FCI TEAM

The Fisheries Competitiveness Index 2004-2005

Iceland and Norway

Verðlagsstofa skiptaverðs, Akureyri, Ísland
Norges fiskerihøgskole, Tromsø, Norge

The Fisheries Competitiveness Index 2004-2005

Published December 2005

ISSN 1670-6412

Publisher:

Verðlagsstofa skiptaverðs
Strandgötu 29
600 Akureyri
Iceland

http://www.verdlagsstofa.is/
Email verdlagsstofa@verdlagsstofa.is

Preface

This report on the competitiveness of the Icelandic and Norwegian fishing industries is the first step on the way of developing a regular study of the competitiveness of the fishing industries of all the major fishing nations. The methodology of this study is drawn from the reports on the competitiveness of nations as has been perfected by the World Economic Forum. This methodology has never before been used to measure the competitiveness of a single industry across nations like is being done in this report.

This work was initiated by the Fisheries Ministries of Iceland and Norway. The Icelandic Fisheries Minister assigned the task to Verðlagsstofa skiptaverðs (The Directorate of Fresh Fish Prices) in Akureyri and the Norwegian Fisheries Minister asked Norges fiskerihøgskole (The Norwegian College of Fishery Science at the University of Tromsø) in Tromsø to act as the Norwegian counterpart. These institutions have worked effectively to complete this report. The Ministry of Fisheries wants to extend special thanks to Ottó Bierieng Ottósson of the Directorate of Fresh Fish Prices who has served as the project manager for this report. The Ministry would also like to thank members of the Icelandic Project Committee and our partners at the Norwegian College of Fishery Science in Tromsø.

The purpose of this work is to get an overview over the various factors that affect the competitiveness of the Icelandic and Norwegian fishing industries. The next steps are to include more countries in the study, especially countries that are fishing in the North Atlantic. The Icelandic Fisheries Ministry considers this report as a very valuable tool for its policy making. The objective of the Ministry is to reach and maintain the highest level of competitiveness for the Icelandic fishing industry.

The Icelandic Fisheries Ministry intends to continue its support for this work and looks forward to work together with the Directorate of Fresh Fish Prices and our Norwegian partners on the next steps.

Vilhjálmur Egilsson,
Permanent Secretary,
Ministry of Fisheries, Iceland

Table of contents

The Fisheries Competitiveness Index team

Committee of the project
Vilhjálmur Egilsson, Permanent Secretary of the Ministry of Fisheries
Valtýr Þór Hreiðarsson, Manager of the Directorate of Fresh Fish Prices
Eyjólfur Guðmundsson, Dean of the Faculty of Business Administration and Science at the University of Akureyri

Project Manager
Ottó Biering Ottósson. Directorate of Fresh Fish Prices

Partners
Terje Vassdal, Professor, Department of Economics and Management, Norwegian College of Fishery Science, University of Tromsø
Øystein Hermansen, Scientist, Department of Economics and Management, Norwegian College of Fishery Science, University of Tromsø

Acknowledgement

We wish to express our special thanks to the following institutions and individuals for their cooperation

Directorate of Fisheries, Iceland
Directorate of Fisheries, Norway
Faculty of Natural Resource Sciences, University of Akureyri
Marine Research Institute, Iceland
Rafn Kjartansson, certified translator
Statistics Iceland
Statistics Norway
Technological Institute of Iceland
All participants in the test groups and surveys

We thank IMG Gallup, Iceland for excellent work and cooperation in the survey.

Special thanks to the World Economic Forum for permission to use their statistical material.

Executive summary

This report introduces a new model for measuring competitiveness in the fishing industry. The model has been named *The Fisheries Competitiveness Index (FCI)*. The purpose of this new model is to give a consistent estimate of how well fishing industries are doing in the global business of processing and marketing seafood products. The *FCI* is an effective tool for managers and government officials to improve the competitive edge of fishing industries within the countries measured by the index.

The *FCI* consists of 139 questions and observations. These items are split between 6 sub-indexes. It is possible to evaluate each index individually, thus further expanding the use of the index. For instance, it can be used to compare fish processing sectors between countries and search for answers as to what it is that makes one country relatively more competitive in that particular field. The same can be done for the fishing sector and the marketing sector.

This model is first applied to the Icelandic and Norwegian fishing industries with additional countries added in the future. This run of the model is seen as a test run of the methodology and questionnaires used. After this initial test run and necessary changes based on that experience, other countries will be added to the study. The aim is to first include fishing nations in the North Atlantic and then expand the portfolio of countries by adding other large fishing nations.

The Icelandic and Norwegian fishing industries have many similarities and the economies and cultures are also quite similar. Hence, one would expect that the competitiveness between the two countries should be similar. And indeed it is; Iceland scores 4.6 and Norway 4.5 in the overall index. However, there are some striking differences between sub-indexes and also within specific categories in certain sub-indexes. To highlight a few, we first look at fisheries management. Iceland scores 4.6 but Norway receives 4.0, which is a considerable difference. This is mostly due to the fact that property rights and freedom of exchange of fishing rights are stronger in the Icelandic case. It is also interesting to note that Icelandic managers see their system as being more efficient with regard to monitoring and inspection than their Norwegian counterparts think with respect to their own system. Norway scores higher, both in general macroeconomic management and infrastructure. In terms of macroeconomic management, Iceland scores low with regard to exchange rates and exchange rate fluctuations, while Norway has a lower score regarding labour laws and regulations. The main reason for Iceland's lower score in the infrastructure measurements relates to higher

transportation costs, both domestically and for exports. Finally it is worth noting that Iceland seems to have a competitive edge over Norwegian companies, with regard to fish processing. This difference is based on a higher level of cooperation among Icelandic fish processing companies (horizontal cooperation) as well as closer cooperation between Icelandic companies and their suppliers (vertical cooperation), such as suppliers of fish processing equipment. The marketing of fish products is strongly related to fish processing, and in *The Marketing Index*, Iceland scores slightly higher. This is primarily due to delivering high value-added products.
Overall, the *FCI* seems to be able to capture well the major factors affecting the competitiveness of fishing industries. The results from comparing the Icelandic and Norwegian fisheries have shown how the index can be used to rank countries with regard to their competitive edge, and also how it can identify weaknesses and strengths for each case.

The issue of competitiveness has become a popular topic in past decades. The concept has also acquired a broader scope by incorporating other factors than merely productivity measures or efficiency measures. The main reason for this sharpened focus on competitiveness is most likely due to increased globalization and growing competition in a world where government monopolies are becoming less important and large international companies choose their operating ground in the most favourable business environment. The issue of competitiveness has focused on macroeconomic, political, legal and social circumstances (Porter, 2004). However, microeconomic factors are no less important since, it is the ability of firms to operate within a given business environment which makes the competitive edge of each company. These factors include corporate strategy, human resources and technology level. This paper focuses on the competitiveness of the fisheries sector between nations. It was developed by the Directorate of Fresh Fish Prices in Iceland, scientists at the University of Akureyri and the University of Tromsø. The index consists of 139 different criteria, both macro- and microeconomic, which occur in six sub-indexes. The objective is to identify weaknesses and strengths of the fisheries industries in order to help both government and the sector itself to make appropriate decisions.

