015.

Capacity-building, Education, Training and Awareness-Raising: See under **Information**.

Information: The government published and disseminated a report on climate change and Iceland's effort to curb it in 1997. Another report on the possible consequences of climate change for Iceland was published in 2000. The

Government has conducted a number of studies on health effects resulting from air pollution and ozone layer depletion for example, on the impact of ultraviolet radiation on eyes and skin.

Research and Technologies: Methane gas is now extracted from a Reykjavik landfill and used as fuels for cars and buses. A joint venture has been established to introduce buses and other vehicles running on hydrogen fuel cells in Iceland. Emissions of fluorocarbons from the aluminum industry have decreased significantly due to better technology and an agreement between the industry and the government. There has been some decrease in emissions from fishmeal factories, due to a switch from oil heating to electricity. Legislation has also been revised, for instance, to reduce the use of ozone depleting substances. Based on the results of the conclusions of the Intergovernmental Panel on Climate Change in 1998, the government established a committee composed of scientists and specialists to assess and evaluate possible consequences of climate change for Iceland and the results of the committee were published in fall 2000.

Financing: No information available.

Cooperation: Iceland ratified and implemented the Montreal Protocol (1987), its London Amendment (1990) and its Copenhagen Amendment (1992) in 1994. The latest report to the Montreal Protocol Secretariat was prepared in 1996 for the year 1995. Iceland signed the United Nations Framework Convention on Climate Change in 1993. The latest report to the UNFCCC Secretariat was submitted in 1996. Iceland has also ratified the 1992 United Nations Framework Convention on Climate Change, and has a national plan to implement it. Iceland has signed and ratified the Convention on Long-Range Transboundary Air Pollution. Iceland participates in the Global Observing System. In 1995, there were five local observation stations in Iceland. Transport emissions observation is comprehensive and systematic. Iceland has not yet signed the Kyoto Protocol. In 1996 Iceland had contributed US\$200,000 to the Vienna/Montreal Trust Fund. Bilateral assistance for the substitution of ozone-depleting substances in developing countries has not been made available.

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

Decision-Making: The Planning and Construction Law of 1997 states that the Minister for the Environment shall have supreme control of planning and building. The Planning Agency shall assist the minister. Local authorities shall prepare regional, municipal and local plans. The Planning Agency monitors the planning situation in the municipalities and assists the local authorities and guides them in preparing development plans. The Ministry for the Environment has the primary responsibility for planning and building, according to Icelandic law. Other Ministries primarily responsible for the planning and management of land resources are the Ministries of: Agriculture and Industry.

The key legislation covering the planning and management of land resources are: the Planning and Construction Law 73/1997; and the Environmental Impact Assessment Law 63/1993. The power and initiative of local governments with regard to planning was significantly increased with the 1997 law. A great improvement in the legal environment of planning of land resources occurred with the adoption of the Planning and Construction Law in 1997, which replaced the existing law on planning dating from 1964. Currently, a government committee is attempting to clarify land ownership, especially in the highlands, following the adoption of a 1998 law that states that the Icelandic state owns all land that individuals can not legally uphold their claim for.

The Planning and Construction Law of 1997 contains some provisions dealing with possible conflicting issues in land use goals. The Planning Agency shall gather information on land use, which applies to the country as a whole, e.g. regarding transportation, telecommunications, power structures and nature conservation. If inconsistencies or other conflicts of interest are revealed in land use as set forth in individual plans, the Minister for the Environment may decide to appoint a special committee to make proposals on the co-ordination of the relevant plans. On receipt of the proposals of the committee, the Minister may require the local authorities to incorporate the proposals in their development plans.

Expansion of human settlements and all major structures must undergo environmental impact assessment. The integrated management plan for the central highlands deals, among other things, with biological diversity, fresh water resources and mountain ecosystems within the area. Laws regulating grazing and the fight against soil erosion are currently being reviewed. The 1997 Planning and Construction Law was adopted after extensive consultation with local authorities and all major sectors of society. A group mainly comprised of representatives from municipalities bordering the highlands drew up the integrated management plan for the central highlands. A committee to be set up to implement and oversee the plan will have representatives from local authorities and NGOs.

Programmes and Projects: A government programme on a comprehensive plan for developing Iceland's hydroelectric and geothermal energy sources was launched in 1999. The programme is to take into account the views of all relevant sectors and the general public. The government has entrusted an NGO, Landvernd, to disseminate information about the programme and act as interlocutor in the dialogue between authorities and the public. The aims of this programme are to ensure that further utilization of these resources yield maximum economic, social and environmental benefits, while limiting their negative impact on the environment. This is an issue of major importance for land use and sustainable development in Iceland. It is estimated that only 10-15% of economically viable hydro and geothermal energy in Iceland has been harnessed, and the value of these non-polluting energy sources is likely to increase with growing concern about global warming and fossil fuels.

Status: Forest land in Iceland is highly prized, as the country has suffered massive deforestation since its settlement some 1.100 years ago. The amount of forest land taken for other use since 1992 is negligible, while afforestation programmes have been greatly strengthened. Despite these improvements, there is a lack of data regarding land use, including data on which to base a policy on sustainable grazing. A comprehensive land inventory to be undertaken by the Agricultural Research Institute and the Soil Conservation Service should greatly improve the situation. On a more general level, the lack of a digital geographical data base for most of Iceland's territory is a problem for further development of geographical information systems. As of 1999, the government has

allocated new resources to develop a comprehensive geographical database for all of Iceland, which the Geodetic Survey should complete in the next few years. There are currently no indicators in use for integrated land management and sustainable use of land resources.

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

Information: Information about land management is widely available via the Internet. General information on planning issues and environmental impact assessment (including all evaluation reports and decisions) can be accessed via the website of the Planning Agency <<http://www.skipulag.is>>. Information on remote sensing, maps etc. is available at the Geodetic Survey <<http://www.lmi.is>>. Maps and other information on land erosion is available at a special website maintained by the Agricultural Research Institute <<http://www.rala.is/kvasir>>.

Research and Technologies: No information available.

Financing: No information available.

Cooperation: Iceland is active in Nordic cooperation in this field, including NORDREGIO (Nordic Institution for Regional Development and Planning), the Nordic Committee on Construction Regulation and the Nordic Committee on Planning.

