

CONCLUSIONS AND RECOMMENDATIONS*

After sluggish growth in the early 1990s, Iceland's economic growth performance since 1994 has been one of the best in the OECD, averaging 4.5% in real terms and bringing Icelandic GDP per capita above the OECD average.

The economy depends heavily on Iceland's rich endowment in **natural resources**: the fishing industry on marine resources, the aluminium and ferrosilicon industry on hydropower and the tourism industry on nature and natural beauty. Fish exports and tourism development thus depend on a high-quality environment and a positive, "green" international image.

As Iceland is more sparsely populated than most other OECD countries, it does not suffer from the same order of pollution problems as many densely populated countries. Some **pollution issues** are nevertheless emerging: reducing pollution loading to water from municipal and agricultural sources, improving waste management, enhancing soil and nature conservation and controlling air emissions from increases in road traffic. These challenges largely reflect insufficient environmental infrastructure, together with changes in consumption patterns associated with recent increases in per capita income.

Concerning **international issues** and commitments, Iceland has a good record in transposing EU directives and in protecting the sea and areas of special natural value, but it needs to make progress in its implementation of these commitments, in reducing greenhouse gas emissions from transport and fisheries, and in development aid.

Thus it is all the more necessary for Iceland to: i) further implement environmental policies and strengthen its environmental infrastructure; ii) better integrate environmental concerns into economic decisions; and iii) reinforce international environmental co-operation. This report examines progress made by Iceland **since the previous OECD environmental performance review** in 1993, and the extent to which Iceland's **domestic objectives and international commitments** are being met, based on environmental effectiveness and economic efficiency criteria. A number of recommendations are put forward that could contribute to strengthening the country's environmental performance.

1. Environmental Management

Implementing environmental policies

Since the early 1990s and the first OECD environmental performance review of Iceland, the **Ministry for the Environment** has extended the scope of its responsibilities, among which are now: pollution prevention and control, nature protection, physical planning and meteorology. Staffing of the ministry and of the agencies operating under its auspices has increased. Regional public health inspectorates have been created to facilitate implementation of environmental policies. **Legislation** has been substantially enhanced: both environmental legislation, largely as a result of Iceland's participation

* Conclusions and Recommendations reviewed and approved by the Working Party on Environmental Performance at its meeting in November 2000.

in the European Economic Area (EEA), and land-related legislation, providing a framework for managing land resources and the central highlands. Significant progress has also been made in environmental impact assessment (EIA) and physical planning.

Implementing environmental policies, however, has proved difficult in many respects. **Licensing and enforcement**, which are shared between the Environment and Food Agency (EFA) for big firms and municipalities' health inspectorates for smaller ones, are lagging. Transposing EU environmental legislation has absorbed many resources at national level, while the small size of many local communities has complicated enforcement at municipal level, due to limited resources and possible conflicts of interests. **Industry** has only started using voluntary agreements, environmental management and eco-auditing. **Economic instruments** have been introduced (e.g. in fisheries and in hazardous waste management), but there is scope to increase their use (e.g. pollution charges, user fees for environmental services). There is a need for quantified **environmental policy objectives**.

It is **recommended** to:

- pursue efforts towards revising and **implementing environmental legislation**, taking account of Iceland's EEA membership;
- strengthen **environmental licensing and enforcement**, e.g. by strengthening government inspection and environmental management by companies, and by ensuring that inspection fees cover inspection costs;
- define quantified **environmental policy objectives**;
- increase the use of **economic instruments** in pollution prevention and control and in nature conservation;
- stimulate environmental management initiatives by **industry**;
- assure timely implementation of the **physical planning** functions of municipalities.

Water and waste management

Icelandic inland and coastal waters are generally of **good quality**. Pressures on water quality mostly relate to point sources. **Waste water treatment plants** (primary treatment only) have been or are being built to deal with greater Reykjavik's municipal waste water, in response to Iceland's international commitments in the EEA, and investments are being made in rural areas to combine sewers and build outfalls for disposal at sea. **Cost recovery** on these investments is relatively low, however; prices for water supply are also low by international standards. Volumetric waste water charges might be introduced to cover increasing waste water expenditure. Intensive livestock production units increasingly threaten inland waters, as slurry is not allowed to be disposed of directly at sea; **nutrient** management plans should be introduced for pig farms and, more generally, the impact of agriculture on water quality should be monitored more closely.

