

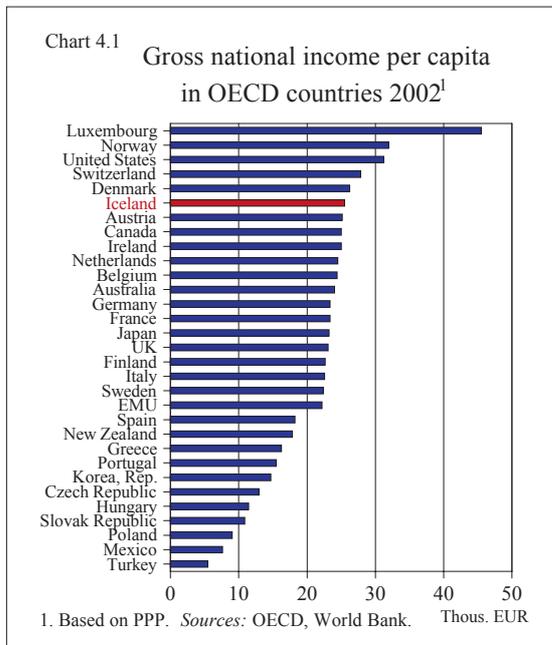
## 4. Structure of the economy

### *Size and income level*

The Icelandic economy is the smallest within the OECD, generating GDP of €7.5 billion in 2002 in terms of Purchasing Power Parities (PPP). This was less than 1/1200 of the US economy, 1/20 of the Danish economy and 1/3 of the economy of Luxembourg but 1/3 larger than the economy of Malta. The small size of the Icelandic economy mainly reflects the small size of the population, which was only 288 thousand at the end of 2002.

Iceland's small population has not inhibited economic growth and prosperity. The country has all the characteristics of a modern welfare state. GDP per capita measured in terms of Purchasing Power Parities (PPP) amounted to €26,386 (in 2002), the sixth highest in the world. In comparison to the Nordic countries, Iceland's GNI per capita is lower than in Norway and Denmark, but higher than in Sweden and Finland and somewhat above the EU average.

This prosperity can be attributed to Iceland's ability to utilise its comparative advantages by exploiting its abundant natural resources, both marine and land-based, as well as human capital. The location and geology of Iceland determine its main resources which are marine resources from some of the richest and cleanest waters in the world and hydro and geothermal energy. Both are from highly renewable and non-polluting sources and both are scientifically managed to maintain self-sustainable long-term use. Iceland is the 12th largest fishing nation in the world, exporting nearly all its catch as domestic demand is relatively small. Even following the rapid build-up of power-intensive industries, only around one-fifth of economically harnessable hydro and geothermal power has been harnessed until now. The third major resource in Iceland



is the unspoiled natural environment on which a large and growing tourist industry is based. High labour force participation of women and by the young and elderly, as well as long working hours by international comparison, also contribute to Iceland's robust growth.

#### *Composition of output and expenditures*

As in other developed economies, services, which to a significant degree are non-tradable, form the bulk of economic activity, accounting for 65% of GDP in 2002. Agriculture contributes only 1.5% of the country's GDP.<sup>1</sup> While the marine sector is the most important source of export revenue, its share of GDP has declined considerably in recent years, from 17% in 1980 to 12% in 2002.

These developments reflect a transformation in the utilisation of natural and human resources. Scope for expanding the harvesting of Iceland's coastal fishing grounds has been limited in recent years, while the utilisation of its hydroelectric and geothermal power potential has intensified. At the same time, the advent of service industries such as tourism, and several emerging human capital-intensive activities such as information technology and communications (ITC) and financial services, has continued unabated. Significant progress has been made in high-tech activities such as medical equipment, technical solutions for food processing, fisheries equipment, biotechnology and pharmaceutical products.

Private consumption contributed on average about 57% of GDP in 1998-2002 and public consumption and gross fixed investment 24% and 23% respectively. The investment to

Table 4.1 Output and expenditure

Percentage distribution (period average)

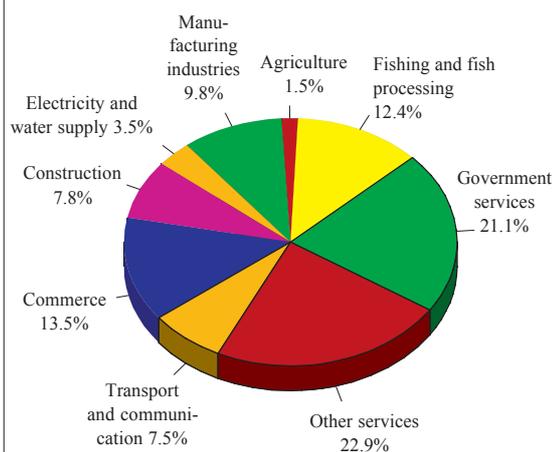
% of GDP	1968-1972	1998-2002
Private consumption .....	59.9	56.7
Public consumption .....	13.1	23.8
Gross fixed investment .....	28.9	22.5
Changes in stock .....	0.0	0.1
National expenditure .....	101.8	103.0
Exports of goods and services .....	39.7	37.2
Goods, fob .....	23.8	24.6
Services .....	15.8	12.6
Imports of goods and services .....	41.5	40.2
Goods, fob .....	27.7	27.1
Services .....	13.8	13.1
GDP .....	100.0	100.0
Current account balance .....	-3.1	-5.6

Source: Statistics Iceland.

GDP ratio has risen substantially in recent years on average, after falling below 1/5 in the mid-1990s. The ratio of public consumption has also risen somewhat over the past five

Chart 4.2

Breakdown of GDP by industry in 2002



Source: Statistics Iceland.

1. It should be noted that fishing is not included in this figure. Agriculture and fisheries are often bracketed together in international statistics.

years, after remaining broadly stable through most of the 1990s.