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CHAPTER 11: COMBATING DEFORESTATION

Decision-Making: The body primarily responsible for the forestry sector is the Iceland Forest Service, an agency under the auspices of the Ministry of Agriculture. It implements, monitors and evaluates the decisions made at the governmental level. The Ministry for the Environment has a role in the conservation of native birch forests, especially through the Nature Conservation Agency, which is in charge in the management of protected areas.

The main forestry laws in effect in Iceland are: the Forestry Law (1955); the Farm Afforestation Law (1991); and the Southland Afforestation Law (1997). Forestry policy and laws are currently being reviewed. The Southland Afforestation Law of 1997 has launched a programme of afforestation in the south of Iceland, which is primarily executed by individual farmers, and has been emulated in other parts of the country. The law recognizes explicitly non-market benefits to society by afforestation, such as soil regeneration and shelter from wind.

The Iceland Forest Service is currently preparing a comprehensive afforestation plan for all of Iceland, as a part of Iceland's sustainable development strategy and in response to a request by the parliament. Effective mechanisms exist to harmonize forestry policy to Iceland's environmental goals.

Programmes and Projects: There are also efforts to harmonize policies in forestry and agriculture. Over one hundred farmers receive grants to plant trees for sheltering crop fields in a programme that was launched in 1995. Most of the tree-planting for sequestration of carbon is contracted to farmers. A large state-supported forestry project has been initiated in east Iceland, where, during the next four decades, 80 landowners propose to establish some 15,000 hectares of productive forests.

A programme to afforest denuded or severely eroded land has resulted in the planting of about a million trees in 70 areas subject to soil erosion. Another programme to sequester carbon dioxide was launched in 1997 as a part of Iceland's strategy to fulfill its obligations under the UN Framework Convention of Climate Change.

See also under **Decision-Making** and **Status**.

Status: Forests in Iceland consist mainly of small areas of birch woodlands or plantations of native or exotic species, covering only 1.4% of the total land area. It is thought that about 95% of the original forest cover at the time of Iceland's settlement has been lost. Attempts to reforest the land date back a century, and the first law on afforestation was passed in 1907.

Efforts by the government and non-governmental afforestation associations have succeeded in halting the destruction of the main remaining forests and in planting new forests all over Iceland, but the scale of deforestation means that large-scale re/afforestation is still a distant goal. Efforts to conserve and increase the area covered by native woodlands are hampered by the fact that the majority of woodlands are subject to grazing, mainly by sheep, so the total area covered by birch woodlands appears not to have changed much in recent decades. Recently, a government programme to sequester carbon dioxide has increased afforestation efforts. About 4,5 million trees are now planted annually in Iceland and about 11 km² are afforested annually. Issues that still need to be addressed or improved include: establishment of concrete long-term afforestation goals, education in forestry, remote sensing, establishment of information exchange linkages, investment analysis and feasibility studies, promotion of small scale forest based industries and integration of the social, economic and ecological values of forests in the national economic accounting systems.

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

Information: Information on sustainable forest management is available at the web-site of the Iceland Forest Service <<http://www.simnet.is/SKOGRAEKTIN>> and the Icelandic Forest Research Station <<http://www.simnet.is/RSr>>. Information on the forestry project in east Iceland is available at <<http://www.simnet.is/HERADSSKOGAR>> and many local forestry associations also have information on afforestation available on the World Wide Web.

Research and Technologies: Many actions have been taken to improve the effectiveness of afforestation, forest productivity and tolerance to environmental stress. These include: research in tree improvement; forest pathology and ecology; establishment of seed procurement networks; improvements in plant production technology; increased forestry planning; and establishment of specific afforestation programmes.

Financing: No information available.

Cooperation: No information available.

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CHAPTER 12: MANAGING FRAGILE ECOSYSTEMS: COMBATING DESERTIFICATION AND DROUGHT

Decision-Making: The Soil Conservation Service, under the coordination of the Ministry of Agriculture, is mainly responsible for anti-desertification measures. The Soil Conservation Law (1965) grants authorities the means to combat desertification. Furthermore, the Ministry of Agriculture has prepared a national Soil Conservation Strategy (1991) and a committee appointed by the ministry completed a new soil conservation policy in 1999 based on extensive consultations. Based on this policy the Soil Conservation Law is being revised. NGO participate in a number of anti-desertification activities and reclamation projects. Women and youth participate in specific projects at all levels (national, district and field).

Programmes and Projects: The Soil Conservation Programme for 2002-2013 has been submitted to the Parliament. This programme emphasizes mitigating land degradation and desertification, reclamation, sustainable land use, research, extension and awareness-raising. It includes provisions for strengthening cooperation with NGOs, land users and other interest groups. The Soil Conservation Service co-operates with 20% of Icelandic farmers in the programme Farmers Reclaiming the land. The NGO Forestry Association administers a special project for Afforestation for Soil Conservation and Reclamation on behalf of Ministry of Agriculture.

Status: The Government aims at bringing soil erosion under control and achieving sustainable land use as soon as possible. Landowners, institutions and enterprises, as well as the society as a whole, share the responsibility for implementation. The soil conservation authorities, mainly the Soil Conservation Service, will be given stronger capacities to manage and monitor grazing practices, protected areas threaten by erosion and to restore denuded land. According to a survey completed in 1996, about 40% of Iceland, or 40.000 km², falls under the definition of desertification contained in the convention, despite ample rain. Desertification is mainly caused by the interaction of grazing effects, both past and present, with sensitive soils and vegetation. Grazing has in some cases been identified as having serious consequences.

Measures are being planned to restrict livestock grazing to areas where it does not cause deterioration in the quality of the land. The government has encouraged a more conservative use of land by providing financial assistance and guidance. In general, there is a lack of trained staff in Iceland, both at the institutional and grass roots level.

Capacity-building, Education, Training and Awareness-Raising: In addition to policy and legal instruments, efforts to improve environmental knowledge and education at all levels of the school system have begun. Special emphasis has been put on land care. Media has been an important means to increase public awareness on this issue. The Agricultural College has recently increased emphasis in its curricula on sustainable land use, soil conservation and afforestation.

Information: No information available.

Research and Technologies: Actions have been taken to improve preventive measures and the effectiveness of reclamation of eroded and severely degraded areas. These include research into the processes of land degradation and soil erosion, reclamation methods, the use of native species for revegetation and processes of community and ecosystem recovery.