Competitiveness

The concept of competitiveness is used to explain a variety of factors. The most simplistic approach defines competitiveness as the country, region or industry with the lowest cost of production. However, research done by Michael E. Porter has shown that

the concept of competitiveness is much more complex. The measure of competitiveness of countries and regions focuses on more and partly different factors than measuring the competitiveness of industries and individual companies. The competitiveness of a country is not necessarily strong, even though wages in that country are low. Unemployment, a low level of education and political instability can all be factors in determining low wage levels. The definition of competitiveness must therefore take into account the most important factors without making the model too complex to work with.
True competitiveness is measured by productivity or the ability to increase productivity in the nearest future. Increased productivity results in higher wages, more profitability, higher GDP per capita and a stronger competitive position in the global business environment. These factors should lead to increased prosperity which is the main goal of increased competitiveness of countries and districts. With the above in mind, an estimation of competitiveness has to include data from both macro and micro level.
Many different factors characterize uncompetitive industries. Oligopoly in main markets, both for inputs and outputs, is a significant cause of low competitiveness. Other aspects like trade barriers, restrictions on investment and flow of capital, an inflexible labour market, high bureaucracy and low legal status have similar effects. Large subsidies may have a positive impact on competitiveness in the short run, but may addict firms to the arrangement and therefore have a negative impact in the long run. On the other hand, an industry which has to compete in most markets but is also involved in joint cooperation with suppliers and related sectors (e.g. R&D) can gain competitiveness in the marketplace.

Competitiveness of Fishing Industries

Fisheries are an international industry with processed goods and raw material flowing between countries and continents. Seafood products are among the most traded food categories, making the fishing industry one of the most global food industries in the world (Anderson and Martinez-Garmendia 2003). This is in part due to the fact that many of the world's richest fishing grounds are located far away from the largest seafood markets. Fishing companies are therefore international by nature and distinguishing between their domestic and foreign operations can be difficult. In this study, we define domestic fisheries sectors more narrowly than the area in which many domestic fisheries companies operate. Figure 1 below presents a flowchart of a fishing industry as it might be defined from a broad perspective. On the left side we have domestic activities and on the right side we have foreign activities.

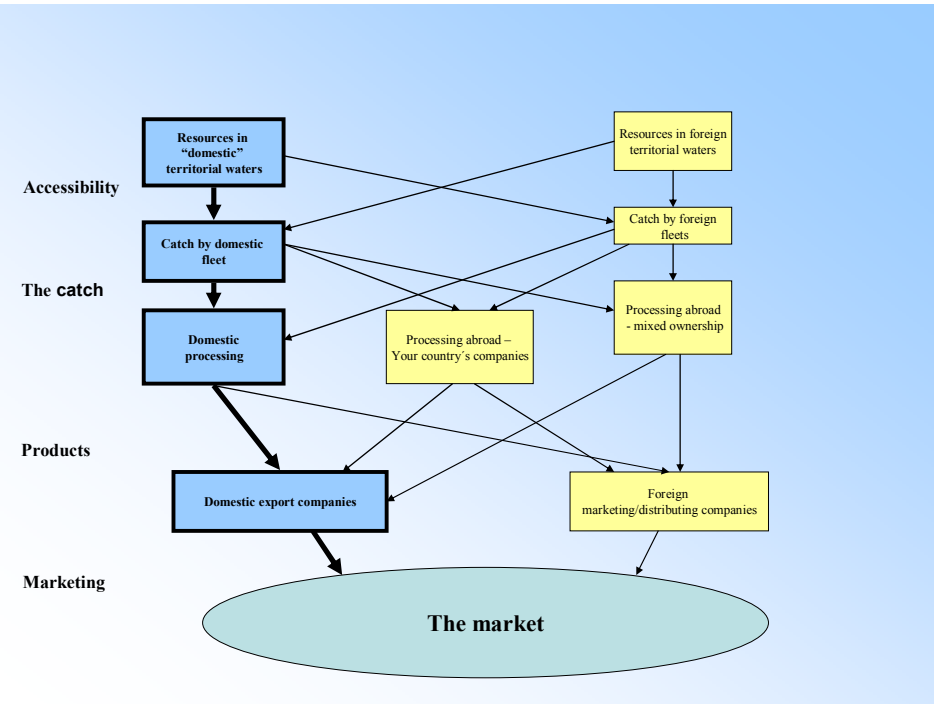


Figure 1. A flow diagram defining the scope of this research.

A domestic fishing company can operate in both domestic and foreign waters and sell the product to local or foreign processors. Therefore, the structure of the industry may be quite complicated as shown in Figure 1 above. In this study, we shall focus on operations within each country, which can be defined as domestic, or industries which can be directly affected by local economic conditions and local government (but indirect foreign influences are not excluded). Hence, *The Fisheries Competitiveness Index* measures the competitiveness of fishing industries as defined by countries (the left part of Figure 1) rather than by companies.

The second part of the analysis examines the value chain for seafood products. The value chain for the fisheries sectors consists of several links; the most common being the fisheries sector, processing sector and marketing sector. But other sectors are related to seafood value chains such as aquaculture and biotechnology. These sectors are shown in Figure 2. This value chain is likely to become more complex in the future. New links emerge and relate to some existing links in the chain. Aquaculture and even chemical industries are examples of this, but often new links are

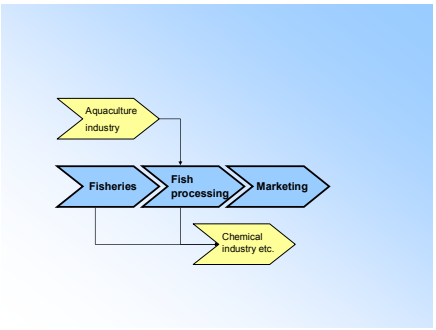


Figure 2. The value chain for the fishing industry.

seeds for new industries rather than extensions of traditional sectors. Today the most important parts of the value chain for most world fisheries, however, are the traditional capture and processing sectors. Hence, those sectors are the main subjects of *The Fisheries Competitiveness Index*. Consequently, the project focuses on traditional fishing industries, i.e. fishing, processing and marketing of seafood from capture fisheries in the context of a domestic industry.

The Fisheries Competitiveness Index (FCI)

The Fisheries Competitiveness Index (FCI) identifies factors that affect the competitiveness of fishing industries within different countries. The index allows authorities within each country to identify where action should be taken in order to improve the competitiveness of its fishing industry, and the industry itself can use the *FCI* to identify the most favourable environment for operating seafood companies.

It is difficult to establish a model that yields sound estimates of competitiveness in the fishieries sector. However, a number of studies have been conducted with regard to the concept of competitiveness. The basic ideology used in determining *The Fisheries Competitiveness Index* is drawn from neo-classical economics and theories and models for competitiveness originated by Michael E. Porter. With regard to methodology, our main sources comprise methods that the World Economic Forum and IMD have developed to estimate the competitiveness of nations, as demonstrated in their two highly esteemed works: *IMD World Competitiveness Yearbook* and the World Economic Forum´s *The Global Competitiveness Report*.

The Fisheries Competitiveness Index is based on 139 independent factors. Each factor is measured either by surveys, secondary data or based on our own research. These measures are respectively denoted “soft data”, “hard data”, “research and analysis”.

- Soft data – questionnaires. Answers to questions directed to managers in the fishing industry and data from the World Economic Forum.
- Hard data (statistics) collected from international and national sources.
- Research and analysis conducted by the FCI team.

These 139 items form 3 major themes and 6 sub-indexes (sub-themes) as shown in figure 3.

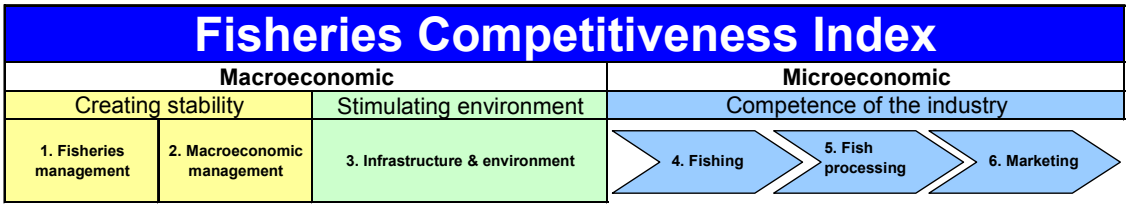


Figure 3. Fisheries Competitiveness Index defined.