In line with national objectives of the early 1990s, good performance has been achieved in recycling **waste** from households (e.g. beverage containers), closing unsatisfactory municipal landfills, introducing a hazardous waste charge (1996, based on producer responsibility) and achieving a high rate of recovery of hazardous waste (mostly waste oil from the fishing fleet and other sources). The intent to extend this experience to other waste streams, especially packaging, end-of-life vehicles and old tyres, has been expressed. However, there is a need to promote cost recovery in municipal waste management, to better finance waste management services and to provide appropriate incentives. Most municipal waste still goes to landfill. A waste management bill is being drafted and municipalities are preparing or

implementing regional waste management plans. There is a potential for increased private sector participation and investment in waste management.

It is **recommended** to:

- continue investing in **waste water infrastructure**;
- apply the user pays principle in **pricing for waste water services** to households and industry, e.g. through volumetric pricing;
- introduce nutrient management plans at farm level for **intensive pig and poultry production**;
- adopt, as soon as possible, comprehensive **waste management legislation**;
- extend **producer responsibility** to packaging waste, end-of-life vehicles and old tyres;
- complete licensing of all landfills and incinerators as soon as possible, charge for **landfill waste disposal** and continue to develop modern municipal waste treatment.

Land management and the central highlands

Concerning **soil erosion**, Iceland has implemented projects to halt erosion in many of the most severely affected areas. Sheep grazing has declined as agricultural policy and shrinking markets for mutton and lamb have resulted in a halving of the number of sheep since 1980. Incentives have been provided to farmers to engage in land reclamation and afforestation. Information programmes on soil conservation and range management have been put in place. Concerning **nature conservation**, much progress has been made recently in establishing a legal and institutional base; government support to drain wetlands has ceased. In recent years, a legal framework has been put in place to assure the **sustainable development of the central highlands** (e.g. by specifying municipal boundaries, defining land ownership and related rights, planning infrastructure and conserving nature) and a regional plan has been adopted for the highlands, dealing with: protected areas; traditional uses such as grazing, fishing and hunting; energy resources; tourism and recreation; roads; and sanitation. A national master plan for hydro and geothermal resources is in preparation.

However, large areas of the country remain vulnerable to further **erosion** and overgrazing, and pressure from horse grazing has increased in the lowlands. There is a need to quantify policy objectives in soil conservation and to introduce new measures to enhance the role of local stakeholders. Concerning both **nature conservation and the management of the central highlands**, the legal framework and policies adopted need to be implemented. Most newly protected areas are small; larger wilderness areas and landscapes should be protected, a concern addressed by the 1999 Nature Conservation Act. Ranger staff and management plans are insufficient or lacking in most national parks and other protected areas. Red lists have been issued for birds and vascular plants and should be developed for other species. **Tourism** greatly increased in the 1990s and with it the need to manage the pressures it puts on nature, as well as to finance additional facilities and rangers at the most popular natural sites. The **central highlands** should benefit from the current process of defining land ownership by 2007 and from planning efforts such as the regional plan for the highlands, municipal and local plans, and master plans for energy resources and tourism.

It is **recommended** to:

- streamline soil conservation policy objectives by defining **quantitative targets for**

sustainable land use, soil reclamation and vegetation cover;

- regulate **livestock density** based on the carrying capacity of soils, as defined by the Soil Conservation Service, for both sheep and horses;
- follow up on the 1997 survey of **soil erosion** by identifying the various pressures and potential policy responses;
- continue to implement the new legal framework and regional plan for the **central highlands** and increase the responsibility of local stakeholders in land reclamation by clarifying communal and individual **land ownership and user rights** in the highlands;
- extend **protected areas** significantly as regards wilderness and landscape protection (e.g. in the central highlands and coastal areas); prepare and implement **management plans** in all national parks, and extend red lists to cover all relevant species in Iceland;
- increase ranger staff and funding for **nature conservation**, e.g. by applying the user pays principle to the tourism sector, inter alia, through fees and levies on visitors to protected areas;
- diversify farm income by promoting **agro-tourism** and farm forestry.