Financing: Awareness of the problems of land degradation, desertification and the need for reclamation has greatly increased in recent years, especially as research has confirmed the severity of land condition. However, the budget of the Soil Conservation Service for 2001 was the same as in 1980, or US\$ 3.4 million.

Cooperation: Ratification of the International Convention to Combat Desertification in Countries Experiencing Drought and/or Desertification Particularly in Africa was completed in 1997.

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CHAPTER 13: MANAGING FRAGILE ECOSYSTEMS: SUSTAINABLE MOUNTAIN DEVELOPMENT

Decision-Making: The Planning Agency, the Nature Conservation Agency, the National Energy Authority, and the Soil Conservation Service are primarily responsible for sustainable mountain development in Iceland.

To achieve sustainable development of the highlands, Icelandic authorities have defined framework conditions for the area's development and protection. This framework includes: the 1998 Municipalities Act and the 1998 Public Lands Act, which respectively determine municipal boundaries for the highlands and a process for defining land ownership and related rights; and the 2000 Environmental Impact Assessment Act, the 1997 Planning and Construction Act and the 1999 Nature Conservation Act, respectively covering project assessment, infrastructure planning and concerns regarding nature conservation.

In 1999, a Regional Plan for the Central Highlands was approved, running to 2015. It deals with protected areas, traditional uses (grazing, fishing, hunting, etc.), energy resources, tourism and recreation, development of the road system, and sanitation. Land is classified according to homogeneous landscape units and by different uses. A main feature of the plan is to concentrate development of major tourist infrastructure in the periphery of the highlands, leaving the heart of the area as untouched as possible. Planning in the central highlands is the responsibility of an appointed committee, based on the Regional Plan.

Programmes and Projects: See under **Decision-Making**.

Status: With a land area of 54,000 Km², the central highland is the most significant mountain area in Iceland. On the one hand, the highlands provide natural resources for agriculture, energy production and tourism, and are hence subject to related pressures, i.e. from animal grazing, traffic by vehicles and construction of hydro plants and electricity transmission lines. On the other hand, the highlands constitute a fragile ecosystem. In order to facilitate consensus on the development of energy resources in the highlands, the government has launched a process called "Man-Utilisation-Nature" to prepare a Master Plan for Hydro and Geothermal Energy Resource Development. Preliminary results from the Plan are expected in 2001. The Government decided in 2001 to create a National Park centered on Iceland's (and Europe's) biggest glacier, Vatnajökull. It is hoped that the Park can open in 2002 on the International Year of Mountains, pending some legal questions that will have to be resolved in advance of creating a National Park.

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 14: PROMOTING SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT

Decision-Making: The Ministry of Agriculture is primarily responsible for developing a sustainable agricultural policy in Iceland, in coordination with the Ministry for the Environment.

The Government policy goal is that, all Icelandic agriculture should meet the requirements of sustainable development, in particular with respect to soil erosion and other measures that prevent the deterioration of land condition, and soil, water and ground water pollution. The Soil Conservation Service operates according to a Land Reclamation Programme, but is hampered by a legal environment that is in many ways obsolete. Currently, the legislation on land conservation and reclamation is being reviewed by a committee with the aim of introducing new legislation soon.

The agreement between the Government and Sheep Farmers for the production of sheep during 2001 - 2007 links governmental support to sustainable land use. International trade relations have been reviewed in the light of agricultural production. The 1997 Action Plan's provisions on agriculture deal particularly with land use, grazing and soil erosion, afforestation, wetlands, exotic plant and animal species, organic waste and other waste from agriculture, hunting of wild species and aquaculture. The 1997 Action Plan for Sustainable Development was developed in cooperation with interested groups, including farmers and local communities. The Soil Conservation Service has in recent years strengthened its cooperation with farmers in land reclamation and preventing soil erosion, especially by a programme called "Farmers Reclaiming the Land."

Programmes and Projects: A programme run by local authorities in the South of Iceland has surveyed water quality in rural areas in Iceland's main agricultural area, with the aim of locating and improving unsatisfactory water quality and runoff from farms. See also under **Status and Capacity-building, Education, Training and Awareness-Raising**.

Status: In Iceland, the level of crop production is extremely small, with agriculture being primarily concentrated on animal husbandry. The low level of crop production means that the use of fertilizers and pesticides is minimal, and pollution problems linked to agriculture are usually not serious. Soil erosion and livestock grazing has been the overriding concern in ensuring the sustainability of agriculture in Iceland. During the last few years, cooperation between the authorities and farmers has had a positive effect on reducing grazing pressures. However, overgrazing, still exists. The Government has not prepared a water resource policy for food and agriculture. Freshwater is abundant in Iceland and water availability and water logging are not problems for agriculture. On a general scale, agriculture has very little effect on water quality in Iceland, although there can be local problems of a limited scale. There have been no major initiatives on behalf of the Icelandic Government to promote crop rotation and diversification or intensification of production.

Capacity-building, Education, Training and Awareness-Raising: Numerous initiatives have been launched to increase public awareness and participation for promoting sustainable agriculture practices. The Soil Conservation Service has been especially active in publishing information and guidelines for schools, farmers and the general public on the subject of soil erosion and "land literacy." Numerous volunteer projects for soil reclamation and afforestation exist, with NGOs devoted to afforestation being especially strong and active in Iceland. Environmental education and training in land use management is being improved in the agricultural vocational schools. There has been a significant increase in public awareness and participation, and a clear progress in the effort to halt soil erosion, which has remained a serious problem in Iceland over a long time.

Information: Information is widely available on sustainable agriculture in Iceland, especially on the subject of soil erosion and sustainable grazing. The Soil Conservation Service, in cooperation with the Agricultural Research Institute and others, has published several brochures and guidebooks, intended for farmers and the general public. Recent publications include "Land literacy," an illustrated guidebook on erosion sent to all secondary schools in Iceland, and "Horse Grazing Lands," a handbook for horse farmers on how to ensure responsible grazing by horses. The Agricultural Research Institute maintains a comprehensive web-site on soil erosion <www.rala.is/desert>.

Information on sustainable agriculture is also available on the web-site of the Soil Conservation Service <<http://www.landgr.is>> and the Ministry of Agriculture <<http://www.stjr.is/lan>>.