The three major themes are *creating stability,* a *stimulating environment* and the *competence of the industry*. The six categories (sub-indexes) are *Fisheries Management Index*, *Macroeconomic Management & Government Index*, *Infrastructure & Environment Index*, *Fishing Companies Index*, *Fish Processing Companies Index* and *Marketing Index*. We will start by defining the three major themes, followed by explanations of the sub-themes.

CREATING STABILITY in an economic, legal and political environment is one of the crucial points in creating favourable operational conditions for companies. These include a fisheries management regime and a macroeconomic environment. This is particularly important in fisheries, since natural fluctuations in fish stocks pose added risk to the fishing industry compared to other industries.

A STIMULATING ENVIRONMENT is the economic and social environment in which industries in each country operate. It contains factors such as infrastructure, education, R&D, development of financial markets and access to capital.

COMPETENCE OF THE INDUSTRY is estimated by looking at each stage in the value chain (fishing – processing - marketing). The estimation considers factors such as technology, profit, access to qualified labour, cost and cooperation (cluster-formation).

External or macroeconomic indicators (creating stability and a stimulating environment) weigh 50% in the final index and microeconomic indicators (the value chain) weigh 50% as well.

Sub-indexes

1. Fisheries Management Index

The management of fisheries is crucial and has significant impact on the operational outcomes of firms in the industry, not only in fishing but also in fish processing and the marketing of seafood products. Stability in the allocation of fishing rights and freedom for the holders of such rights to use them in their best perceived way is therefore very important. Fisheries management that stimulates efficient investments and the stability of catch instead of excess investment and Olympic style fishing should lead to higher profits and an improved market position. The measurement of the performance of fisheries management systems draws on neo-classical and bio-economic theory. The basic conclusion is that property rights, along with free trade in those rights, are always preferable to common rights. Several criteria in this sub-index are based on Anthony Scott's (1998) work on evaluating the level of property rights in fisheries management. The criteria can be split into four categories or chapters:

- Stability of fisheries management - allocation of fishing rights
- Property rights and freedom of exchange of fishing rights
- Fisheries-related research and advice on total catch
- Official monitoring and inspection

The first two categories define stability within the management system, both in terms of allocated fishing rights (changes in quotas) and how well property rights are defined. The second two examine biological knowledge relating to particular fisheries, measured in terms of monetary resources spent on fisheries-related research based on the methodology used to determine recommended total catch. The more a country spends on fisheries research and the better the scientific advice provided, the higher the country will score within this index. Finally, a measurement of monitoring and inspection is achieved through questionnaires to managers in the industry.

2. Macroeconomic Management & Government Index

The fishing industry operates within the general macroeconomic environment and economic policies in each country. This index indicates the general economic environment as used in measuring the competitiveness of national economies, such as the Global Competitiveness Report (World Economic Forum) and IMD World Competitiveness Yearbook. Government actions which affect all parties, such as taxes, labour law and regulations, are important criteria for each industry. The special impact of

government actions on companies in the fishing industry is not measured here. This measurement belongs in the sub-indexes assessing the competence of firms in the fishing industry, (see *Fishing Companies Index*, *Fish Processing Index* and *Marketing Index*). About half the criteria in this chapter are based on a survey in Word Economic Forum's report.

The macroeconomic environment is split into four chapters in this research. These are:

- Labour law and regulations
- Taxes
- Economic policy
- Administration

3. Infrastructure & Environment Index

This index is based on common measures of the economy's infrastructure. It also includes specialized criteria for the fisheries sector regarding transportation cost and frequency. About half the criteria in this chapter are based on a survey in the Word Economic Forum report.

This sub-index has 6 categories:

- The labour market
- Education and knowledge
- General infrastructure
- Communication
- Financial markets
- Management practice

4. Fishing Companies Index

This index is based on many different criteria. Some of them are common to all industries, such as profitability indicators, but others are highly specific to fishing, such as the competition for fishing rights. The index has three different categories. First, the special impact of government on companies which takes into account any government actions that are implemented for (or against) fishing companies only. Second, the competence of the fishing companies, measured by analyzing their operation. Third, the competition/cooperation theme that measures competition and cooperation between firms in the industry, as well as their level of cooperation with suppliers.

- Special impact of government on fishing companies
- Competence of fishing companies
- Competition/cooperation and suppliers

5. Fish processing companies Index

This index is based on criteria similar to those in *The Fishing Companies Index*. Some of them are traditional but others are highly specific to fish processing, as the timing of wet fish availability and the distribution of the catch within the year. The index has three categories that are quite similar to the *Fishing Companies Index*.

- Special impact of government on fish processing companies
- Competence of fish processing companies
- Competition/cooperation and suppliers

6. Marketing Index

This index measures the ability of firms to market and distribute seafood products. Here it is assumed that competition among wholesalers is a significant factor for building competitiveness. However, cooperation between value chain levels is an important part of supplying the market with the right product (vertical cooperation). This index has three categories for further classification and simplification.

- Special impact of government on marketing
- Competence of marketing companies/exporters
- Competition/cooperation and suppliers

Data for the first category are collected from secondary data sources and measure governmental monetary support of the marketing sector. The competence of marketing companies is measured by company size (market concentration), where it is assumed that larger marketing companies/exporters have more competitive strength than smaller ones. Finally, competition/cooperation is measured.

References

Anderson, J. L. and Martinez-Garmendia, J. (2003). *International Seafood Trade*. Cambridge: Woodhead Publishing Ltd.

IMD. (2004). *IMD World Competitiveness Yearbook 2004*. Lausanne Switzerland: IMD.

Porter, M. E. (1998). *The Competitive Advantage of Nations*. New York: Palgrave.

Porter, M. E. (2004). Building the Microeconomic Foundations of Prosperity: Findings from the Business Competitiveness Index: In A. Lopez-Claros (ed.), *The Global Competitiveness Report 2004-2005* (p.19-49). New York: Palgrave Macmillan.

Scott, A. (1998*). Fishermen's Property Rights*. Conference on Individual Transferable quotas, in Theory and Practice, November 20, 1998. Reykjavík

World Economic Forum. (2004). *The Global Competitiveness Report 2004-2005*. New York: Palgrave Macmillan.

Results of the measurements

The following tables contain the results for *The Fisheries Competitiveness Index.* There are seven tables in all. The first table presents the overall score for both countries, and the other six show the results for the sub-indexes. A list of appropriate criteria follows each table; the criteria being 139 in all. The measurements are based on a relative comparison and are ranked on the scale from one to seven.

The total score for Iceland is 4.6, while it is slightly lower for Norway at 4.5. Although the total scores are very similar, we note interesting differences in the sub-indexes. These will be further elaborated in the discussion of each sub-index.

		Iceland	Norway
Total competitiveness score		**4.6**	**4.5**
1	**Fisheries management**	**4.5**	**4.0**
1.1.	Stability of the fisheries management	4.2	4.1
1.2.	Property rights and freedom of exchange of fishing rights	5.4	3.7
1.3.	Research and advice for total catch	3.4	4.3
1.4.	Official monitoring and inspection	5.3	4.2
2	**Macroeconomic management & government**	**4.6**	**5.1**
2.1.	Labour law and regulations	5.5	3.5
2.2.	Taxes	4.5	4.0
2.5.	Economic management	3.4	5.9
2.6.	Administration	5.8	5.9
3	**Infrastructure & environment**	**4.8**	**5.2**
3.2.	Education and knowledge	5.3	4.9
3.3.	General infrastructure	4.1	4.9
3.4.	Communications	7.0	6.8
3.5.	Financial markets	5.7	6.1
3.6.	Management practice	5.4	5.8
4	**Fishing companies**	**4.8**	**4.7**
4.1.	Special impact of government on fishing companies	5.2	4.9
4.2.	Competence of the fishing companies	4.5	4.7
4.3.	Competition/cooperation and suppliers	5.1	4.4
5	**Fish processing companies**	**4.6**	**4.2**
5.1.	Special impact of government on fish processing companies	4.9	5.6
5.2.	Competence of the fish processing companies	4.5	3.7
5.3.	Competition/cooperation and suppliers	4.5	3.8
6	**Marketing**	**4.3**	**4.0**
6.1.	Special government impact on marketing	6.0	6.0
6.2.	Competence of marketing companies/exporters	4.1	3.1
6.3.	Competition/cooperation and suppliers	4.1	4.9

1. Fisheries Management Index

As introduced in the theoretical approach to measurement of competitiveness, the sub-index for fisheries management tries to measure and grade the various issues concerning management that have implications for fisheries competitiveness. As the other five sub-indexes, it is split into categories: the impact of the management regime on fish stocks, property rights, research and advice and, finally, the efficiency of inspections and control. The categories consist of 26 criteria in all. Of these, 4 represent hard data, 15 are survey questions and 4 are based on our own analysis.