### *Foreign trade*

Icelandic trade has many of the characteristics of small resource-based open economies, such as a high degree of openness, a large share of primary products and commodities and a small share of intra-industry trade. Nevertheless, the diversity of exports has increased significantly in recent years. In 2002, imports and exports of goods and services amounted to 38% and 40% of GDP respectively. Although this can be seen as a fairly open economy, reflecting the small size of GDP, many larger economies have a considerably higher ratio. To some extent this can be explained by geographic distance from major population centres, but other factors may also be at work, such as limited intra-industry and transit trade, a natural resource-based export sector with high value added, and extensive protection of domestic agriculture.

The mainstay of merchandise exports is still fish and other marine products, which in 2002 accounted for 63% of merchandise exports and 42% of total exports. Rapidly growing in importance has been export of manufactured products, which in 2002 accounted for one-third of merchandise exports. This is mainly the result of growth in metals industries, mostly aluminium smelting, and in medical and pharmaceutical products. Export of services grew rapidly over the past decade, as the economy became more service-oriented. Services now account for 34% of total export revenues.

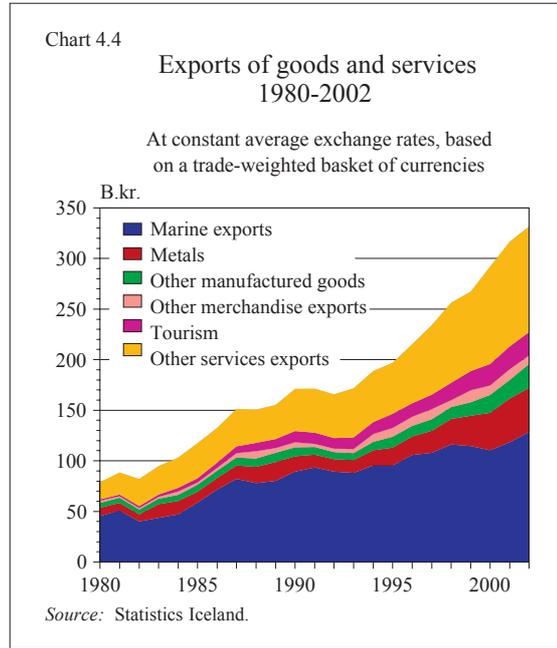
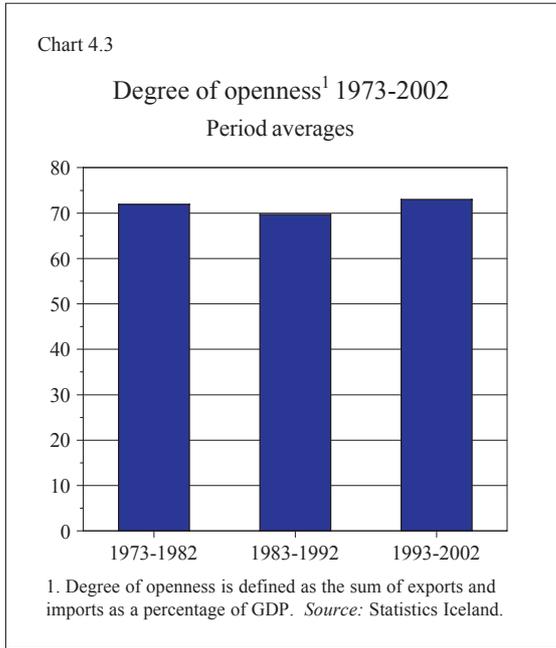
Iceland imports a wide range of manufactured goods and commodities, reflecting both the small size of the economy and the limited range of natural resources. Imports of capital goods accounted for roughly a quarter of total

merchandise imports in 2002. Industrial supplies and consumer goods are around one-third of imports each.

Iceland is the westernmost outpost of Europe and therefore an ideal base for business between Europe and North America. This strategic location is further enhanced by Iceland's membership of EFTA (The European Free Trade Association) since 1970 and the European Economic Area (EEA), which has integrated Iceland into the internal market of the EU since it went into effect on January 1, 1994. The EEA constitutes the world's largest market, with GDP of €9 trillion. EEA membership implies that business legislation has been adapted to that of the EU, guaranteeing the free flow of goods, services, capital and labour.

Iceland's free trade arrangements with Europe have stimulated trade with the region, causing the share of North America to fall. In 2002, three-quarters of merchandise exports went to the member countries of the EEA, which also were the source of 63% of imports. Currently, the largest trading partner countries are the UK, Germany, the USA and the Nordic countries. In terms of currency, the euro area constitutes the largest trading area, accounting for 31% of imports and 48% of exports.