Research and Technologies: Environmentally sound energy transition in rural communities has been completed as well as the transfer of technology to increase input to rural households. All rural towns and virtually all farms by now have access to the national electric grid, which is powered by hydro and geothermal energy. A comprehensive survey and map of soil erosion was published in 1997, the first of its kind. A comprehensive land inventory will be developed in the coming years. This information will greatly enhance the possibility of managing livestock grazing in a sustainable way, according to the state and vulnerability of the vegetation cover. The Government launched a programme in 1995 to sequester carbon dioxide into biomass via afforestation and land reclamation. The aim was to sequester 100.000 tons more in biomass in the year 2000 than in 1990. This goal was exceeded.

Financing: No information available.

Cooperation: Iceland is a participant in the Nordic Gene Bank and the Nordic Gene Bank for Livestock, sponsored by the Nordic Council of Ministers, which takes part in agricultural research in Iceland and conservation of genetic resources.

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CHAPTER 15: CONSERVATION OF BIOLOGICAL DIVERSITY

Decision-Making: The Ministry of the Environment, supported by the National Institute of Natural History, the Nature Conservation Agency and the Food and Environment Agency, are responsible for bio-diversity and genetic resources in Iceland. A new comprehensive Nature Conservation Law was adopted in 2000, inter alia to better meet the provisions of the international conventions on biological diversity. Regulations have been set for the introduction of alien species. A special steering group for biodiversity has been established. With regard to economic instruments, agricultural subsidization for drainage of wetlands has been abolished. Measures to be undertaken were also planned to enable the Nature Conservation Agency to lease the management of protected areas to private organizations on condition that such organizations provide the required services and surveillance, and all developments in the area are approved by the Nature Conservation Agency. Iceland prepared a national strategy on the conservation of biological diversity in 1996.

Programmes and Projects: For the sustainable management of marine and terrestrial resources, measures will be taken to restore, and strengthen depleted fish stocks and to bring soil erosion under control. In 1990, 9% (9,264 km²) of the total land area was protected; this area is due to have about doubled from that level in 2002. A new national park, the fourth one in Iceland, was established in 2001. Another park, centered on the glacier Vatnajökull is being planned, with the aim to establish it in 2002. This park would be the largest national park in Europe at its establishment, and is envisioned to expand in the coming years by adding new areas adjacent to the glacier.

Status: There are no threatened mammal species. Iceland is particularly rich in bird life. The latest comprehensive baseline survey concerning biodiversity was conducted in 1995-1996. Still, there are a few serious problems. Since the settlement of the country in the 9th century, approx. 80% of the country's vegetation and soil resources have been lost due to erosion and deterioration of the vegetative cover. Today, continuous vegetation covers only some 25% of the total land area, and birch forests and bushes only about 1%.

As a result of major drainage and cultivation of wetlands during the past forty years, there are only a few undisturbed wetlands left in the lowlands, affecting the flora and fauna in these areas. The genetic mixing with imported and cultivated species also endangers the flora and fauna. This applies, in particular, to freshwater fisheries and, to a less extent, to some imported tree species and the seeding of land with lupins to combat erosion. In addition, habitat destruction, over-harvesting and inappropriate introduction of animals cause moderate fauna loss. Red lists for plants and birds have been issued by the Institute of Natural History.

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: Iceland signed the Convention on Biological Diversity in 1992 and ratified it on 12 September 1994. Iceland is a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora and the Berne Convention. A report was submitted in 2001 and a second report is being prepared. Iceland participates in two important regional monitoring systems: Monitoring of marine pollution in the North East Atlantic under the Oslo and Paris Conventions, and monitoring of the flora and fauna and pollution of the Arctic region within the Arctic Environmental Protection Strategy.

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

Decision-Making:

Technologies: No information available.

Biotechnologies: The Ministry of Environment is responsible for the legal and policy issues related to biotechnology. The competent authority is the Food and Environment Agency. New legislation was adopted in early 1995 to promote biotechnology safety mechanisms and procedures.

Programmes and Projects:

Technologies: See under **Status** and **Capacity-Building, Education, Training and Awareness-Raising**.

Biotechnologies: No information available.

Status:

Technologies: The concept of Environmentally Sound Technologies (ESTs) is not generally in use in Iceland. In industry, especially new energy-intensive industry, there has been an emphasis on demanding the Best Available Technology (BAT) with regard to pollution control. There have also been government programmes on integrating "Cleaner Production" methods in industry, especially in the fish and food industries. ISO 14000 has been introduced in Iceland.

Biotechnologies: No information available.

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

Technologies: The Geothermal Training Programme of the United Nations University was established in Iceland in 1979, and it is run by the National Energy Authority of Iceland. The aim of the programme is to assist in building a cadre of specialists in the geothermal departments of developing countries. The programme trains approximately 16 students per year. A programme for fisheries with the UN University is now being prepared and will begin in 1998.

Biotechnologies: No information available.

Information:

Technologies: No information available.

Biotechnologies: No information available.

Research and Technologies:

Technologies: No information available.

Biotechnologies: Research and development in the field of environmentally sound biotechnology is carried out by the Technology Institute and by the Iceland Council of Science, which also seeks to enhance biotechnology research through competitive research grants.

Financing:

Technologies: No information available.

Biotechnologies: The financial support allocated to biotechnological research is approximately US\$ 730,000 annually (1994). In the Technology Institute, the budget for biotechnology for 1991 was US\$ 228,500.

Cooperation:

Technologies: In recent years, the Icelandic International Development Aid Agency (ICEIDA) has concentrated its aid to biological research on fish resources of the developing countries and on experimental fishing of under-exploited species. At present, ICEIDA cooperates with Namibia, Malawi and Cape Verde. Since 1992, the assistance granted to these countries has amounted to some US\$ 7,1 million. Technical assistance has also been focused on fisheries. Iceland has also increased its assistance to the economies in transition through cooperation for capacity-building. A special relationship has been formed with the three Baltic States. Iceland has established a

US\$ 1 million payment facility for them and provided training for the nationals of these countries, including the award of grants to study at the University of Iceland. In cooperation with the business community, business management and training possibilities have been provided

Biotechnologies: No information available.