The results for Norway and Iceland are presented in the tables on the following pages. Total scores for this sub-index are 4.5 for Iceland vs. 4.0 for Norway. This implies a substantial advantage for Iceland. Investigating the separate categories and criteria allows us to point out where this advantage stems from.

For category 1.1, describing the stability and effectiveness of biological management, Iceland is found to have a small advantage with a score of 4.2 vs. Norway's 4.1. This comes as a result of Icelandic fishing operators perceiving the management regime as more stable and fair, keeping fishing efforts and catch closer to ICES recommendations as well as the quota decision making. Norway has the upper hand when it comes to quota compliance and stability of catch for the previous five years.

Within category 1.2, describing property rights and transferability of these rights, we find a major advantage to Iceland with a score of 5.4 vs. 3.7. This can be attributed to better scores in all but one of the criteria. In particular, the transferability of quotas is freer and the management regime allows for more efficient investment. It is noteworthy that both countries' fishing operators do not have more than a reasonable perception of the legal status of their fishing rights.

Category 1.3 handles issues concerning stock research and advice for catch. Iceland's advantage is reduced with this category, as Norway scores 4.3 vs. 3.4 for Iceland. Norway has a more extensive research program and its fishing operators find research to be slightly more adequate, both in terms of scope and volume. Icelandic researchers, on the other hand, are found to be somewhat better at interpreting research data and have been more accurate in their stock estimates.

The final category 1.4, consists of only three criteria, all relating to the control and inspection of fisheries and based on survey questions. Here, Icelandic fishing operators find the control system more efficient than their Norwegian counterparts, yielding category scores of 5.3 vs. 4.2.

		Iceland	Norway
1. Fisheries management		**4.5**	**4.0**
1.1. Stability of fisheries management - Effectiveness of fisheries management		**4.2**	**4.1**
1.1.1.	**Stability of fisheries management**	**4.5**	**3.9**
1.1.1.1.	Stability of fisheries management	4.7	3.7
1.1.1.2.	Permanency of the allocation of the fisheries rights	4.2	4.1
1.1.2.	**Effectiveness of fisheries management**	**4.1**	**4.1**
1.1.2.1.	Efficiency of fisheries management	3.9	4.1
1.1.2.2.	Actual fishing mortality vs. recommended fishing mortality	4.4	3.6
1.1.2.3.	Catch in excess of quotas	3.0	5.0
1.1.2.4.	Sustainability. Catch in accordance with the advice of ICES	6.5	2.0
1.1.3.	Stability of catch for the 5 most important species	1.7	6.3
1.1.4.	Change in catch for the 5 most important species	4.1	3.9
1.1.6.	Official decision-making with regard to total catch	4.5	3.8
1.1.7.	The principle of equality (fairness) in allocation of fishing rights	4.8	4.0
1.2. Property rights and freedom of exchange of fishing rights		**5.4**	**3.7**
1.2.1.	Property rights - legal status	4.2	4.3
1.2.2.	Fishing rights and transferability	6.0	3.0
1.2.3.	Freedom of transferability - permanent fishing rights (permanent quota shares)	6.0	3.0
1.2.4.	Freedom of transferability - permanent fishing rights (permanent quota shares)	6.3	4.3
1.2.5.	Freedom of transferability - leasing fishing rights (within the season)	6.0	3.0
1.2.6.	Freedom of transferability - leasing fishing rights (within the season)	6.2	4.2
1.2.7.	Efficiency of investment by fishing companies	4.8	3.6
1.2.8.	Duration of fishing rights	4.0	4.0
1.3. Research and advice for total catch		**3.4**	**4.3**
1.3.1.	Extent of marine research	1.9	6.1
1.3.2.	Extent of information gathering by marine research	2.9	3.2
1.3.3.	Information gathering by marine research	3.9	4.6
1.3.4.	Advice for total catch (interpretation of data)	4.0	3.8
1.3.5.	How accurate has the forecast for stock sizes been	4.2	3.8
1.4. Official monitoring and inspection		**5.3**	**4.2**
1.4.1.	Official fishing gear inspection	5.2	4.3
1.4.2.	Official fishing area surveillance	5.1	4.3
1.4.3.	Official landing inspection	5.6	4.0

1.1. Stability of fisheries management - Effectiveness of fisheries management

1.1.1. Stability of fisheries management

1.1.1.1. Stability of fisheries management

Current fisheries management is characterised by

1 = high instability — *Survey* — 7 = high stability

Ranking	Country	Score	SD
1	Iceland	4.7	2.0
2	Norway	3.7	1.5

1.1.1.2. Permanency of the allocation of the fisheries rights

Current allocation of fishing rigths (quotas) to existing user-groups (as defined by location, vessel categegory, gear type etc.) is characterised by

1 = high instability — *Survey* — 7 = high stability

Ranking	Country	Score	SD
1	Iceland	4.2	1.9
2	Norway	4.1	1.6

1.1.2. Effectiveness of fisheries management

1.1.2.1. Efficiency of fisheries management

In general, for the last years, fisheries management has been

1 = highly inefficient — *Survey* — 7 = highly efficient

Ranking	Country	Score	SD
1	Norway	4.1	1.7
2	Iceland	3.9	2.1

1.1.2.2. Actual fishing mortality versus recommended fishing mortality

Average for last 5 years, calculated for the 5 most important species. Weighed by catch value last year. $(F_{real} / F_{pa}) - 1$.

Hard data

Ranking	Country	Score	%
1	Norway	3.6	49.0%
2	Iceland	4.4	60.0%

1.1.2.3. Catch in excess of quotas

Average for last 5 years. The 5 most important species; (total catch / allowable catch -1). Weighed by catch value last year.

Hard data

Ranking	Country	Score	%
1	Norway	5.0	4.2%
2	Iceland	3.0	7.0%

1.1.2.4. Stability. Catch in accordance with the advice of ICES

Discrepancy between the country's total allowable catch (quotas) and what is advised by ICES. Average for last 5 years for 5 most important species and weighed by catch value last year.

Hard data

Ranking	Country	Score	%
1	Iceland	6.5	2.7%
2	Norway	2.0	71.0%

1.1.3. Stability of catch for the most important species

Standard deviation in catch of the five most important species during the past 5 years. Weighed by catch value last year.

Hard data

Ranking	Country	Score	SD
1	Norway	6.3	0.0
2	Iceland	1.7	0.2

1.1.4. Change in catch for the most important species

Change in catch of the five most important species during the past 5 years. Weighed by catch value last year.

