ICELAND

CONCLUSIONS AND RECOMMENDATIONS*

After rapid economic expansion during the 1970s and much of the 1980s, Iceland is now in a phase of sluggish growth. In the coming years, the country's development will largely depend on the sustainable development of its natural resource base and on its comparative advantage of having an environment which is both clean and perceived as clean. Together with international issues relating, for instance, to the protection of the sea and the atmosphere, these facts have pushed environmental protection and its relationship with development towards the top of the list of priorities in public opinion polls and onto the country's agenda.

The OECD report has set out the baseline for assessing environmental progress and examines the environmental performance of Iceland in four major strategic areas:

- management of natural resources;
- reduction of the pollution burden;
- integration of environmental and economic decision-making;
- international co-operation.

In each of these areas, the extent to which government policy objectives are being met has been assessed. Iceland's environmental objectives are generally expressed as broad aims, or as more specific qualitative goals. They are not, however, expressed as quantitative targets, with the notable exception of the fisheries management system. This applies equally to domestic objectives and to international commitments.

This Chapter highlights the Conclusions and Recommendations of the OECD's appraisal of Iceland's environmental performance.

1. Baseline

The Icelandic economy remains highly dependent on marine resources and particularly on the production and export of fish products. Currently, total annual fish catches in Iceland reach about 1.5 million tonnes, a figure which represents the highest fish catch, per capita or per unit of GDP, of any OECD country. The recruitment of the most important fish stocks has been satisfactory except of cod during recent years. Fish products represent 75 per cent of the country's merchandise exports. Since establishing full control over the fishing grounds around the country in the mid-1970s, Iceland has gradually developed a system of fisheries management organised around: i) the annual specification by species of a Total Allowable Catch (TAC), ii) a system of individual transferable quotas, and iii) several accompanying technical enforcement and economic measures.

Concerning terrestrial resources, Iceland is characterised by:

- a stable biodiversity, with no mammal species and very few other species being threatened and with thriving local populations of flora and fauna;
- abundant and high quality inland freshwater resources, with ground water currently supplying most of the population; water is also bottled and exported;
- freshwater fish stocks which are in good condition and are of high quality;
- major development of hydro and geothermal energy resources which currently provide over 60 per cent of total primary energy supply; and
- soil erosion, which affects some three-quarters of total land area, and is considered by Icelandic authorities to be one of the most immediate environmental problems; over-grazing is one of the leading causes in many areas.

Measured ambient concentration levels of pollutants in Iceland are generally low, and are far below those in other OECD countries. This applies equally to air and water pollution. It mainly reflects low emissions due to low population density (only 260 000 inhabitants in an island of 103 000 km^2), the low level of industrialisation, a favourable energy supply structure, and the very low level of crop production and limited use of agrochemicals; it also reflects a low level of transfrontier pollution. There is, however, concern about localised pollution sources and about the emergence of diffuse pollution problems. Currently, 6 per cent of the national population is connected to secondary waste water treatment plants. Transport growth (with an increase of over 200 per cent in the number of

* Conclusions and Recommendations approved by the Group on Environmental Performance at its December 1992 meeting.

cars over the period 1970-1990) has contributed to an increase in national atmospheric emissions of carbon monoxide, nitrogen oxides and volatile organic compounds; there have been occasional periods of smog in the Reykjavik area.

Regarding the institutional and administrative baseline, important aspects include the following:

- The Ministry for the Environment was established in 1990, centralising the major environmental protection responsibilities.
- The Government's 1991 White Paper identifies a broad range of environmental initiatives relating to preservation and utilisation of land, measures to combat pollution of the sea, waste disposal and sewage, environmental research, international co-operation and the dissemination of environmental information to the public.
- An important body of laws and regulations exists pertaining to various environmental issues, including nature conservation, wildlife management, land rehabilitation, pollution control and management of natural resources.
- Newer environmental legislation is under preparation concerning, among others, environmental impact assessment, the development of the central highlands, and public right-to-know measures.
- Within a two-tier government structure, decentralised approaches are often effectively used to promote more environmentally aware behaviour. There is a tradition of consultation in policy planning in the drafting of legislation and in the regulatory process.

2. Environmental performance

Managing natural resources

Marine resources

The biological goal of ensuring the conservation of fish stocks is being achieved for most species, albeit with a degree of precariousness for some species such as cod. The newest version of the fisheries management system implemented in 1991 should contribute further to achieving this goal. The economic efficiency of the fishing industry has benefited from the fisheries management system and has increased over a period of several years; economic distortions appear to be relatively absent. The sustainable yield of fish stocks, however, is point of concern, next to the policy directed at improving the economic efficiency of the fishing industry. Provision for the transfer of quotas between vessels has opened up possibilities for fishing operators to combine their rights and use fewer vessels, thereby reducing costs. Prices are now set by the market. Iceland's fisheries are not subsidised and they continue to make a large contribution to the country's standard of living.