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

Decision-Making: The protection and conservation of the oceans in Iceland can be divided in two parts, the protection and conservation of the ecosystem and the conservation and management of the living marine resources. The Ministry for the Environment is responsible for physical planning and environmental impact assessment and for marine environmental protection from both land-based and sea-based activities. The National Physical Planning Agency, which falls under the ministry is responsible for physical planning and EIAs. The Nature Conservation Agency and the Icelandic Institute of Natural History are responsible for nature conservation and habitat protection. The responsible agency for marine environmental protection is the Environmental and Food Agency of Iceland (EFAI). It has responsibility for marine pollution control regardless of the source. The Ministry of Fisheries is responsible for the Icelandic fisheries management and cooperation with other countries as regards management outside the exclusive economic zone. The Marine Research Institute is responsible for assessment of the living marine resources, and makes recommendations yearly to the Minister of Fisheries on total allowable catches of harvested species. The Directorate of Fisheries is responsible for the implementation, control and enforcement of the management act and other acts such as on the proper and safe handling of seafood. The Icelandic Coast Guard exerts a policing function and provides inter alia surveillance and communications service for the EFAI and the Directorate of Fisheries. The Icelandic Maritime Authority (IMA), an Agency of the Ministry of Communication, is responsible for the inspection of ships. The monitoring of radioactive waste is the responsibility of the Icelandic Radiation Protection Institute, an agency of the Ministry of Health.

The dependence of the nation on fisheries tends to lead to improved efficiency in this sector and the cooperation between government and stakeholders is good. The fisheries management is based on an individual transferable quota (ITQ) system and strict technical regulations such as closed areas, mesh-sizes and selective fishing gear are an important part of the regulatory framework. The Marine Research Institute (MRI) conducts extensive research on the marine ecosystem and its living resources. That work and the knowledge accumulated is the basis for the national fisheries management.

The national strategy and policy on conservation and sustainable use of the living marine resources is stated in Icelandic legislation and the Government's Action Programme on Sustainable Development, adopted in 1997. It relates directly to marine environmental protection and together with the Fisheries Management Act stipulates how to work towards sustainable use and conservation of marine living resources. The responsible ministries consult stakeholders directly. Groups of stakeholders are commonly represented on committees preparing legislation. When bills are being considered by the Parliament, stakeholders are given the opportunity to submit written comments and are invited to meet with the parliamentary committee. Parliamentarians extensively consult with groups and individuals. In a similar way the scientific community, not least those who are in charge of marine research are in direct contact with those who are affected by their work and those have ample opportunities to express their views and comments.

Programmes and Projects: The Marine Research Institute has had an ongoing wide-ranging program for decades, on assessing the living marine resources and publishes every year a status report and recommends total allowable catches (TAC) for many stocks. One project to mention specifically is a comprehensive multi-stock management research project aimed at studying interactions in the marine ecosystem spanning the whole range of marine life from algae and plankton to large whales.

An international project Benthic Invertebrates of Icelandic Waters (BIOICE) is run by the Ministry for the Environment and aims at a faunistic-zoogeographical investigation of the benthic invertebrate fauna in Icelandic waters. Collections are analyzed by an international team of specialists, and later curated at the Icelandic Museum of Natural History. This project represents a major effort in the study of marine biodiversity.

A marine conservation area has been established in the bay of Breidafjörður, West Iceland. The programme has facilitated scientific study, raised awareness of the biological, geological and economic values of the area, heightened interest in the cultural heritage and is stimulating the development of the tourism industry. A

programme of integrated monitoring and assessment of marine pollution in Icelandic waters was initiated in 1989 based on the standards set in OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic, the Arctic Environmental Protection Strategy and Icelandic regulations. Another programme of integrated monitoring and assessment of marine pollution in Icelandic waters was initiated in 1989 based on the standards set in OSPAR, the Arctic Environmental Protection Strategy and Icelandic regulations administered by the EFAI.

Status: The most important economic activity in the country is fisheries. In 2000 revenues from export of fish accounted for 64% of the total Icelandic export of goods. The percentage of export and goods and services is 45%. Percentage of fisheries in the GDP in 1997 was 9.9%. Tourism in Iceland tends to centre on inland areas rather than the coast. Coastal recreation is limited. The impact of shipping on coastal zone ecosystems in Iceland is generally low. In light of the overwhelming dependence of Icelandic economy on fisheries it is vital for the economy and the well being of future generations that the management of living marine resources has sustainable use and conservation as a primary goal.

Practices of other countries can have a considerable negative effect in Iceland's effort to promote sustainable development related to use of living marine resources, however. A major factor in this regard is state subsidies for fisheries on the world market, and trade barriers. Free trade is an important driving force to attain sustainable use and conservation of the living marine resources, as many subsidies and trade distortions tend to support unsustainable practices.

Capacity-Building, Education, Training and Awareness-Raising: Several courses have been offered in the area of environmental impact assessment. In Iceland there is general awareness of the importance of sustainable development of marine living resources. This is due to the dependency of the national economy on the fisheries sector. Special effort has been undertaken to distribute information on the sustainability of Icelandic fisheries for consumers and leaders of public opinion home and abroad i.e. with conferences, lectures, brochures and on a special website.

Information: The website <<http://www.fisheries.is>> was created to inform the general public about aspects of sustainable utilization of living marine resources. There is up to date information on i.e. the Icelandic catch, stock assessment, TACs, stocks, vessels and gear, main fishing areas, processing and control, and the results of both the programme of integrated monitoring and assessment of marine pollution in Icelandic waters and the Arctic Council AMAP working group that monitor and assess pollution in the ocean around Iceland and in the Arctic. The Marine Research Institute <<http://www.hafro.is>> provides annual stock assessment of the major stocks and makes recommendation on Total Allowable Catch (TAC) for the harvested stocks. Online information on catch and permits and licenses in the fisheries sector and implementation of the fisheries management can be accessed at <<http://www.hafro.is/fiskistofa>> and information on the research and analytical work for the processing sector at <<http://www.rf.is>>.

The EFAI <<http://www.hollver.is>> operates a web site on marine environmental protection including information on emergency response in cases of marine pollution. The <<http://www.sigling.is>> Icelandic Maritime Authority operates a web site with a wealth of useful information for ship operators including a warning system for dangerous waves important in reducing the risk of pollution accidents. Information on fish catches and their disposition and export can be found in reports on statistics of the Icelandic Bureau of Statistics <<http://www.statice.is>>.