2. Towards Sustainable Development

Economy and the environment

Iceland's economy relies heavily on **natural resources**; the fishing industry depends on marine resources, industry on hydropower, and tourism on nature and related resources. Iceland has achieved a high rate of economic growth in recent years. Some weak **decoupling** of economic growth from environmental pressure is occurring; for example, energy intensity has fallen since 1990, and SO_x and NO_x emissions are growing more slowly than GDP. There has also been a degree of progress on pollution management. Some environmentally favourable changes in **consumption patterns** have been induced, notably the switch from oil to geothermal energy for domestic heating. Iceland has also made progress towards sustainable management of natural resources. Framework conditions (e.g. regarding land ownership rights, municipality boundaries, procedures for planning and building infrastructure, and regional long-term planning) have been established to assure better use and protection of the natural resources of the **central highlands**. The **fishery management system** (individual transferable quotas coupled with better regulations) has enabled fish stocks to recover and produce good economic returns. The National Environmental Strategy, "**Towards Sustainable Development**", was published in 1993, followed by the National Sustainable Development Action Plan in 1997. The Ministry for the Environment has begun regular co-ordination meetings with several other ministries, local authorities and other stakeholders.

However, **implementation** of the sustainable development strategy and action plan has been patchy. Most ministries and local governments continue to give much more attention to economic considerations, and **integration of environmental factors** in sectoral and economic policies is limited. In some sectors, such as transport and tourism, environmental pressures are increasing and more coherent strategies are needed to address them. Iceland would benefit from improvements in **sustainable natural resource management**, further strengthening of the fishery management system and further reduction of farm support. The **environmental management** industry remains weak. The government is not promoting reduced energy and material intensity in industry, and the implementation of its "green government" policy is patchy. **Taxation policy** has been developed without taking full account of environmental issues, and use of **economic instruments** for environmental policy is limited. While EEA membership and EU environmental directives constitute a major driver for environmental policy improvements in Iceland, their translation and adoption into Icelandic legislation has dominated

administrative attention, and their implementation has just started. **Environmental expenditure** remains low.

It is **recommended** to:

- translate national sustainable development commitments into **integrated policies and programmes** in key economic sectors (e.g. fisheries, agriculture, energy, transport and tourism), with targets and timetables;
- further implement mechanisms to encourage **better interministerial co-ordination and co-operation** related to sustainable development;
- review the environmental effects of the **tax system**, integrate environmental concerns in fiscal policies and expand the use of economic instruments for environmental management;
- further increase public and private **environmental expenditure** so as to expand environmental infrastructure, implement national laws and translate international commitments into reality;
- encourage private companies to improve **environmental management standards**, and implement "Environment Policy in Government Operations".

Environmental/social interface

In line with a very long **democratic tradition**, Iceland has developed its environmental policies in consultation with relevant stakeholders. The 1997 National Sustainable Development Action Plan was drawn up **with participation of all relevant societal groups**, and a Local Agenda 21 process has been started in co-operation with the public. For the many environmental issues, institutions have been created for complaint and appeal: everyone has the right to go to court in environmental matters, though little use has been made of this possibility so far. However, since Rio, only one comprehensive state of the environment report has been published. **Environmental information** (environmental data, indicators and state of the environment reports) should be issued regularly to inform the public about the environment and give an accounting of the country's performance with respect to its own environmental objectives and commitments.

Much emphasis is given to the role of **environmental education** in sustainable development. By 2000, environment had been made part of the curricula for all levels of education (pre-school, compulsory primary and lower secondary, upper secondary, university), and implementation of this decision has started. **Public environmental awareness** was last measured in 1993. More regular national surveys of environmental awareness and public priorities are needed. The ways in which the public can contribute to sustainable development need to be further clarified and promoted. **Consumption patterns** are influenced by environmental information and awareness, as well as by price signals. A recent tax measure for the largest cars has given wrong signals to the public in the form of reduced incentives for fuel economy. Charges relating to water and waste only partly cover costs.