Although the Icelandic fisheries management system thus appears to be achieving its basic biological and economic goals, potential adjustments should be considered: closing the gap between the recommended and actual fish catches would help to improve protection of stocks; attention could be given to structural adjustment assistance to disadvantaged groups or communities. Iceland, like other countries, could also improve its scientific knowledge concerning the biological, hydrological and climatic determinants of fish stocks, as well as carrying out other research into the conservation of fish stocks, the interdependence between species and marine ecology.

Terrestrial resources

The Government of Iceland is committed to facilitating and promoting environmentally sound utilisation of terrestrial resources. The Ministry for the Environment as well as the institutions under its auspices are thus actively engaged in co-operating with sectoral Ministries, non-governmental organisations and the public in order to promote the development of Iceland's terrestrial resources in a manner that is consistent with nature conservation and sustainable development objectives. In that respect, important progress has been make in updating and harmonising environmental legislation. There are many examples of how Iceland's efforts to achieve sound management of terrestrial resources over the long term have brought mutually reinforcing environmental and economic benefits in the short term. There are also cases of progress at the policy level; this has not always been reflected through actual performance outcomes. Important challenges still exist in regard to reconciling nature conservation, agriculture, energy, tourism and recreation objectives, as well as co-ordinating national interests with those of local communities, associations and larger development agencies and enterprises.

Concerning specific terrestrial resources, the following observations can be made:

Policies aimed at promoting biodiversity have had considerable success with respect to: a) expanding "protected and conserved" areas (from 0.5 to 9 per cent of the national territory between 1970 and 1990); b) reversing legislation which encouraged the extermination of a few species and revising legislation to incorporate the principle that wild terrestrial mammals and birds are to be conserved; c) reducing subsidies for wet lands drainage; and d) maintaining user rights for farmers protecting birds such as eider ducks. However, difficulties stem from the lack of funding for the enforcement of nature protection and uncertainty over land rights in uninhabited areas. A more ambitious target could be set for protected areas.

Maintenance of the quantity and high quality of freshwater fish stocks has been aided by: a) efficient aquaculture techniques, b) an innovative system of management for sport fishing, and c) bans on ocean catches of salmon. It has also benefited from extremely clean lakes and rivers. However, the effects on the genetic integrity of future fish stocks resulting from the mixing of wild salmon with those raised by aquaculture methods are a potential concern.

Policies aimed at protecting soil and vegetation and reversing erosion have led to widespread involvement of the public involvement effectively and facilitate the establishment of longer-term priorities. However, given the extent of the erosion problem and budgetary restraints, there remains a fundamental need for the identification of priorities and for economic analysis of projects and programmes.

An integrated approach to the planning and management of the central highlands is needed in order to reconcile nature protection, agriculture, energy and tourism development objectives. The management of the central highlands' terrestrial resources in the 1990s should undergo a transformation similar to that experienced by marine resources in the 1980s, that is, a transition from a regime endangering the resource base to a regime managed in the long-term interests of the various parties and the nation as a whole. This could involve: a) a consensus on the appropriate structures and administrative mechanisms; b) a development strategy, a Master Plan and the integration of environmental impact assessments into project planning and design; c) management changes in order to strengthen the enforcement of legislation and regulations, as well as to develop voluntary support and the use of economic instruments; d) establishing mechanisms for fund collection and allocation; and e) the clarification of property rights.

Reducing the pollution burden

The need for a clean and unspoiled environment to respond to the demand from the Icelandic public, to support exports of fish and other "clean" products, and to attract foreign tourists, calls not only for strengthening of the implementation of existing policies, but also for more specific objectives and increased efforts concerning pollution prevention and control.

The endorsement of the Polluter-Pays Principle, the preventive role of the substitution of renewable energy for fossil fuels, the use of economic instruments (differential taxation in favour of unleaded petrol, fees on the collection of waste from business, fees on single-use plastic shopping bags and deposits for beverage containers) are all important elements of the current policy. It would be appropriate to concentrate short-term attention and efforts on the following:

- The national waste management strategy adopted in 1991 needs to be implemented with adequate funding as well as strengthened co-operation among local governments and between central and local government.
- Waste water disposal should be better assessed and waste water treatment expanded where necessary; in the Reykjavik urban area, a reduction of releases of pollutants into the sea should be sought taking into account the receiving capacity of Icelandic waters for nutrients; water protection legislation should be revised and strengthened.
- Energy efficiency and pollution abatement in the transport sector will continue, and the introduction of cleaner cars is already under way. Further attention should also be given to the fishing fleet.
- Regarding global environmental problems, climate change-related greenhouse gas emissions should be given particular attention, as a substantial share comes from aluminium production and could expand if a new aluminium plant was built. Options to reduce greenhouse gas emissions should be considered, including a carbon tax.