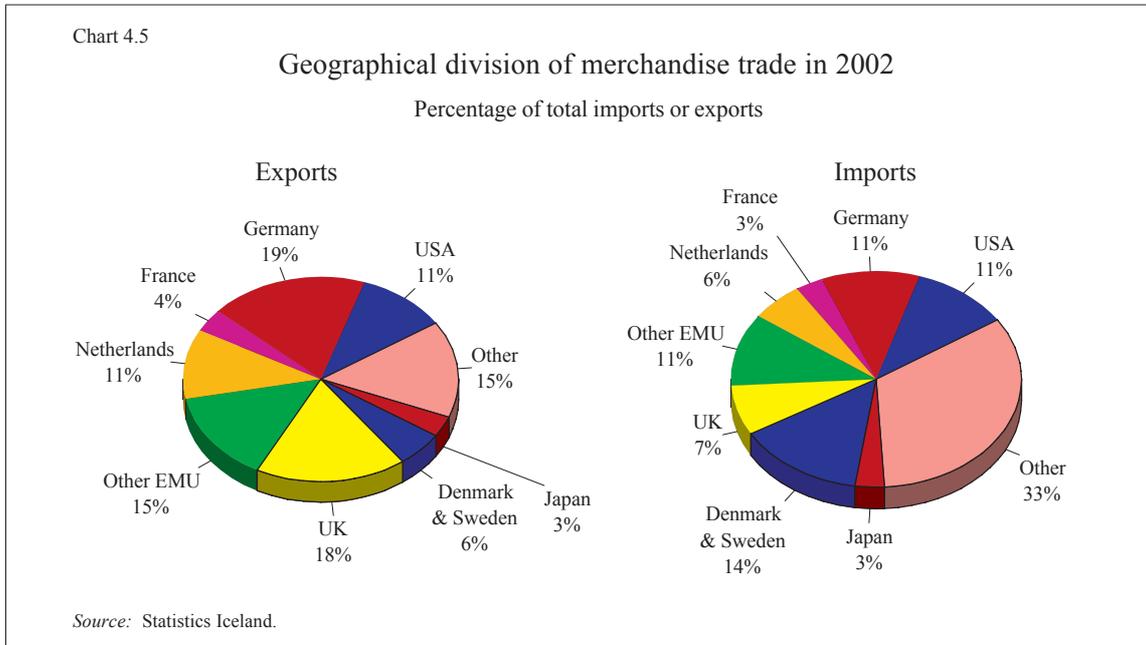
Iceland has normally had a trade surplus with Japan, the UK, the Iberian countries and the USA, but a substantial deficit with its Nordic neighbours. Iceland's ratio of services to total trade is one of the highest among OECD countries. In 2002, Iceland ranked third with a share of services trade near 34%. Data on the direction of services trade are not as reliable as merchandise trade data. However, around 2/5 of Iceland's services exports in 2002 used euros and the same share used USD as the vehicle currency.

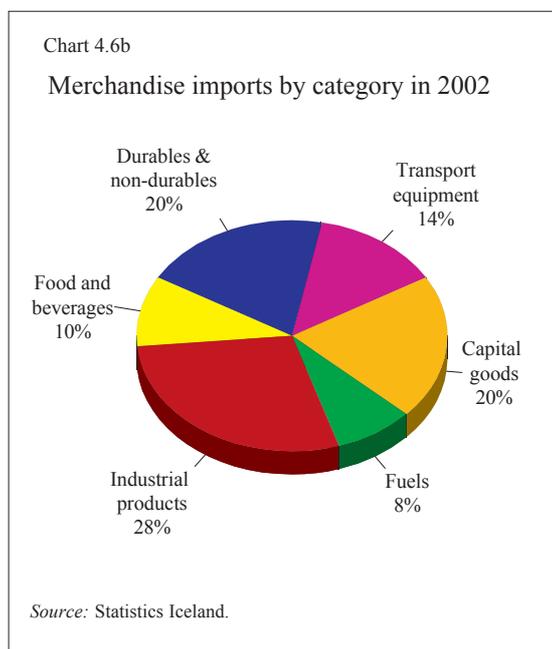
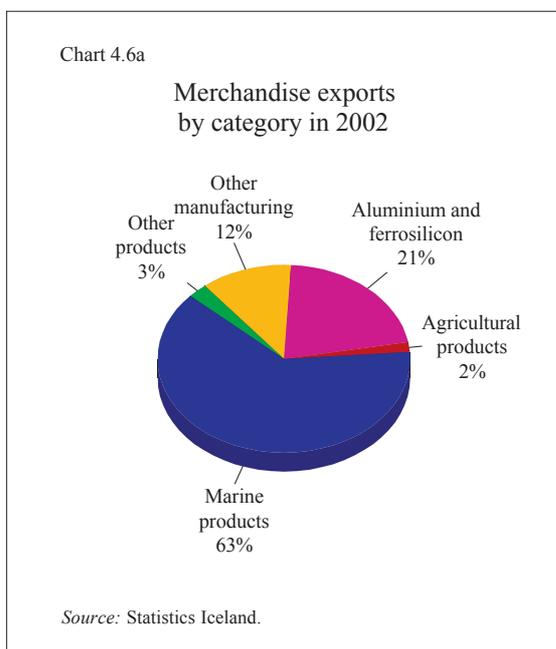


*Marine sector*

The marine sector is the backbone of export activity. In 2002, fishing and fish processing contributed 63% of total merchandise exports. The importance of the marine sector has

diminished considerably in the last four decades. In the early 1960s, export of fish products constituted over 90% of merchandise exports.

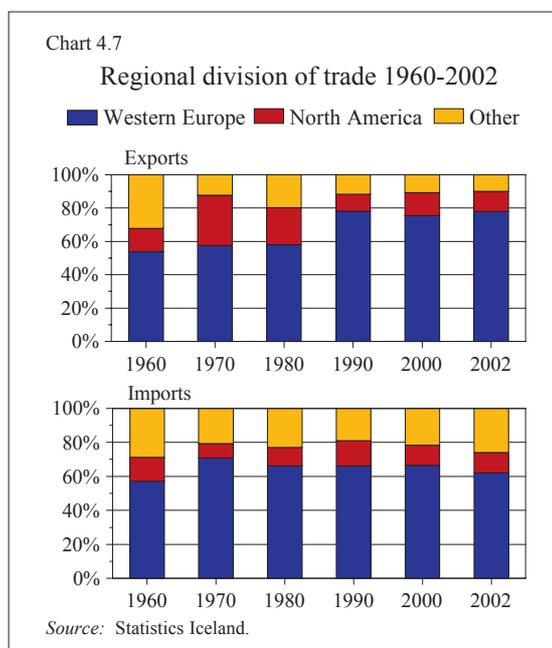




Fishing and processing of groundfish, mainly cod, haddock, saithe and redfish, are the principal part of the Icelandic marine sector. The catch of these and other demersals was around 470 thousand tons in 2002. Conservation measures led to substantial cuts in total allowable catch (TAC) in the 1990s, most significantly in cod quotas. Cod is in terms of total value of the catch the most valuable species in Icelandic waters. The decline in the cod catch has been offset by increased harvesting of other species such as redfish, Greenland halibut, blue whiting and herring, inside and outside Iceland's exclusive 200-mile fishing zone.