Research and Technologies: The Marine Research Institute due to its advisory role to the Ministry of Fisheries has a central role in the Icelandic administration regarding sustainable use and conservation of living marine resources. The research it conducts focuses on marine physics and chemistry, characteristics of the seabed, biological conditions and behaviour of the marine vegetation. The most extensive field of research is however in the field of stock assessment, trials of fishing gear and studies of potentially harvestable species. The Icelandic Fisheries Laboratories (IFL) conducts research on production methods to make fishing as environmentally sound as possible. Research on trends in pollutants in marine biota are performed by EFAI, IFL and the Institute of Pharmacy, Pharmacology and Toxicology at the University of Iceland

Financing: The fisheries industry is run by the private sector in Iceland, the financial responsibility is the owners. They do not get subsidies from the national budget. Most of the larger firms are public limited companies listed on the stock-exchange. The activities of governmental agencies regarding monitoring, conservation and management are funded from the national budget.

Cooperation: International cooperation in the management of the utilization of living marine resources that occur outside Icelandic jurisdiction is the responsibility of the Ministry of Fisheries. To this end Iceland takes part in various international conservation and management organizations and arrangements such as the North East Atlantic Fisheries Commission (NEAFC). Iceland participates also in international cooperation in the field of monitoring, protection and conservation of ecosystems and science, such as the OSPAR Convention, the International Council for the Exploration of the Sea (ICES) and the Arctic Council.

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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 Environment and Food Agency is responsible at the national level for coordinating water resource management and development. Its mandate is to ensure that water for consumption in household and industries complies with health regulations. At the local level, Local Health Inspection Boards conduct on-site measurements of water supplies and enforce health regulations and standards. The general practice in policy-formulation is to provide for participation of all major stakeholders.

The Hygiene and Public Health Act No. 81/1988, as amended, provides the general legislative and regulatory framework in this area. In addition, a new health act bill has been presented to the Minister for the Environment at the Icelandic parliament, which would further strengthen the monitoring of water purity and hygiene. Also relevant is Regulation No. 319/1995 on freshwater for consumption, in accordance with the following European Union directives: 75/440/EEC, 79/869/EEC and 80/778/EEC.

With regard to legal instruments, a new Law on Freshwater Protection has been prepared to ensure access to clean freshwater resources for human consumption and for use in industry. Rules regulating aquaculture have also been revised with the aim of improving the planning practices and the issuance of licenses for such operations. Furthermore, pollution control regulations have been tightened to meet European water quality standards.

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

Status: There is no comprehensive master plan for the conservation and utilization of groundwater resources, rivers, lakes and geothermal areas in Iceland. In general, Iceland has pure freshwater in abundance and does not need a specific policy to allocate water to different regions and sectors. Primary treatment of waste-water is undertaken in the Reykjavik area. This comprises the major technological needs, since over 50% of the population resides in this area. Water purification is not an issue, since groundwater supplies over 96% of the total abstraction. Filtration and UV-treatment are used for surface water, which is less than 4% of the total use. Over 95% of water in Iceland is not treated for drinking purposes, as this is not needed for groundwater supplies. There is no recycling of waste-water. Universal coverage of adequate sewage-disposal systems throughout Iceland is expected to cost US\$ 140 million over the next ten years. Iceland conducts monitoring of rivers and sub-glacial volcanoes that have triggered big floods. There are evacuation plans for the main areas that are thought to be in danger in the event of such a flood (although most such areas are uninhabited glacial sands, in which case there are plans to close roads that cross them).

The greater part of Iceland's freshwater resources are clean, free from pollution and low in chemical contents. In general, the groundwater is potable. Some springs are temporarily fed by infiltration from glacial rivers. Surface water, on the other hand, is frequently polluted by dirt and mud caused by rainstorms, snow-melt, and heavy erosion. Therefore, the construction of water wells must be approved by local health commissions, which also monitor regularly the quality of extracted waters, especially their bacterial contents.

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

Decision-Making: The Ministry of the Environment is responsible for waste management. Legislation that establishes a framework for levying environmental fees on substances that can become hazardous in the waste stream was adopted in 1996. The aim of the legislation is to reduce the use of such substances and to finance a nationwide system for the collection of hazardous and toxic wastes. Measures have also been taken to stop discharge of hazardous and toxic substances from industry and households into sewage systems. Iceland is particularly concerned about marine pollution from persistent, toxic and bioaccumulating substances (persistent organic pollutants/POPs), and supports the Nordic Action Plan to reduce the releases of these substances.

Programmes and Projects: See under **Decision-Making**.

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: Iceland is active in Nordic cooperation on chemicals and is affected by EC legislation in this area through the EEA. Iceland has been active in preparing international action to address persistent organic pollutants (POPs), both within the framework of UNEP and the LRTAP. Iceland signed the Stockholm Convention in 2001.

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

DECISION-MAKING:

Hazardous Wastes: The body mainly responsible for all waste management is the Food and Environment Agency under the Ministry of the Environment. In 1996, a new law was adopted for introducing environmental fees on hazardous materials to finance the collection of hazardous wastes. The fee applies to goods imported or produced in Iceland that result in hazardous waste (e.g. various oils and chemicals, paint, batteries). The revenue is used to finance waste collection and safe disposal, following the producer responsibility principle. The unit charge has been progressively increased to fully recover the disposal costs by 2000. A special committee, with representatives from government and industry, oversees the system. It is foreseen that this system will be progressively applied to other waste streams in the coming years.

Solid Wastes: The Ministry of the Environment is responsible for waste management. Representatives of industry have been directly involved in the development of regulations in this area. Several economic instruments have been used to promote recycling of solid wastes. Fees on beverage containers and single-use plastic shopping bags have been introduced. There are also special charges levied on commercial enterprises for waste collection on the basis of nature and quantity. This provides an incentive for commercial establishments to reduce waste. Such incentives do not apply to households, which pay a flat fee. The government adopted a specific national strategy for national waste management in 1991. The objective was to reduce waste generation by 50% before the turn of the century. This goal was not met, although a significant improvement in reducing waste generation was made with increased recycling.

Radioactive Wastes: The Ministry of Health is responsible for management of radioactive waste.