Hard data

Ranking	Country	Score	%
1-2	Iceland	4.1	10.6%
1-2	Norway	3.9	10.3%

1.1.6. Official decision making with regard to total catch

The methodology used by authorities (Ministry of Fisheries) to decide the total catch for this year was

1 = highly illogical | *Survey* | 7 = strongly logical

Ranking	Country	Score	SD
1	Iceland	4.5	1.8
2	Norway	3.8	1.6

1.1.7. The principle of equality (fairness) in allocation of fishing rights.

The allocation of fishing rights (quotas) for this year to existing user-groups (as defined by location, vessel categegory, gear type etc.) has been

1 = Carried out in a highly unfair manner | *Survey* | 7 = Carried out in a highly fair manner

Ranking	Country	Score	SD
1	Iceland	4.8	1.8
2	Norway	4.0	1.6

1.2. Property rights and freedom of exchange of fishing rights

1.2.1. Property rights - legal status

The perceived legal status of your fishing rights is

1 = very weak | *Survey* | 7 = very strong

Ranking	Country	Score	SD
1	Norway	4.3	1.9
2	Iceland	4.2	2.3

1.2.2. Fishing rights and transferability

Are the fishing rights reduced by trading in vessels, companies or quotas

Research / analysis

Ranking	Country	Score
1	Iceland	6.0
2	Norway	3.0

1.2.3. Freedom of transferability - permanent fishing rights

Degree of transferability of the permanent fishing rights (permanent quota shares)

Research / analysis

Ranking	Country	Score
1	Iceland	6.0
2	Norway	3.0

1.2.4. Freedom of transferability - permanent fishing rights

The freedom to sell or buy permanent fishing rights (permanent quota shares) is

1 = does not exist | *Survey* | 7 = is very high

Ranking	Country	Score	SD
1	Iceland	6.3	1.0
2	Norway	4.3	1.6

1.2.5. Freedom of transferability - leasing fishing rights (within the season)

Degree of transferability of the temporary fishing rights (lease quota).

Research / analysis

Ranking	Country	Score
1	Iceland	6.0
2	Norway	3.0

1.2.6. Freedom of transferability - leasing fishing rights (within the season)

The freedom to lease (sell or buy) temporary fishing rights (temporary catch quota)

1 = does not exist | *Survey* | 7 = is very high

Ranking	Country	Score	SD
1	Iceland	6.2	1.0
2	Norway	4.2	1.9

1.2.7. Efficiency of investment by fishing companies

Current fisheries management in your country

1 = does not at all stimulate efficient investment | *Survey* | 7 = greatly stimulates efficient investment

Ranking	Country	Score	SD
1	Iceland	4.8	2.1
2	Norway	3.6	1.8

1.2.8. Duration of fishing rights

How long is the period during which the holder is empowered to take fish?

Research / analysis

Ranking	Country	Score
1 - 2	Iceland	4.0
1 - 2	Norway	4.0

1.3. Research and advice for total catch

1.3.1. Extent of marine research

Total research expenditure / catch value

Hard data

Ranking	Country	score	%
1	Norway	6.1	8.0%
2	Iceland	1.9	2.6%

1.3.2. Extent of information gathering by marine research

The extent of information gathering by marine research is

1 = highly insufficient | *Survey* | 7 = highly excessive

Ranking	Country	Score	SD
1	Norway	3.2	1.3
2	Iceland	2.9	1.9

1.3.3. Information gathering by marine research

Data gathered by marine research is

1 = highly irrelevant | *Survey* | 7 = highly relevant

Ranking	Country	Score	SD
1	Iceland	3.9	1.8
2	Norway	4.6	1.3

1.3.4. Advice for total catch (interpretation of data)

Scientfic interpretation of research data on which catch decisions are based is

1 = highly incorrect | *Survey* | 7 = highly correct

Ranking	Country	Score	SD
1	Iceland	4.0	1.8
2	Norway	3.8	1.3

1.3.5. How accurate has the forecast for stock size been

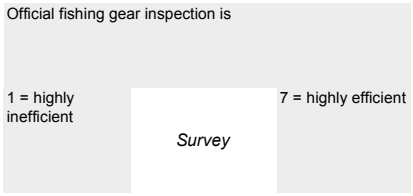
The deviation from estimated size of fishing stock each year compared to current estimate. Calculated for most important species last 5 years.

Hard data

Ranking	Country	score	%
1	Iceland	4.2	30%
2	Norway	3.8	33%

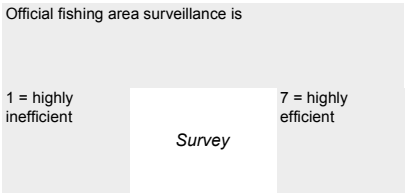
1.4. Official monitoring and inspection

1.4.1. Official fishing gear inspection



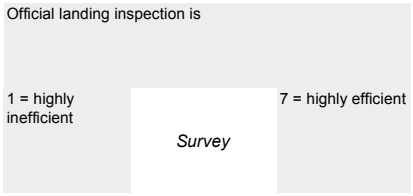
Ranking	Country	Score	SD
1	Iceland	5.2	1.8
2	Norway	4.3	1.6

1.4.2. Official fishing area surveillance



Ranking	Country	Score	SD
1	Iceland	5.1	2.0
2	Norway	4.3	1.5

1.4.3. Official landing inspection



Ranking	Country	Score	SD
1	Iceland	5.6	1.7
2	Norway	4.0	1.8

2. Macroeconomic Management & Government Index

The fisheries sector operates within a framework heavily influenced by the macroeconomic policy and reality in each country. In addition, other cultural and government defined policies define this framework to a large extent. In our study, these aspects are covered in the sub-index for macroeconomic management and government. Some of the criteria are taken from Word Economic Forum's study on national competitiveness. The sub-index consists of 6 hard data, 7 survey questions and 1 analysis. Norway scores a little better than Iceland here with 5.1 vs. 4.6.

The index is divided into four categories; labour law and regulations, taxes, economic management and administration. Within the labour category, Iceland scores 5.5 vs. Norway at 3.5. Managers find Icelandic labour law more flexible and it is easier to hire foreign workers in Iceland.

When it comes to category 2.2, Iceland slightly increases its advantage from the previous category with a score of 4.5 vs. 4.0. Icelandic taxes are lower than Norwegian, but state refunds of companies' research expenses are more extensive in Norway.

The measure of economic management in category 2.5 represents a major advantage to Norway with 5.9 vs. 3.4. The exchange rate, in particular, has developed favourably for the Norwegian industry. Interest rates are also at very low levels and the country experiences a large government surplus.

In category 2.6 describing the aspects regarding official administration, scores are almost even at 5.8 for Iceland and 5.9 for Norway. Some differences occur in the individual criteria, as Norwegian managers find that officials make somewhat more objective decisions, while Norway experiences slightly more corruption among officials.

		Iceland	Norway
2. Macroeconomic Management & Government		**4.6**	**5.1**
2.1. Labour law and regulations		**5.5**	**3.5**
2.1.1.	Hiring and firing practices	5.8	2.6
2.1.2.	Ease of hiring foreign labour	5.2	4.4
2.2. Taxes		**4.5**	**4.0**
2.2.1.	Tax burden	5.2	4.5
2.2.2.	Corporate tax rate on profit	4.9	3.1
2.2.3.	Subsidies and tax credits for firm-level research and development	3.5	4.4
2.5. Economic management		**3.4**	**5.9**
2.5.1.	Exchange rate stability	3.8	4.2
2.5.2.	Exchange rate changes	1.7	5.3
2.5.3.	Inflation	6.2	7.0
2.5.4.	Risk free interest rate	1.9	6.1
2.5.5.	Government fiscal surplus/deficit	3.3	7.0
2.6. Administration		**5.8**	**5.9**
2.6.1.	Transparency of government policymaking	5.1	5.1
2.6.2.	Favouritism in decisions of government officials	5.2	5.6
2.6.3.	Extent of bureaucratic red tape	5.9	6.0
2.6.4.	Business costs of irregular payments	7.0	6.7

2.1. Labour law and regulations

2.1.1. Hiring and firing practices

Hiring and firing of workers is

1 = impeded by regulations | *Survey* *WEF 9.18.* | 7 = flexibly determined by employers

Ranking	Country	Score	SD
1	Iceland	5.8	1.2
2	Norway	2.6	1.2

2.1.2. Ease of hiring foreign labour

Labour regulations in your country

1 = prevent your company from employing foreign labour | *Survey* *WEF 4.11.* | 7 = do not prevent your company from hiring foreign labour

Ranking	Country	Score	SD
1	Iceland	5.2	1.3
2	Norway	4.4	1.6

2.2. Taxes

2.2.1. Tax burden

The overall tax burden on corporates.