Efforts to enhance value added in processing, e.g. by product development, have partially succeeded in offsetting lower catch volumes in recent years. Efficiency in the fishing and fish processing industry has increased substantially. The industry is increasingly relying on information and communication technology, automation and modern management techniques to increase productivity.

Icelandic fishing vessels are regarded as among the most modern and technically advanced in the world. In recent years a number of fisheries companies have merged in order to



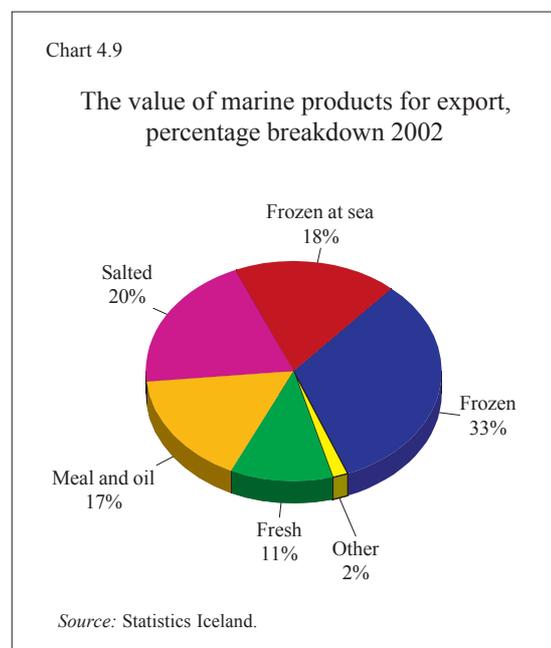
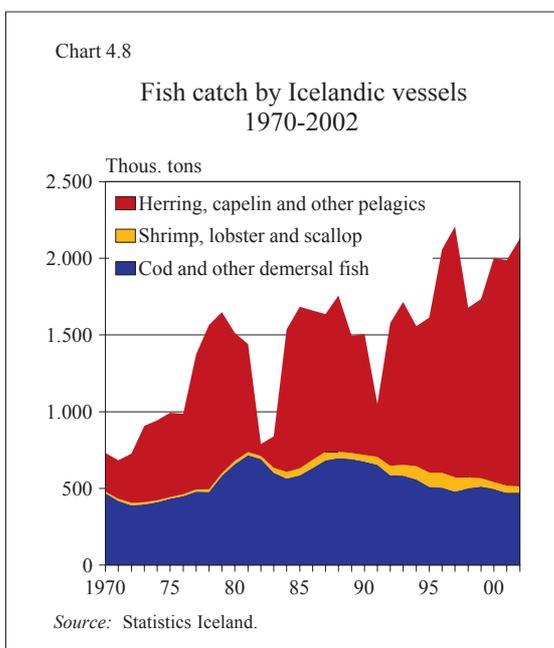
enhance efficiency. Several of the leading fisheries companies rank with the largest private companies in Iceland.

A comprehensive fisheries management system based on individual transferable quotas (the ITQ system) has been developed to manage fish stocks. All commercially important species are regulated within the ITQ system. Each year a TAC is set on the basis of biological assessment of the fish stocks and forecasts for their development in the near future. The Fisheries Management Act of 1990 is the cornerstone of the management system. Under this Act, quota shares represent shares in the annual TAC and are allocated to individual fishing vessels. Quotas are permanent, perfectly divisible and freely transferable. In 1995 the Icelandic government introduced the “catch rule” whereby the TAC for the next consecutive quota year is set at 25% of the mean of the fishable biomass in the assessment year and the year after. Annual fishing quotas are allo-

cated against an annual fee for fisheries inspection and enforcement purposes. This fee will be increased under a recent change in the law, but will still remain well below the market price of annual quotas. Quotas can be and are traded at market prices. The introduction of the ITQ system has led to substantial rationalisation and improved performance in the marine sector.

#### *Manufacturing and power-intensive industries*

The largest manufacturing industries in Iceland are power-intensive industries based on the use of electric power. They produce almost exclusively for export. A number of smaller-scale export-oriented manufacturing industries have emerged in recent years, in areas such as biotechnology, pharmaceuticals, capital goods for fisheries and food processing, medical equipment and other IT-intensive high-tech activities.



In 2002 manufactured products accounted for 33% of total merchandise exports, of which power-intensive products (mainly aluminium) amounted to 21% and pharmaceuticals and other high-tech products to 7%. There has been a considerable increase in manufacturing exports in recent years, as they amounted only to 22% of total exports in 1997, of which 12% was aluminium.

The development of power-intensive industries is mainly based on competitive energy costs and a highly educated and skilled labour force. The government has actively encouraged foreign direct investment in power-intensive industries. The largest manufacturing facility in Iceland is an aluminium smelter located near Reykjavík, owned and operated by Alcan Iceland Ltd., a wholly owned subsidiary of Alcan Inc. Its total capacity is 175 thousand tonnes per year, (tpy), after being expanded by 60% in 1996-98. The second aluminium smelter is Columbia Ventures