Available information does not indicate any "**environmental injustice**" with regard to exposure to pollution. The government's policy is to strengthen **regional development** so as to promote population growth outside the Reykjavik area. Through enhanced co-operation with local authorities and among communities, measures are taken to adjust regional development to changing economic circumstances in accordance with principles and objectives of sustainable development. A more integrated approach to industrial policy, regional development and environmental issues could prove useful, however. The effects of the **fishery management system** on regional development and income distribution are under active

discussion; efforts should be made to enable the fishery management system to better address its social objectives.

Iceland has a high rate of volcanic and seismic activity and experiences landslides and avalanches. **Preparedness and mitigation measures** for natural disasters and environmental emergencies have been implemented. Considerable effort has been made in this field.

It is **recommended** to:

- improve public **access to environmental information** by publishing periodic **state of the environment reports**, environmental data and indicators showing the progress made towards goals and targets;
- regularly carry out national surveys of public **environmental awareness**, and build consensus about environmental policies and their implementation;
- develop the use of environmental information and economic instruments to provide appropriate **signals to consumers**;
- further research the **social consequences of the fishery management system** and develop the decision making process so as to achieve the social objectives of sustainable fishery management;
- adopt a new **national plan for sustainable development**, with economic, environmental, social and regional dimensions, a long-term perspective and appropriate objectives and targets, based on extensive consultation;
- adopt a national spatial plan on land use, co-ordinated with the sustainable development plan.

Sectoral integration: fisheries

Icelandic fishery management in the past decade is a **success story**, as **fish stocks** have recovered and produced good **economic returns** for large segments of the fleet. Icelandic fishery management authorities have greatly improved the regulatory base, with **total allowable catch** (TAC) and related rules (no discard, gear rules, closure of fishing grounds). Since the introduction of the cod catch rule in 1995, stakeholders know the rules of the game, and pressure to increase TACs above what the scientific advice prescribes have ceased. The **individual transferable quota** (ITQ) system has had positive effects on the fishing industry: most stakeholders in the industry have benefited from the related economic results, and the quota exchange has stimulated efficiency and added transparency. Iceland has played a key role in advancing **bilateral** and **multilateral regional fishery agreements** that will help ensure long-term sustainable yields from the fish stocks concerned.

However, the system could be further improved and extended. The small-scale fishing fleet should be fully incorporated into the ITQ system. Catch rules could be extended to include **additional commercial stocks**. With respect to **environmental objectives**, better knowledge and management of the marine ecosystem (e.g. species interdependency, sea bed protection), is needed, as is control of the fishing fleet's air emissions (e.g. CO₂) and of fish processing effluents. It is important to increase transparency and consultation on the **allocative and distributional issues** involved in the fishery management system to broaden its acceptance and strengthen its benefits to Icelandic society. More research is needed on the long-term economic consequences of the system. The strategy for sustainable fishery management requires further development to assure coherence of environmental, social, territorial and economic objectives. In particular this relates to the regional distribution of landings and processing, which form the

economic mainstay of many local communities. Overall, more **institutional integration** is needed to address the economic, environmental and social dimensions of the sustainable management of fisheries.

It is **recommended** to:

- continue the more stringent approach to TAC setting adopted with the introduction of the **cod catch rule** in 1995, as well as associated technical regulations (e.g. closure of fishing grounds, net size regulations);
- adopt and implement catch rules similar to the cod catch rule for **other species** as appropriate, taking into account their biology and their value for the future of Icelandic fisheries;
- undertake further analysis of the economic, social and environmental implications of the **ITQ system** in the light of the latest evidence and experience;
- fully incorporate **small vessels** into the ITQ system;
- integrate **environmental concerns** in fishery policies and practices, including improved management of marine ecosystems, control of CO₂ emissions from the fishing fleet and reduction of effluents from fish processing;
- further develop and implement the **strategy for sustainable fishery management**, ensuring the coherence of environmental, social and economic objectives.

3. International Co-operation

Achievements

Iceland is closely associated with European countries as a member of the Nordic Council and the EEA, and it has close ties with North American trading partners. Its economy is highly dependent on exports of fish and development of tourism, two sectors that require a high-quality environment and a positive, "green" image. Iceland developed its environmental policy at a fairly late stage but made significant progress in the 1990s, in particular by **transposing many EU directives** into its legal system and giving legal status to its international commitments. It has ratified and implemented many international agreements, and it hosts the secretariats of two working groups under the Arctic Environment Protection Strategy.