Integrating environmental and economic decision-making

There is scope in Iceland for better integration of environmental and economic decision-making, mostly within the existing institutional and administrative framework, and by expanding and diversifying the use of policy instruments.

Institutional and administrative arrangements

At governmental and parliamentary level, the establishment of the new Ministry for the Environment, the creation of a Parliamentary Environment Committee and the adoption by the government of a White Paper are recent initiatives which will promote the integration of environmental concerns into decision-making concerning areas such as energy, agriculture, fisheries, tourism and the budget.

At departmental level, the Government has taken initial steps towards improving policy co-ordination on environmental affairs between the new Ministry for the Environment, resource management ministries and other central bodies. The Ministry for the Environment is responsible for this co-ordination through various ad hoc committees. However, effective servicing by such committees may be constrained by the relatively small staff and limited economic expertise of the Ministry for the Environment. Further efforts will be needed to enhance the co-ordinating role of the Ministry for the Environment and to foster the integration of environmental concerns into the activities of other Ministries through more systematic consultation of the Ministry for the Environment.

At local government level, integration can be pursued through many useful mechanisms to co-ordinate central government actions with local governments in the field of environmental and resource conservation development and implementation; examples are the Nature Conservation Council, the National Physical Planning Agency and the Soil Conservation Service. Nonetheless, there are cases concerning management of the central highlands and waste management, for example, where co-operation needs to be organised and strengthened.

Major interested groups have adequate opportunities to participate in policy, planning and regulatory processes within government, with provision for such participation in many cases being stipulated in law.

Instruments used for policy development and implementation

Reliance on improving public environmental awareness has had success in a number of areas, such as tree planting and activities to combat soil erosion, but in other areas, such as off-road travel and construction of mountain huts, there appears to be a need for more rigorous enforcement of laws and regulations.

The use of economic instruments and the adoption of the Polluter-Pays Principle are already contributing to the integration of decision-making, but their scope could be extended, particularly to waste management, sewage disposal and treatment, and the protection and management of the central highlands, as well as in the transport and industrial sectors. These instruments also contribute to diversifying sources of financing for environmental activities.

Important gaps still remain regarding basic physical and economic information about the state of the environment, the stresses it is under, and carrying capacity. Efforts to improve environmental research, monitoring , indicators and information should be strengthened. Available information might be brought more systematically to the public's attention.

Further instruments might be considered:

- A strategic national environmental plan, based on the Government's White Paper, could set out short- and long-term goals for sustainable development and selected targets, outline funding levels and sources and propose corresponding implementation strategies;
- Environmental impact assessments of major projects could build on the approval and implementation of the legislation currently being prepared, as well as the necessary accompanying guidelines to ensure the balanced consideration of environmental and economic factors across government departments and agencies; and
- Land-use planning should be improved and property rights specified, especially in the management of the central highlands.

These instruments should be viewed as mechanisms which can promote and assist integrated and consultative decision-making. They, in turn, can also help balance attention between short-term and long-term issues,

sectoral and integrated decisions, as well as individual and community interests. Furthermore, they can help forge further partnerships and consensus with enterprises, trade unions and associations.

Sectoral integration

Structural adjustment is now under way in the agricultural sector, and will, inter alia, help replace price support with direct income support and reduce production to the level of domestic demand. Environmental pressures may be reduced through: a) encouraging a shift towards other more environmentally "friendly" activities such as eco-tourism and organised sport fishing, and b) further reducing the number of sheep and the associated pressures on vegetation cover and soil erosion. Progress has been made in reducing pressures on wetlands as agricultural subsidies for wetlands drainage have been greatly reduced. However, further adjustments are required, such as curbing the increase in the number of horses (more than 50 per cent over the last ten years) and confining grazing to areas which can sustain the pressure.

Structural adjustments, already accomplished in the energy sector with the expansion of renewable energy use, have had important beneficial effects on the environment. Studies of environmental impacts are being carried out for hydro power resources. Nonetheless, this model approach should be extended to projects and plans for the development of other energy resources. Iceland has the highest energy consumption per unit of GDP among OECD countries. Improving energy efficiency might be considered in terms of its contribution to meeting several objectives: nature conservation pollution reduction, energy conservation and energy security. In addition, work is being undertaken to study and find solutions to the environmental impacts of geothermal energy harnessing.