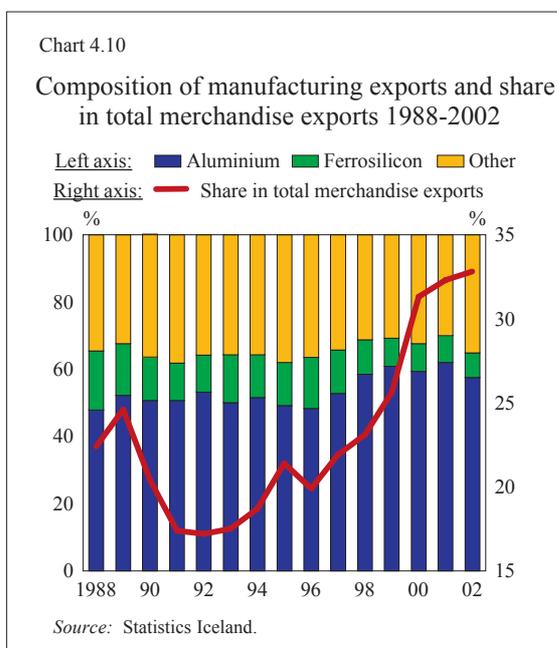
(Norðurál) with a capacity of 90 thousand tpy. Icelandic Alloys plc. is a ferrosilicon plant with an annual capacity of 115 thousand tonnes.

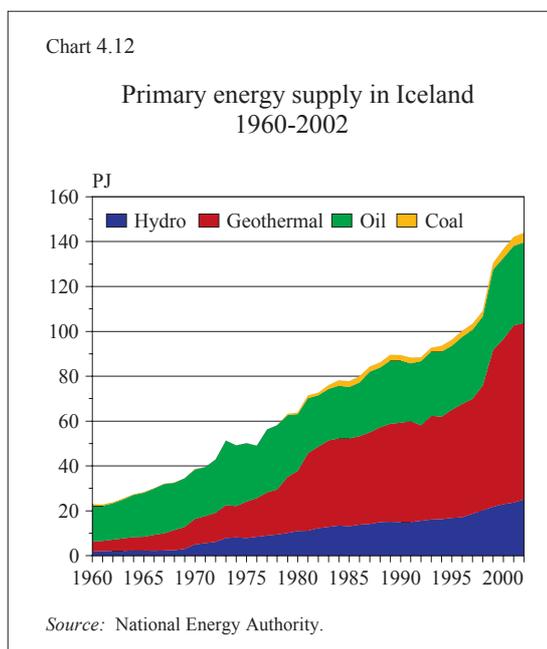
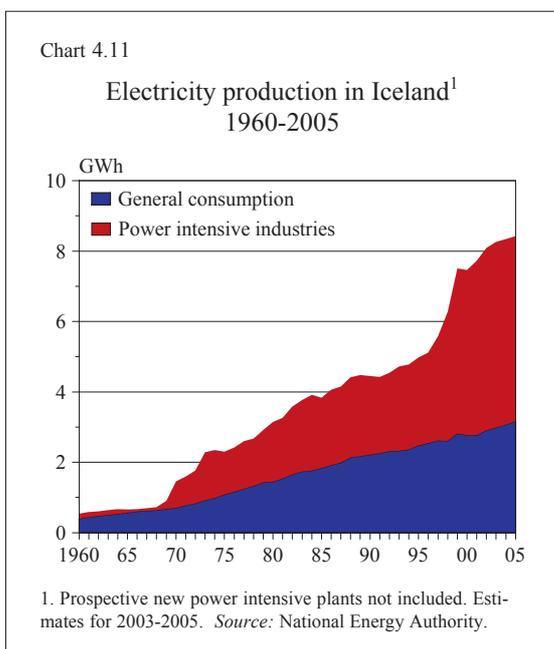
A new aluminium smelter, owned by Alcoa, is to be built on the east coast of Iceland. It is due to start operations in autumn 2007, producing 322 thousand tpy at full capacity. Plans are also afoot, although they have not been finalised, to expand the production capacity of the Norðurál smelter by 90 thousand tpy by 2006. If both these projects materialise, the total production capacity of the aluminium industry in Iceland will be 677 thousand tpy, or one-and-a-half times the present level.

### Energy

Iceland has extensive hydro and geothermal resources and is the only country in Western Europe that still has large-scale, competitively priced power remaining to be harnessed from such sources. Although electricity consumption per capita is the highest in the world, at some 29,300 kWh per person in 2002, only a fraction of the energy potential has been tapped.

Electric power potential from hydro and geothermal sources is now estimated to be 50 thousand GWh/year, taking into account economic and environmental considerations. Some 8,500 GWh/year of this power had been harnessed in 2002, or only about 17% of estimated total energy potential. Economically exploitable electricity from hydro resources is estimated at around 30 thousand GWh/year. In 2002, total installed hydropower was 1,151 MW in 31 power plants capable of producing 6,800 GWh per year. Installed geothermal power in six plants now amounts to 202 MW or 1,616 GWh/year. The largest single hydropower plant has an installed power capacity of 270 MW and the largest geothermal plant 90 MW.





All the largest hydroelectric power plants as well as the inter-regional power lines are owned and operated by Landsvirkjun (the National Power Company). Landsvirkjun is jointly owned by the Icelandic state, the City of Reykjavík and the Town of Akureyri.

Iceland is a world leader in the use of geothermal energy for domestic and industrial purposes. Some 87% of all homes are heated by geothermal energy at less than half the comparable cost of fossil fuels or even electrical heating. Geothermal steam is applied in a number of industrial processes and increasingly also for electricity generation.

Recent restructuring in the electricity sector internationally is having an impact in Iceland. As a signatory to the EEA Agreement, Iceland is obliged to comply with the EU directive relating to the separation of transmission, generation, distribution and sales of electricity. A new Electricity Act, which aims to phase in a deregulation of the electricity market, was passed by Parliament and ratified in March

2003. It entered into force on July 1, 2003 although implementation of its chapter on transmission was deferred until July 1, 2004. As an immediate measure, it calls for an accounting separation of the above functions. The Electricity Act does not call for incorporation of power companies or any changes with regard to the guarantees they currently enjoy.