Research *WEF 2.17.*

Ranking	Country	Score	SD
1	Iceland	5.2	1.0
2	Norway	4.5	1.3

2.2.2. Corporate tax rate on profit

Corporate tax rate on profit.

Hard data

Ranking	Country	Score	%
1	Iceland	4.9	18.0%
2	Norway	3.1	28.0%

2.2.3. Subsidies and tax credits for firm-level research and development

For firms conducting research and development (R&D) in your country, direct government subsidies to individual companies or R&D tax credits

1 = never occur | *Survey* *WEF 3.07.* | 7 = are widespread and large

Ranking	Country	Score	SD
1	Norway	4.4	1.3
2	Iceland	3.5	1.5

2.5. Economic management

2.5.1. Exchange rate stability

Standard deviation of montly exchange rates past 3 years.

Hard data

Ranking	Country	Score	CV (INDEX)
1	Norway	4.2	4.0%
2	Iceland	3.8	4.5%

2.5.2. Exchange rate changes

Changes in exchange rates during last year (- appreciation; + depreciation)

Hard data

Ranking	Country	Score	Index
1	Norway	5.3	-4.4%
2	Iceland	1.7	7.6%

2.5.3. Inflation

Change in consumer price index 2004

Hard data

Ranking	Country	Score	%
1-2	Norway	7.0	0.4%
1-2	Iceland	6.2	4.0%

2.5.4. Risk free interest rate

Nominal yield (short term) during past year, Average of 3 and 6 month Treasury Bills

Hard data

Ranking	Country	Score	%
1	Norway	6.1	2.2%
2	Iceland	1.9	7.0%

2.5.5. Government fiscal surplus/deficit

Government surplus/deficit (% of GDP 2004)

Hard data

Ranking	Country	Score	% of GDP
1	Norway	7.0	7.4%
2	Iceland	3.3	-0.7%

2.6. Administration

2.6.1. Transparency of government policymaking

Firms in your country are usually informed clearly and transparently by the government on changes in policies and regulations affecting your industry

1 = never informed — *Survey* *WEF 6.09.* — 7 = always fully and clearly informed

Ranking	Country	score	SD
1-2	Norway	5.1	1.4
1-2	Iceland	5.1	1.2

2.6.2. Favouritism in decisions of government officials

When decieding upon policies and contracts, government officials

1 = usually favour well-connected firms and individuals — *Survey* *WEF 6.10.* — 7 = are neutral among firms and individuals

Ranking	Country	score	SD
1	Norway	5.6	0.9
2	Iceland	5.2	1.3

2.6.3. Extent of bureaucratic red tape

How much time does your firm's senior management spend dealing/negotiating with government officials (as a percentage of work time)? (1=0%, 2=1-10%, 3=11-20%.... 8=81-100%)

Survey *WEF 6.11.*

Ranking	Country	score	SD
1	Norway	6.0	0.7
2	Iceland	5.9	0.8

2.6.4. Business cost of irregular payments

On average, what percentage of total annual revenues do firms like yours typically pay in unofficial payments to public officials? (1=nothing, 2=less than 1% of total revenues, 3=1-3%, 7=more than 15%)

Survey *WEF 6.28.*

Ranking	Country	score	SD
1	Iceland	7.0	0.0
2	Norway	6.7	0.7

3. Infrastructure & Environment Index

Equally important to the previous category is the country's infrastructural capacity, both in terms of hardware and knowledge, and the quality and stability of financial supporting services. These aspects are assumed to be reflected in the sub-index called Infrastructure & Environment. Again, several of the criteria are obtained from WEF's study. In all, there are 18 criteria, of which 16 are survey questions and 2 are hard data. The sub-index places Norway on top with a score of 5.2 vs. Iceland at 4.8.

Like the previous sub-indexes, this is divided into five categories; education and knowledge, general infrastructure, communications, financial markets and management practices. In category 3.2, Iceland scores a little better than Norway at 5.3 vs. 4.9. The advantage is found in all criteria, implying a better educational system and more focus on research and development within Icelandic companies.

In category 3.3, describing the general infrastructure, Norway has a competitive edge with a score of 4.9 vs. 4.1. Most of this advantage stems from having a railroad network, and lower costs of transportation, both domestically and abroad. Icelandic advantages comprise better port and air infrastructure with respect to the transport of seafood and a higher frequency of domestic transportation.

In category 3.5, the Norwegian banks are found to be somewhat more sophisticated, resulting in a total category score of 6.1 vs. Iceland at 5.7. When it comes to category 3.6, Norwegian companies are found to be better at delegating authority, yielding a total category score of 5.8 vs. 5.4.

		Iceland	Norway
3. Infrastructure & environment		**4.8**	**5.2**
3.2. Education and knowledge		**5.3**	**4.9**
3.2.1.	Quality of the educational system	5.7	5.1
3.2.2.	Quality of math and science education	4.9	4.4
3.2.3.	Availability of scientists and engineers	6.0	5.8
3.2.6.	Company spending on research and development	4.6	4.2
3.3. General infrastructure		**4.1**	**4.9**
3.3.1.	Overall infrastructure quality	6.0	5.9
3.3.2.	Railroad infrastructure development	2.5	4.1
3.3.3.	Port infrastructure quality	6.0	5.7
3.3.4.	Air transport infrastructure quality	6.1	5.7
3.3.5.	Domestic communications network	4.0	4.2
3.3.6.	Cross-border communications	5.1	4.9
3.3.7.	Frequency of domestic transportation	5.3	4.3
3.3.8.	Cost of domestic transportation	2.6	3.5
3.3.9.	Frequency of cross-border transportation	4.7	4.4
3.3.10.	Cost of cross-border transportation	2.6	4.5
3.3.11.	Cost of transporting a 40 foot container	2.9	5.1
3.3.12.	Cost of transporting 1000 kg of fresh fish	1.9	6.1
3.4. Communications		**7.0**	**6.8**
3.4.1.	Telephone/fax infrastructure quality	7.0	6.8
3.5. Financial markets		**5.7**	**6.1**
3.5.1.	Financial market sophistication	4.9	5.5
3.5.2.	Soundness of banks	6.5	6.6
3.6. Management practice		**5.4**	**5.8**
3.6.1.	Delegation of authority	5.0	5.5
3.6.2.	Reliance on professional management	5.8	6.0

3.2. Education and knowledge

3.2.1. Quality of the educational system

The educational system in your country

1 = does not meet the needs of a competitive economy | *Survey* *WEF 4.01.* | 7 = meets the needs of a competitive economy

Ranking	Country	Score	SD
1	Iceland	5.7	1.2
2	Norway	5.1	1.2

3.2.2. Quality of math and science education

Math and science education in your country´s schools

1 = lag far behind most other countries | *Survey* *WEF 4.03.* | 7 = are among the best in the world

Ranking	Country	Score	SD
1	Iceland	4.9	1.0
2	Norway	4.4	1.3

3.2.3. Availability of scientists and engineers

Scientists and engineers in your country are

1 = nonexistent or rare | *Survey* *WEF 3.10.* | 7 = widely available

Ranking	Country	Score	SD
1	Iceland	6.0	1.1
2	Norway	5.8	1.1

3.2.6. Company spending on research and development

Companies in your country

1 = do not spend money on research and development | *Survey* *WEF 3.06.* | 7 = spend heavily on research and development relative to international peers

Ranking	Country	Score	SD
1	Iceland	4.6	1.0
2	Norway	4.2	1.2

3.3. General infrastructure

3.3.1. Overall infrastructure quality

General infrastructure in your country is

1 = poorly developed and inefficient | *Survey* *WEF 5.01.* | 7 = among the best in the world