Iceland has consistently acted to ensure greater **protection of the seas**. In particular, it has promoted the adoption of a regional convention on **persistent organic pollutants** and is seeking the adoption of a worldwide convention on the topic. Its main aim is to ensure that consumers continue to see fish products as healthy and attractive and that the sustainability of the oceans, in particular the coastal zone, remains intact. At national level, Iceland has undertaken a wide-ranging study of invertebrates in its exclusive economic zone and measured the (very low) level of pollution of its waters. It has strengthened its response capability in case of an **oil spill** and has become a party to international agreements on oil spill prevention and preparedness.

Iceland is a party to only a few international agreements on **transboundary air pollution** but, as a member of the Nordic Council, has agreed to reduce its emissions of volatile organic compounds. Good progress has been achieved in this area.

The country's unique **natural parks and protected areas** are great tourist attractions. Iceland has stepped up protection of wetlands under the Ramsar Convention and announced its intention to protect

a larger part of its territory. Its carbon sequestration programme through revegetalisation has made considerable progress, and significant reduction in industrial greenhouse gas (GHG) emissions has been achieved.

Areas for progress

While Iceland's international obligations and responsibilities are considerable, its population is small. In addition, public environmental awareness is fairly recent. Thus there are **significant gaps** in its international co-operation programme caused by insufficient staffing and financial means. Its commendable transposition of EU directives needs to be followed up by greater effort at local level to **implement the resulting legislation** and carry out related data collection. The significant steps taken to inform the Icelandic public need to be supplemented by similar efforts geared towards the international community in order to publicise Iceland's achievements in fulfilment of environmental policies, its goals and objectives for future action, the state of its environment and the measures taken to implement new policies.

As Iceland seeks international support for its creative policies aimed at **sustainable use of its own natural resources**, it will need to give wider publicity to its efforts to protect its natural environment and to its special contribution to climate change policies, in particular through carbon sequestration. So far, Iceland has not taken extensive or far-reaching measures to reduce **GHG emissions from transport or the fishing industry**. Excluding new and expanded energy-intensive industry (using renewable forms of energy), it may be assumed that net CO₂ emissions will have been stabilised in 2000 at the 1990 level, in line with the national commitment. So far, Iceland has not agreed to become a party to the Kyoto Protocol. Its gross **GHG emissions in 2010 are likely to be well above the 1990 level**. Measures taken so far to reduce CO₂ emissions from transport and fisheries have been rather limited and could be strengthened, especially if Iceland wants to carry out a climate change policy with ambitious goals. Participation of all societal members and stakeholders in implementing such a climate change policy would be needed.

Iceland's per capita NO_x emissions are considerably higher than the OECD average, the main reason being the large fishing fleet. They were supposed to be stabilised at the 1990 level, but are at present higher. On the other hand, they have been slowly decreasing in recent years, mainly because of the use of catalytic converters, despite the car fleet growth.

Although Iceland is well aware of the global dimension of environmental problems and of the need to help developing nations play a part in their solution, its contribution to **development aid** is, in relative terms, **among the lowest** for all industrialised countries and about four times below the level that the Icelandic Government said in 1993 was to be reached by 2000. Thus Iceland's bilateral aid is quite limited. Concerning multilateral aid, Iceland is not contributing to the Global Environment Facility, though it supports environmental projects in line with its foreign policy.

It is **recommended** to:

- develop and implement a meaningful programme of measures, in consultation with all stakeholders, to **reduce GHG emissions from transport and fisheries**, while seeking international support for the greater use of industrial processes based on clean and renewable energy sources;
- develop knowledge and promote understanding for a policy of **sustainable utilisation of all marine resources** without compromising the future of any marine species;
- implement the newly transposed EU directives and **collect necessary environmental data** to meet international commitments;

- develop policy to protect **Ramsar sites** and natural parks of outstanding interest, with a view to maintaining the integrity of the Icelandic wilderness;
- **combat** soil erosion and land degradation and **create carbon sinks** through revegetalisation;
- increase official development assistance, to reach the OECD-DAC average;
- complete the national report on biodiversity.