Iceland currently provides a testing ground for the feasibility of using hydrogen in transport systems. The idea is to take advantage of Iceland's ample geothermal and hydropower resources to produce hydrogen for powering cars and ships. The first project is called Ecological City Transport System (ECTOS) and involves building a fuel station for three fuel-cell buses which will run on emission-free hydrogen for two years. These buses are already in operation in the City of Reykjavík. The project is run by Icelandic New Energy Ltd. ([www.newenergy.is](http://www.newenergy.is)), which is owned by Icelandic energy companies, DaimlerChrysler, Norsk Hydro, Shell International Hydrogen

and others. Icelandic New Energy aims to develop a hydrogen-based community in Iceland in stages over the coming decades.

### *Agriculture*

Approximately one-fifth of the total land area of Iceland is suitable for fodder production and the raising of livestock. Around 6% of this area is cultivated, with the remainder devoted to raising livestock or left undeveloped. Production of meat and dairy products is mainly for domestic consumption. The principal crops are hay and potatoes. Cultivation of other crops, such as barley, has yielded promising results. Vegetables and flowers are cultivated in greenhouses heated with geothermal water and steam. A fur industry has developed in the last two decades.

The agricultural sector has undergone structural changes in recent years. Demand for traditional Icelandic products, especially lamb meat, has declined substantially while consumption of white meat (pork and poultry) has risen in line with changes in taste and relative prices. Price support and export subsidies for the traditional products of sheep and dairy farming have been replaced with subsidies in the form of direct income payments to farmers in these segments. In 2002, such direct payments are estimated to have amounted to 52% of farmers' income in lamb and mutton production and 47% of the producers' price for milk production. Total on-budget transfers to farmers amounted to about 1.2% of GDP in 2002. Imports of meat, dairy products and vegetables that compete with domestic production are subject to high tariffs, controls to prevent diseases, and quotas. Imports are likely to increase as tariffs go down in line with WTO agreements on trade in agricultural products.

In terms of total agricultural support,

Iceland ranks 4th highest in the OECD, with a PSE (producers' support estimate) of 63, behind Switzerland, Norway and Korea with PSEs of 75, 71 and 66 respectively. Producers' support amounts to 36 on average in the EU and 31 in the OECD countries.

### *Transport and communications*

The domestic transportation network consists of roads, air transportation and coastal shipping. Car ownership is widespread. In 2002, Iceland had 569 passenger cars per 1,000 inhabitants, the third highest ratio within the OECD after the USA and Australia.

Several airlines operate in Iceland. Iceland-air is a private company with international routes and direct flights from Iceland to a number of cities in Europe and the United States. Air Atlanta mainly operates as a charter airline on international routes outside Iceland. Iceland Express is a newcomer operating daily direct flights to London and Copenhagen. Some foreign airlines also operate to Iceland from time to time.

Iceland has numerous harbours that are almost without exception free of ice throughout the year. In exceptionally cold years, drift ice from Greenland can close harbours in the northern part of the country. The two main shipping companies, Eimskip and Samskip, operate regular liner services to the major ports of Europe and the United States.

In 1998, Iceland Post and Telecom (Póstur og sími) was divided into two separate entities, Iceland Post (Íslandspóstur) and Iceland Telecom (Landssíminn). Both are limited liability companies and have been state-owned until now. The first steps in privatising Iceland Telecom have been taken and the government's policy is that it will be fully privatised in the near future.

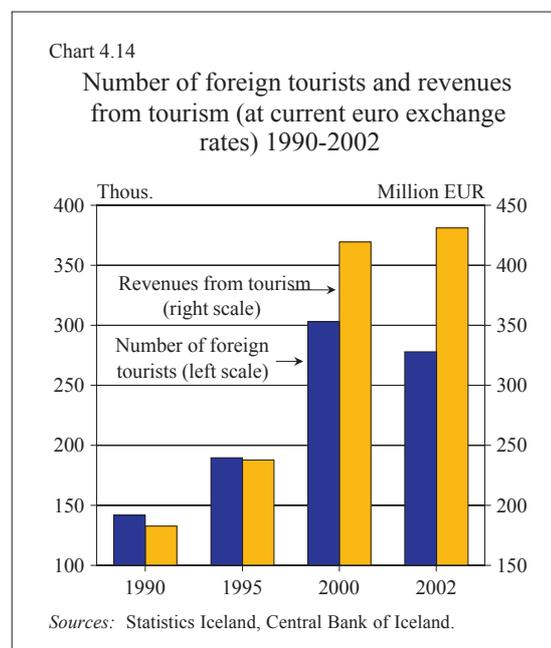
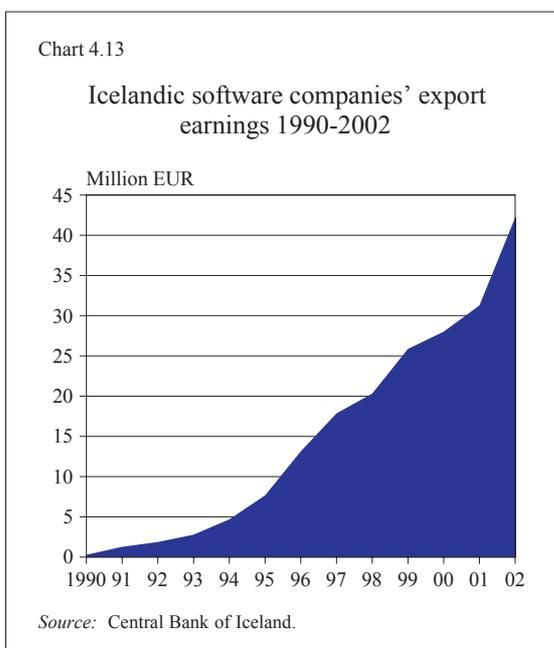
The telecommunication sector is developing rapidly and competition is increasing. As a result of technological developments, deregulation and enhanced competition, telephone charges in Iceland, both at residential and business rates, are among the lowest within the OECD. The cellular mobile telephone network is extensive. In 2001, Iceland had the second-highest mobile telephone penetration in the world, surpassed only by Finland. The telecommunication system operated by Iceland Telecom is both extensive and modern, with satellite earth stations, optical fibre cables, broadband networks and a wide-reaching cellular mobile phone system. Og Vodafone is a new telecommunications company that commenced operation in spring 2003 after the merger of three Icelandic telecommunication companies in cooperation and partnership with Vodafone Int. It has acquired one-quarter of the telecommunication market in Iceland. Og Vodafone is listed on Iceland Stock Exchange.