Ranking	Country	Score	SD
1	Iceland	6.0	0.9
2	Norway	5.9	0.9

3.3.2. Railroad infrastructure development

Railroads in your country are

1 = under-developed | *Survey* *WEF 5.02.* | 7 = extensive and efficient as the world's best

Ranking	Country	Score	SD
1	Norway	4.1	1.3
2	Iceland	2.5	2.3

3.3.3. Port infrastructure quality

Port facilities and inland waterways in your country are

1 = under-developed | *Survey* *WEF 5.03.* | 7 = extensive and efficient as the world's best

Ranking	Country	Score	SD
1	Iceland	6.0	0.7
2	Norway	5.7	1.0

3.3.4. Air transport infrastructure quality

Air transportation in your country is

1 = infrequent and inefficient | *Survey* *WEF 5.0.4.* | 7 = extensive and efficient as the world's best

Ranking	Country	Score	SD
1	Iceland	6.1	1.2
2	Norway	5.7	0.9

3.3.5. Domestic communications network

The communications network (roads, airports, ports etc.) in your country

1 = does not at all meet the needs of domestic companies — *Survey* — 5 = well meets the needs of domestic companies

Ranking	Country	Score	SD
1	Norway	4.2	1.6
2	Iceland	4.0	1.8

3.3.6 cross-border communications

Communications between your country and other countries

1 = do not at all meet the needs of domestic companies — *Survey* — 5 = well meet the needs of domestic companies

Ranking	Country	Score	SD
1	Iceland	5.1	1.5
2	Norway	4.9	1.2

3.3.7. Frequency of domestic transportation

Frequency of domestic transportation

1 = does not at all meet the needs of companies — *Survey* — 7 = well meets the needs of companies

Ranking	Country	Score	SD
1	Iceland	5.3	1.6
2	Norway	4.3	1.4

3.3.8. Cost of domestic transportation

Cost of domestic transportation is

1 = highly uncompetitive — *Survey* — 5 = highly competitive

Ranking	Country	Score	SD
1	Norway	3.5	1.2
2	Iceland	2.6	1.7

3.3.9. Frequency of cross-border transportation

Frequency of transportation between your country and other countries

1 = does not at all meet the needs of domestic companies — *Survey* — 7 = well meets the needs of domestic companies

Ranking	Country	Score	SD
1	Iceland	4.7	1.6
2	Norway	4.4	1.2

3.3.10. Cost of cross-border transportation

Cost of transportation between your country and other countries is

1 = highly uncompetitive — *Survey* — 5 = highly competitive

Ranking	Country	Score	SD
1	Norway	4.5	1.2
2	Iceland	2.6	1.7

3.3.11. Cost of transporting a 40 foot container

Cost of transporting a 40 foot freezer container from your company/processing plant to your main customers in Europe? (estimated average cost in EUR)

Survey (Hard data)

Ranking	Country	Score	EUR/unit
1	Norway	5.1	3,575
2	Iceland	2.9	6,149

3.3.12. Cost of transporting 1000 kg of fresh fish

Cost of transporting 1000 kg of fresh/chilled fish/fishproducts (not unprocessed fish) from your company/processing plant to your main customers in Europe? (estimated average cost in ISK)

Survey (Hard data)

Ranking	Country	Score	EUR/1000 kg
1	Norway	6.1	325
2	Iceland	1.9	1,056

3.4. Communications

3.4.1. Telephone/fax infrastructure quality

New telephone lines for your business are		
1 = scarce and difficult to obtain	*Survey* *WEF 5.07.*	7 = widely available and highly reliable

Ranking	Country	Score	SD
1	Iceland	7.0	0.2
2	Norway	6.8	0.5

3.5. Financial markets

3.5.1. Financial market sophistication

The level of sophistication of financial markets in your country is		
1 = lower than international norms	*Survey* *WEF 2.03.*	7 = higher than international norms

Ranking	Country	Score	SD
1	Norway	5.5	0.9
2	Iceland	4.9	1.5

3.5.2. Soundness of banks

Banks in your country are		
1 = insolvent and may require government bail out	*Survey* *WEF 2.04.*	7 = generally healthy with sound balance sheets

Ranking	Country	Score	SD
1	Norway	6.6	0.7
2	Iceland	6.5	0.7

3.6. Management practice

3.6.1. Delegation of authority

Willingness to delegate authority to subordinates is		
1 = low, top management controls all important decisions	*Survey* *WEF 9.13.*	7 = high, authority is mostly delegated to business units and other lower management

Ranking	Country	Score	SD
1	Norway	5.5	1.1
2	Iceland	5.0	1.3

3.6.2. Reliance on professional management

Senior management positions in your country are		
1 = usually held by relatives	*Survey* *WEF 9.15.*	7 = held by professional managers chosen based on superior qualification

Ranking	Country	Score	SD
1	Norway	6.0	1.1
2	Iceland	5.8	0.8

4. Fishing Companies Index

The following three sub-indexes are employed in order to capture the industry-specific microeconomic aspects of business operations. These are clearly relevant and very important in terms of competitiveness. The previous categories predominantly define the potential for productivity, leaving it up to the industry itself to realize the actual competitiveness. This highlights the importance of the interplay between diverse factors in creating wealth in an economy.

The Fishing Companies' Index consists of 36 criteria. These are divided into three categories; government regulations, industry competence and competition/cooperation. In total, the countries were found to have almost equal scores for this sub-index with 4.8 for Iceland vs. 4.7 for Norway. This, however, hides interesting differences in the three categories and between the individual criteria.

In category 4.1, describing the impact of government regulations specific to this segment, we find a small advantage to Iceland with a score of 5.2 vs. 4.9. This is mostly due to Norwegian vessel owners experiencing restrictions in both company size and domestic investment. Icelandic managers also perceive control and inspections of vessels to be more efficient.

Category 4.2 describes the competence of fishing companies, and here we find a small advantage to Norway with a score of 4.7 vs. 4.5. This category encompasses many criteria. Norwegian vessels are found to have somewhat higher operating profits and return on investment. The Norwegian fleet has a higher share of relatively new vessels and a better supply of fishermen. Finally, Norwegian public spending on fishing related research and development is much higher. Iceland scores higher on a number of criteria as well. In particular, they enjoy a higher capital turnover and better utilisation of their vessels. Based on book values, they have a higher equity ratio. The processing equipment onboard vessels and the handling of catch is perceived to be of better quality.

In category 4.3, describing the cooperative relations between other companies in the same sector and competition between both other companies and suppliers, Iceland scores better with 5.1 vs. 4.4. Iceland is at an advantage for all but one criterion. A more efficient quota trading market, better domestic development of gear and processing equipment and a superior marketing and distribution system for fresh fish provide advantages for the Icelandic industry. In addition, the fuel prices paid by Icelandic vessels are found to be lower than those paid by their Norwegian counterparts.