Pressures on the environment resulting from the rapid increase of tourism and recreation pose a major challenge for Iceland (*e.g.* an increase of more than 200 per cent in numbers of foreign tourists over the last ten years). Policies have already promoted an increasing awareness of the importance of Iceland's relatively unspoiled environment for tourism; incentives for off-peak travel have contributed to relieving pressures on heavily visited sites. However, a reinforced co-ordinated strategy appears necessary, including, for instance: strengthening institutional mechanisms, particularly as regards co-ordination between the Tourist Board and the Nature Conservation Council; increasing permanent and voluntary staff support; using a range of pricing measures to internalise the environmental costs of tourism, including toll charges on roads into the central highlands, sales of passes for entry into national parks or conservation areas, camping fees and permits and increased taxes on four-wheel-drive vehicles and snowmobiles, and taking steps to spread demand for visits to natural parks and recreation areas.

Financing

A better integration of environmental and economic decision-making should generally help to enhance the benefits of pollution control and natural resource conservation, while helping to contain the need for environmental expenditure. Regarding the latter, preventive and structural measures, for instance, are often less costly than curative measures. Greater use of economic instruments and reliance on the Polluter-Pays Principle can increase the cost-effectiveness of implemented policies. Economies of scale and reduced unit treatment costs can be achieved by co-operation between municipalities in the provision of environmental services such as waste treatment.

Nevertheless, increases in environmental expenditure appear indispensable in order to fulfil Iceland's environmental objectives, particularly those expressed in the Government's 1991 White Paper. This applies, for instance, to waste management objectives, to nature conservation (there are only three full-time park wardens in the whole country), to increased monitoring and research and to strengthening links between the Ministry for Environment and other Ministries and the international community.

Besides some increase in central and local government spending for environmental progress, additional sources of financing also need to be considered, such as increased reliance on service charges for publicly provided environmental services, mobilising the private sector to provide voluntary contributions to environmental causes, and international borrowing.

International co-operation

Iceland has taken a very active role in protecting the ocean against pollution and in conserving natural resources. It supports the progressive development of international environmental lax relating to the sea and is now

ratifying a growing number of international agreements addressing environmental protection. An explicit aim of the Icelandic government is "to play an active part in international co-operation on conserving the environment, at least in those aspects directly related to Iceland's national interests, such as control of atmospheric and marine pollution". The ongoing harmonisation of numerous European Community Directives with Icelandic environmental law within the framework of the recent EEA Agreement between countries of the European Communities and of EFTA, as well as the country's participation in the activities of the Nordic Council and the Arctic co-operation process, are major features of Iceland's present international environmental efforts.

Iceland has achieved progress in a number of areas of international significance:

- It has promoted a high degree of protection of the sea and has fully implemented requirements under Marpol. Iceland's particular location at the junction of the eastern and western areas of the North Atlantic may promote further co-operation between all North Atlantic countries to improve protection of the marine environment.
- Iceland's emissions of carbon dioxide benefit from the country's heavy reliance on renewable energy; its emissions of CFCs and halons are decreasing.
- Nature is well protected in Iceland, more so than in many other OECD countries, and very few species are threatened. Two Ramsar sites are nevertheless at risk of being affected by current industrial activities.

Areas deserving further attention include the following ones:

- The development of a long term environmental strategy and environmental policy directed at the sustainable yield of fish stocks and, in this respect, directed at the integration of environmental and economic policies.
- Concerning development assistance, Iceland has a great capacity for providing useful technical assistance in environment-related areas, such as sustainable management of fish resources, geothermal energy and hydro power and monitoring of natural disasters. However, its overall financial assistance (0.1 per cent of GDP in 1992) is not comparable to that of other OECD countries.
- In line with the Government's aim of "strengthening the image of Iceland as having a clean and unspoiled natural environment", Iceland will have to set an example in avoiding pollution of the sea, atmosphere, and its own natural resources, and should consider giving greater support to international initiatives to ensure sustainable development of all natural resources.
- In particular, in the coming years, Iceland may want to consider: measures to improve its preparedness for accidental marine pollution; launching co-operative activities within the framework of the Rovaniemi Declaration on Arctic co-operation; further developing its whaling policy and explaining it at international level; and choosing a target concerning emissions of greenhouse gases or carbon dioxide.
- To support Iceland's international activities, there will be a need to strengthen the staff of the Ministry for the Environment for dealing with international environmental relations, as well as to provide additional and better data to international organisations and to increase research activities concerning pollution of the sea and of the atmosphere.