The National Broadcasting Service (Ríkisútvarpið) operates two radio channels and one television channel, covering virtually the whole country. Northern Lights Corporation is the largest broadcasting company in Iceland, operating five TV channels and five radio channels covering virtually all Iceland. A newcomer in the broadcasting sector is Skjár 1, operating two TV channels as from October 1 2003. In addition, a large number of foreign TV channels are widely received via satellite, cable or UHF relay.

Iceland has one of the highest rate of Internet connections in the world. About  $\frac{3}{4}$  of the population has direct access to an Internet connection and 93% of all companies in Iceland are connected and active users.

#### Service industries

The tourism sector has been one of the fastest-growing industries in recent years. The number of visitors from abroad in 2002 is estimated at



278 thousand, compared to 142 thousand in 1990. Foreign exchange revenues generated by tourism in 2002 amounted to approximately €430 million.

Besides tourism there is an expanding array of emerging services industries in Iceland and others have been fundamentally transformed in recent years. Important structural changes, for instance, have been implemented in the financial sector in the last two decades, as described in Chapter 5. Rapid growth has also taken place in other business services including computer services and software development.

The Icelandic software industry has extensive knowhow and long practical experience in the design of software for sophisticated food and fish processing equipment. Icelandic software developers are also actively engaged in multimedia and Internet applications, e-commerce, real-time communication, medical software and general office and database systems. An emerging industry is biotechnology which is based *inter alia* on Iceland's genetic resources.

### The labour market

The Icelandic labour market has one of the highest participation rates among OECD countries. Over the past 10 years it has consistently been well above 80%. This is explained partly by the fact that the rate of unemployment has normally been one of the lowest among OECD countries. The participation rate of women has also been very high by international comparison. In 2002, female participation was in fact one of the highest in the OECD countries, with women accounting for 47% of the labour force. Participation rates among the young and the elderly have also been quite high. Furthermore, Icelanders tend to work long hours. The participation rate and number of

hours worked are positively correlated with economic growth, dampening cyclical movements in unemployment.

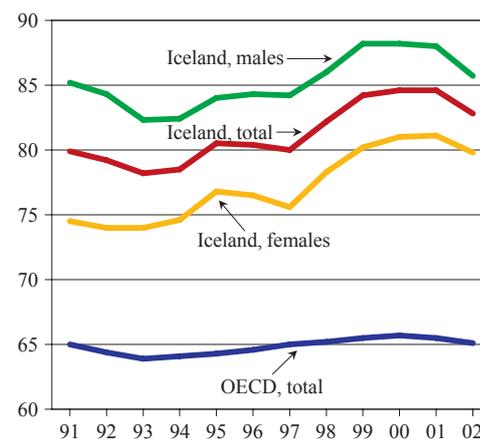
Iceland's EEA membership facilitates movement of labour within the area. The Icelandic labour market tends to attract both foreign and Icelandic nationals during upswings and the opposite applies during downswings. Moreover, even in the case of significant shifts in sectoral or regional employment, a high degree of labour mobility between them prevents large differences in regional unemployment from emerging.

The influx of foreign labour has increased substantially in recent years, both from within and outside the EEA area. Nevertheless, as this is a rather recent phenomenon, the share of foreign nationals in the labour force remains at a modest level. In 2002 approximately 3½-4% of the labour force was foreign.

The wage bargaining process in Iceland is highly centralised and usually leads to more

Chart 4.15

Labour force participation rate in Iceland and OECD countries 1991-2002



Sources: OECD, Statistics Iceland.

or less nationwide settlements. Some 85% of the labour force is unionised and the employers are also highly organised. The government has frequently been involved in wage settlements, either through tax concessions and social transfer or with legislative acts aiming to accomplish moderate settlements. In addition, tailoring of national framework pay deals in sectoral and firm-level negotiations enables specific local conditions to be taken into account.

Notwithstanding its high degree of centralisation, the Icelandic labour market appears to be quite flexible. Substantial and increasing labour mobility, flexible hours and variable participation rates serve to dampen the effects of external shocks. Furthermore, various studies indicate that real wages respond quickly to external shocks and therefore reduce their employment effect, although the measured flexibility may to some extent be the result of high historical inflation.

#### *The pension system*

Iceland will face fewer problems due to the ageing of the population during the coming decades than most other developed nations. There are three main reasons for this. Firstly, the nation is younger and will continue to be so during the coming decades. The old-age dependency ratio, i.e. over 64-year-olds as a ratio of 15- to 64-year-olds, was 18% in 2000, compared to 23% on average in the EU and 19% in the US. Secondly, labour participation rates among the elderly are high and the pension system does not give special incentives for early retirement. The official retirement age is 67 and 37% of 65- to 74-year-olds worked at least one hour a week in 2002. Thirdly, membership of a fully funded occupational pension fund is mandatory for all employees and self-

employed. The Icelandic old age pension system is composed of a tax-financed public pension scheme, mandatory funded occupational pension schemes and voluntary pension saving with tax incentives.