Programmes and Projects:

Hazardous Wastes: See under **Decision-Making**.

Solid Waste: See under **Decision-Making**.

Radioactive Wastes: No information available.

Status:

Hazardous Wastes: Hazardous waste mainly consists of waste oil (82%), car batteries (11%) and other waste, including solvents and oil-based paints (7%). Before 1996, much of this waste was disposed of in an unsatisfactory manner, but after the imposition of a fee-system for hazardous waste there has been significant improvement in its collection and safe disposal.

Solid Wastes: Household and industrial solid wastes constitute 95% of Iceland's total waste. Municipal waste generation increased by 10% between 1992 and 1998 in Iceland as a whole, to some 650 kg per capita per year. Waste recovery in 1998 accounted for about 26% of total waste generated, compared with 20% in 1992. Open pit burning in rural areas, widespread in 1990, was progressively eliminated in the 1990s and had totally ceased in 2000. Over the period 1992-1998, waste disposal in landfills increased by 17% and the number of landfills rose from six to 25. The share of landfilling at sites with permits increased from 57% in 1992 to over 90% in 2000. Recycling for several waste streams improved in the 1990s. Virtually all beverage containers are recycled, thanks to a return-fee system. Recycling rates of paper have doubled since 1992, to 20%. The corresponding rates for glass is 60%, plastics 5%, and metals around 90%.

Radioactive Wastes: There is no production or dumping of radioactive waste in Iceland or Icelandic waters. Iceland is concerned about activities in nearby regions, which could lead to the release of radioactive substances into the sea, even though such substances would be very strongly diluted before they reached Iceland. At present, radioactivity levels of Icelandic waters are among the lowest in Europe.

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

Hazardous Wastes: No information available.

Solid Wastes: No information available.

Radioactive Wastes: No information available.

Information:

Hazardous Wastes: No information available.

Solid Wastes: No information available.

Radioactive Wastes: No information available.

Research and Technologies:

Hazardous Wastes: No information available.

Solid Wastes: No information available.

Radioactive Wastes: No information available.

Financing:

Hazardous Wastes: No information available.

Solid Wastes: No information available.

Radioactive Wastes: No information available.

Cooperation:

Hazardous Wastes: Iceland ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal in 1995.

Solid Wastes: No information available.

Radioactive Wastes: Iceland, supported by other OECD Member States, has achieved significant progress in international fora in order to improve protection of the marine environment against the risk of radioactive pollution, e.g. from dumping of waste, storage of waste under the seabed, and from discharge of radioactive effluents from reprocessing plants.

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CHAPTERS 24 TO 32: STRENGTHENING THE ROLE OF MAJOR GROUPS

Women: Decision-Making: The legal rights of women are fairly well established in the Icelandic legal code. All ministries deal with the issue of gender equality, but the area falls under the jurisdiction of the Ministry of Social Affairs. The current updated Equal Status Act was adopted in 2000, and it applies to all spheres of society. The Minister of Social Affairs submits for approval every four years a resolution outlining a programme of action for the next four-year period. Every second year the Minister also submits to the parliament a report on the status and progress in gender equality. The programme of action emphasizes the duties of each minister and ministry in their own field, towards bringing about gender equality. The Ministry for the Environment has not taken any particular measures for involving women in Agenda 21 related work, but in general women are well represented in such work at the national level and in Local Agenda 21 development and activities. Status: The percentages of women in parliament increased from 25% in 1992 to 35% in 1999 and in local government from 10% in 1992 to 28% in 1999). According to the Equal Status Act municipalities with more than 500 inhabitants should establish equal status committees. Iceland has a long history of women's organizations, which have been and are still active in many areas of society, dealing with various issues, including environmental issues, at the local, national and international level. Cooperation: Iceland signed the Convention on the Elimination of All Forms of Discrimination Against Women on 24 July 1980 and ratified it on 18 June 1985.

Children and Youth: Decision-Making: The Icelandic Youth Council has participated in the development of the National Agenda 21. A number of youth organizations have increasingly included Agenda 21 related activities in their programmes of work.

Indigenous People: Status: There are no communities of indigenous people in Iceland.

Non-governmental Organizations: Decision-Making: The Ministry for the Environment has signed an agreement with NGOs on matters of cooperation, information sharing and funding. The Ministry holds regular meetings with NGO representatives. NGOs are consulted in the preparation of Iceland's Second Strategy for Sustainable Development to be completed before the WSSD in 2002. NGOs are regularly consulted and involved in policy making and projects related to sustainable development. Cooperation: Iceland has signed the Aarhus Convention on Access to Environmental Information.

Local Authorities: Programmes and Projects: Around 30 municipalities are currently active in Local Agenda 21 activities, comprising over 80% of the population of Iceland. The Ministry for the Environment funds a national coordinator of Local Agenda 21 and has signed a long-term agreement with the Federation of Local Authorities on the running and financing of a national programme for Local Agenda 21.

Workers and Trade Unions: Decision-Making: Trade unions are consulted on an ad hoc basis.

Business and Industry: Decision-Making: Business and industry representatives are regularly consulted on matters related to sustainable development, such as draft legislation and regulation.

Scientific and Technological Community: Decision-Making: The government aims to base its policy in matters relating to the environment and sustainable development of natural resources on the basis of sound scientific knowledge. Scientists and experts participate in decision-making.

Farmers: Decision-Making: The Soil Conservation Service (SCS) actively promotes sustainable use of grazing lands to control soil erosion. The Government Policy Statement explicitly calls for sustainable farming practices. A new law provides a framework for organic and ecological farming with the aim of making all Icelandic agriculture truly sustainable and ecological. The SCS organizes programmes for farmers to reclaim and conserve vegetative

cover and, together with the Forestry Service, operates a programme with farmers for establishing “soil conservation forests.” To a large extent, agriculture in Iceland is conducted on a sustainable, non-polluting basis.

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CHAPTER 33: FINANCIAL RESOURCES AND MECHANISMS

Decision-Making: No information available.

Programmes and Projects: See under **Financing** in the various chapters of this Profile.

Status: See under **Financing** in the various chapters of this Profile.

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

Information: No information available.

Research and Technologies: No information available.

Cooperation: No information available.