Public pensions are fully financed by taxes. The public pension system provides an old age pension, disability pension and survivors' pension. The old age pension is in most cases paid from the age of 67. It is divided into a basic pension and supplementary pension. Both are means-tested but pensions received from other sources are treated differently from other income. These do not affect the basic pension and the level at which they begin to reduce the supplementary pension is higher than for other income. The basic pension amounts to around 15% of the average earnings of unskilled workers but the maximum total old age pension to around 70% of the same earnings. Occupational pension funds have been increasing their share in pensions relative to the public system as they approach maturity and means testing reduces the public pension. In 2002 the pension funds and the public pension system had equal shares of €301 million (25.8 b.kr.) or 3.3% of GDP.

It is mandatory to pay at least 10% of total wages and salaries to pension funds. Many of the funds were established through a collective labour agreement in the late 1960s. Most are managed jointly by representatives from the trade unions and employers. The funds have grown by leaps and bounds over the past two decades (Chart 4.16) as their coverage has become almost total and the return on their assets was good during the 1980s and the 1990s. Assets were equivalent to 87% of GDP in 2002 and are predicted to reach at least 1½ times GDP around the middle of the twenty-first century. Pension funds in Iceland are large

relative to GDP by international comparison as Iceland ranked third in 2001 among EU and EFTA countries on this criterion.

At the end of 2002 there were 40 fully operational pension funds in Iceland, thereof 12 with employer guarantees from the government, municipalities or banks. Funds without employer guarantee are required under current legislation to be fully funded. The ten largest pension funds had around 70% of the net assets of all pension funds in 2002, and the two largest ones accounted for 32%. The average fund had net assets of around €153 million (13 b.kr.), while the biggest had assets of a little over €1.4 billion (116 b.kr.).

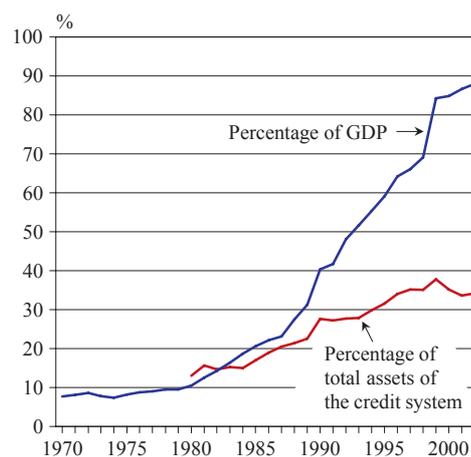
The benefits paid by occupational pension funds without employer guarantee will ultimately depend on their net return and will therefore vary from one fund to another. But the investment risk is born collectively by the members of each fund and there are no individual accounts as in pure DC plans. It has been estimated that a typical general occupational pension fund will, at full maturity, be able to pay a pension amounting to 50-60% of full-time earnings, giving a total replacement ratio of 60-70% when the basic public pension is added.

In the third pillar of pension saving, employees are allowed to deduct from their taxable income a contribution to authorised individual pension schemes up to 4% of wages. Employers must always contribute 1% of wages into an individual pension scheme of the employee's choice. If employees contribute 2% of wages employers have to contribute the same amount. Additional 0.1% of wages for each 1% contributed by the employees is financed by lowering the social security tax to an equal degree. The pension schemes have to be authorised by the Ministry of Finance. They

are in most cases defined contribution individual accounts. The pension saving is not redeemable until the age of 60 and has to be paid in equal instalments over a period of at least seven years. It is estimated that 43% of wage earners were paying into such schemes at the end of 2001.

Pension funds used to invest most of their assets in government-guaranteed bonds, housing finance and loans to members. During the last decade a significant shift took place in the asset allocation of pension funds, with the shares of equities and foreign assets increasing strongly. The proportion of equities was just over 1% of total assets in 1990 but had increased to 24% in 2002. The share of foreign assets went up from less than 2% in 1995 to over 15% at the end of 2002. Current legislation sets upper limits on the share of equities in a pension fund's portfolio at 35% and restricts exposure to exchange rate risk to 50% of net assets.

Chart 4.16  
Net assets of pension funds 1970-2002



Source: Central Bank of Iceland.

The build-up of the pension funds has contributed a great deal to the development of financial markets in Iceland. It is estimated that their assets were equivalent to over 34% of the size of the credit system in 2002. The funds held 39% of the stock of marketable bonds in the same year and 46% of the stock of housing bonds. At the end of 2002 the funds owned domestic equities and shares in equity funds that amounted to around 14% of the size of the organised equity market. This figure really underestimates their importance, due to extensive cross-ownership of listed companies. Finally, foreign asset accumulation of the pension funds is very significant in terms of the national economy. Their foreign assets accounted for over 61% of all foreign portfolio assets of Icelandic residents at the end of 2002 and over 25% of total foreign assets as recorded in the international investment position of the country.

#### *The environment*

Compared to other industrial countries, Iceland is relatively unpolluted and faces few immediate environmental problems. Soil erosion, however, has been a longstanding problem, as a result of the combined effects of climatic

changes, volcanic activity and overgrazing. The intensity of grazing has fallen since the 1970s and considerable work is being carried out to reclaim eroded land.

Electricity and geothermal heating, Iceland's main energy sources, are generated by the use of renewable resources. Utilisation of hydroelectric power, however, requires the building of dams and large reservoirs that can affect the landscape.

Acid disposition over Iceland is very low, due to its geographic location and limited emissions of pollutants. The emission limit set for Iceland in the Kyoto Protocol for the period 2008-2012 entails a 10% increase from the 1990 levels. In addition, emissions from single projects, which increase total emissions by more than 5%, can be reported separately but not included in the above set limit. Emission of greenhouse gases from Iceland in 2000 is estimated to be 7% higher than in 1990. If emissions from new power-intensive industries are included, emissions in 2000 were 17% higher than the 1990 level. The largest source of emissions is the fishing fleet, followed by the transport sector, then by various industrial processes. The marine environment around Iceland is relatively unpolluted.