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CHAPTER 35: SCIENCE FOR SUSTAINABLE DEVELOPMENT

Decision-Making: Research and Development (R&D) institutions in Iceland are organized by sectors under the Ministries of: Agriculture; Fisheries; Industry and Trade; Health; Environment; and Education, Science and Culture. Overall responsibility for the implementation of science and technology policy lies with the Ministry of Education, Science and Culture, which is assisted by the Icelandic Research Council (IRC), established in 1994. The eleven members of the IRC represent industry, research institutions and the university community. The legislation concerning the IRC is due for revision in 1999 and environmental issues are a growing concern in general economic, as well as science and technology policies.

Environmental policies in general are the responsibility of the Ministry of the Environment, while operations reporting to the sectoral ministries have to pay due environmental respect. Science is introduced in decision-making in an institutionalized manner in major policy areas. Environmental issues are addressed both particularly at relevant institutes and generally through inter-sectoral environmental policies. Thus, e.g. research in marine biology also aims at facilitating sustainable management of marine resources, notably the fish stocks in the seas around the country. Similarly, research into natural processes in the earth, on land and in the atmosphere has the dual objective of being scientifically important and being significant in socio-economic context. Public research institutes and institutions for higher education are called upon for advice in the decision-making process and formulation of policy for sustainable environment.

Programmes and Projects: See under the heading **Research and Technologies** in the various chapters of this Profile.

Status: A significant change in the scale of R&D has occurred in recent years. R&D engaged about 1,310 work-years full time equivalent in 1993 and an expenditure of approximately ISK 5,570 million or 1.4% of GNP. In 1987, this ratio was 0.79%. About 70% of R&D is carried out in the public sector, including higher education institutions, while industrial and private sectors account for about 30%. The industrial share in R&D performance is increasing. Only 30 firms were registered active in 1987, but over 200 were active in 1993. The breakdown of public R&D expenditure by main socio-economic objectives included 26,5% on agriculture and fisheries; 19,5% on industry and energy; and 8,5% on the environment and natural resources not included under other headings. General knowledge production, including basic research as well as humanities and social sciences, counted for 27,9% of the total.

Capacity-Building, Education, Training and Awareness-Raising: The scientific capacity is continuously enlarged through the development of higher education institutions and an increasing number of well-educated scientists, not the least within sciences of environmental relevance.

Information: No information available.

Research and Technologies: See under the heading **Research and Technologies** in the various chapters of this Profile.

Financing: No information available.

Cooperation: No information available.

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CHAPTER 36: PROMOTING EDUCATION, PUBLIC AWARENESS AND TRAINING

Decision-Making: One of the priorities of the Ministry of Education National Strategy on Education is environmental education. Since 1993, Iceland has had an Act requiring the Government to provide information about the environment. To fulfill this requirement, the Ministry of the Environment must publish an environmental report every year. The Government also produces educational material on environment to schools. When planning educational material and curricula, the Government usually consults major group representatives.

Programmes and Projects: See under the heading **Capacity-Building, Education, Training and Awareness-Raising** in the various chapters of this Profile.

Status: See under the heading **Capacity-Building, Education, Training and Awareness-Raising** in the various chapters of this Profile.

Information: See under **Decision-Making**.

Research and Technologies: No information available.

Financing: No information available.

Cooperation: No information available.

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

This issue has been covered either under Chapter 2 or under the heading **Cooperation** in the various chapters of this Profile.

In addition, see under the heading **Capacity-Building, Education, Training and Awareness-Raising** in the various chapters of this Profile.

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CHAPTER 38: INTERNATIONAL INSTITUTIONAL ARRANGEMENTS

This issue deals mainly with activities undertaken by the UN System.

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CHAPTER 39: INTERNATIONAL LEGAL INSTRUMENTS AND MECHANISMS

This issue has been covered under the heading **Cooperation** in the various chapters of this Profile.

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CHAPTER 40: INFORMATION FOR DECISION-MAKING

Decision-Making: The Ministry for the Environment and its agencies, such as the Icelandic Institute of Natural History and the Environment and Food Agency, are primarily responsible for the collection and management of data related to sustainable development. Statistics Iceland is responsible for collection and dissemination of environmental and related statistics.

The 1993 Act on Public Access to Environmental Information and the 1997 Public Information Act are the main laws regarding the flow of information and obligation of the Government to provide the public with information on the environment was adopted in Iceland.

Decision-makers at national and local levels, institutes, researchers at universities, NGOs, and private sector companies collect and use information about: the state of the environment and natural resources; the use of natural resources; geographic data; data about the biological diversity; emissions data; physical planning and land-use data; and socio-economic data. Many of these institutes and agencies have their own databases. The Ministry for the Environment has a record of extensive ad hoc consultations with NGOs with respect to a variety of environmental policy measures. In connection with the implementation of the Programme of Action, the Ministry is now seeking ways to establish a more structured mechanism for cooperation between the Government, civil society and business concerning the implementation of the Plan of Action.

Programmes and Projects: An inter-ministerial committee was established to develop a programme on environmental and sustainable development indicators and it will finish its work at the end of the year. A new national strategy for sustainable development in Iceland will be launched next year, and it is envisioned that it will contain quantifiable goals and indicators to monitor progress. Statistics Iceland works on the standardization of data on sustainable development in cooperation with Organization for Economic Co-operation and Development (OECD), Euro stat and other international bodies working on statistics and indicators.

Status: No information available.

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

Information: The Environment and Food Agency and other agencies have participated in the development of standardized data banks and networks under the auspices of the European Environment Agency. The Environment Web (umhverfisvefurinn) is the most comprehensive website on environment and sustainable development issues in Iceland, linking over 200 websites: <http://www.umvefur.is>.

Research and Technologies: See under **Programmes and Projects** and **Information**.

Financing: No information available.

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

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CHAPTER: INDUSTRY

Decision-Making: ISO 14,000 has been introduced. A number of individual companies have implemented an environmental management system and introduced cleaner production processes, for example, in the fish and printing industries.

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: In industry, especially new energy-intensive industry, there has been an emphasis on demanding the Best Available Technology (BAT) with regard to pollution control. There have also been government programmes on integrating "Cleaner Production" methods in industry, especially in the fish and food industries.

Financing: No information available.

Cooperation: No information available.

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CHAPTER: SUSTAINABLE TOURISM

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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