		Iceland	Norway
4. Fishing companies		**4.8**	**4.7**
4.1. Special impact of government on fishing companies		**5.2**	**4.9**
4.1.1.	**Official measures**	**5.2**	**5.0**
4.1.1.1.	Official restrictions on the size of fishing companies	6.0	5.0
4.1.1.2.	Official restrictions on investment in fishing companies - domestic enterprises	6.0	5.0
4.1.1.3.	Official restrictions on investment in fishing companies - foreign enterprises	1.0	1.0
4.1.1.4.	Other official restrictions on the operation of fishing vessels	7.0	7.0
4.1.3.	Special taxation	6.0	7.0
4.1.5.	**Inspection of fisheries and vessels**	**5.1**	**4.8**
4.1.5.1.	Official inspection of vessels and their equipment	5.6	4.9
4.1.5.4.	Official inspection - equality among fishing companies	4.6	4.6
4.2. Competence of the fishing companies		**4.5**	**4.7**
4.2.1.	**Business indicators**	**4.1**	**3.8**
4.2.1.1.	Profit margin	2.1	5.9
4.2.1.2.	Capital turnover	4.8	3.2
4.2.1.3.	Financial strength	7.0	1.0
4.2.1.4.	Return on invested capital	2.7	5.3
4.2.3.	**Technology and productivity**	**5.2**	**4.9**
4.2.3.1.	Technical level of vessels and mechanical equipment	5.8	6.1
4.2.3.2.	Fishing technology	6.1	6.2
4.2.3.3.	Processing technology on board	6.3	5.3
4.2.3.4.	Handling of catch on board	5.8	5.1
4.2.3.7.	Productivity of fishermen	4.3	3.7
4.2.3.8.	Productivity of invested capital	5.0	3.0
4.2.3.9.	Proportion of the fishing fleet less than 10 years old	3.2	4.8
4.2.4.	**Utilisation of vessels**	**4.6**	**3.7**
4.2.4.1.	Utilisation of fishing vessels	4.6	3.7
4.2.5.	**Human resources**	**4.6**	**4.9**
4.2.5.1.	Supply of qualified officers	4.2	4.5
4.2.5.2.	Supply of skilled fishermen	4.0	4.7
4.2.5.3.	Wage system	7.0	7.0
4.2.5.4.	Labour cost	3.9	4.1
4.2.5.5.	Training and education	4.1	4.3
4.2.8.	**Research and development**	**3.3**	**5.3**
4.2.8.1.	Official expenditure on fisheries-related research	1.0	7.0
4.2.8.2.	Research and development - fishing technology	4.0	4.5
4.2.8.3.	Research and development - fish processing and processing technology and handling of the catch	5.0	4.5
4.3. Competition/cooperation and suppliers		**5.1**	**4.4**
4.3.1.	**Competition**	**4.6**	**3.7**
4.3.1.1.	Competition among major suppliers	4.2	4.3
4.3.1.2.	Competition for fishing rights (quota)	5.6	4.3
4.3.1.3.	Oil price	4.0	2.5
4.3.2.	**Cooperation**	**4.8**	**4.4**
4.3.2.1.	Fishing gear manufacturers	5.1	4.6
4.3.2.2.	Processing equipment manufacturers	5.8	4.4
4.3.2.3.	Maintenance work	4.4	4.1
4.3.4.	Cooperation among fishing companies	4.0	4.3
4.3.5.	**Market structure of fresh fish distribution**	**6.5**	**5.5**
4.3.5.1.	Market structure	7.0	6.0
4.3.5.2.	Fresh fish distribution	5.9	4.9

4.1. Special impact of government on fishing companies

4.1.1. Official measures

4.1.1.1. Official restrictions on the size of fishing companies

Official restrictions with regard to the size of fishing companies

Research / analysis

Ranking	Country	Score
1	Iceland	6.0
2	Norway	5.0

4.1.1.2. Official restrictions on investment in fishing companies - domestic enterprises

Official restrictions on the investment of domestic enterprises in fishing companies (other restrictions than in 4.1.1.1.)

Research / analysis

Ranking	Country	Score
1	Iceland	6.0
2	Norway	5.0

4.1.1.3. Official restrictions on investment in fishing companies - foreign enterprises

Official restrictions on direct investment of foreign enterprises in fishing companies in your country

Research / analysis

Ranking	Country	Score
1-2	Iceland	1.0
1-2	Norway	1.0

4.1.1.4. Other official restrictions on the operation of fishing vessels

Official restrictions on investment in equipment and vessels (new, bigger, different etc.)

Research / analysis

Ranking	Country	Score
1-2	Iceland	7.0
1-2	Norway	7.0

4.1.3. Special taxation

Resource rent tax (fishing fee to the state) - other forms of taxation (proportion of catch value)

Hard data

Ranking	Country	Score	%
1	Norway	7.0	0%
2	Iceland	6.0	>0%

4.1.5. Inspection of fisheries and vessels

4.1.5.1. Official inspection of vessels and their equipment

Official inspection of vessels and their equipment is

1 = highly inefficient — *Survey* — 7 = highly efficient

Ranking	Country	Score	SD
1	Iceland	5.6	1.5
2	Norway	4.9	1.3

4.1.5.4. Official inspection - equality among fishing companies

In their requirements regarding fishing companies, official inspection bodies

1 = do not at all treat companies equally — *Survey* — 7 = maintain the principle of equally

Ranking	Country	Score	SD
1-2	Iceland	4.6	2.2
1-2	Norway	4.6	1.6

4.2. Competence of the fishing companies

4.2.1. Business indicators

4.2.1.1. Profit margin

EBIT / catch value

Hard data

Ranking	Country	Score	%
1	Norway	5.9	10.7 %
2	Iceland	2.1	3.7 %

4.2.1.2. Capital turnover

Catch value / invested capital

Hard data

Ranking	Country	Score	Turnover rate
1	Iceland	4.8	0.9
2	Norway	3.2	0.6

4.2.1.3. Financial strength

Owners' equity ratio

Hard data

Ranking	Country	Score	%
1	Iceland	7.0	29.8%
2	Norway	1.0	-5.1%

4.2.1.4. Return on invested capital

EBIT / invested capital

Hard data

Ranking	Country	Score	%
1	Norway	5.3	6.3%
2	Iceland	2.7	3.2%

4.2.3. Technology and productivity

4.2.3.1. Technical level of vessels and mechanical equipment

The fishing vessels and mechanical equipment in your country, is

1 = of a very low technical standard — *Survey* — 7 = of a very high technical standard

Ranking	Country	Score	SD
1	Norway	6.1	0.8
2	Iceland	5.8	1.3

4.2.3.2. Fishing technology

The level of fishing technology in fishing vessels in your country, is

1 = of a very low technical standard — *Survey* — 7 = of a very high technical standard

Ranking	Country	Score	SD
1	Norway	6.2	0.8
2	Iceland	6.1	1.2

4.2.3.3. Processing technology on board

The level of processing technology in fishing vessels in your country, is

1 = of a very low technical standard — *Survey* — 7 = of a very high technical standard

Ranking	Country	Score	SD
1	Iceland	6.3	0.8
2	Norway	5.3	0.8

4.2.3.4. Handling of catch on board

Handling of catch in fishing vessels in your country, is

1 = of a very low standard — *Survey* — 7 = of a very high standard

Ranking	Country	Score	SD
1	Iceland	5.8	1.4
2	Norway	5.1	1.2

4.2.3.7. Productivity of fishermen

Value added / man year (EUR/man year)

Hard data

Ranking	Country	score	€/man year
1	Iceland	4.3	106,526
2	Norway	3.7	90,200

4.2.3.8. Productivity of invested capital

Value added / invested capital

Hard data

Ranking	Country	score	%
1	Iceland	5.0	52.2%
2	Norway	3.0	32.1%

4.2.4. Utilisation of vessels

4.2.3.9. Proportion of the fishing fleet less than 10 years old

Proportion of the fishing fleet (GRT) less than 10 years old.

Hard data

Ranking	Country	Score	%
1	Norway	4.8	21.0%
2	Iceland	3.2	14.1%

4.2.4.1. Utilisation of fishing vessels

By how much can you increase your catch without additional investment? (assuming that quotas are not limited and you do not change the handling of the catch and processing of it onboard)

1=+90%
2=75-89%
3=60%-74%
4=45%-59%
5=30-44% 6=15-29% 7=0%-14%

Survey

Ranking	Country	Score
1	Iceland	4.6
2	Norway	3.7

4.2.5. Human resources

4.2.5.1. Supply of qualified officers

Qualified officers are

1 = not readily available

Survey

7 = readily available

Ranking	Country	Score	SD
1	Norway	4.5	1.5
2	Iceland	4.2	1.8

4.2.5.2. Supply of skilled fishermen

Skilled fishermen are

1 = not readily available

Survey

7 = readily available

Ranking	Country	Score	SD
1	Norway	4.7	1.5
2	Iceland	4.0	1.9

4.2.5.3. Wage system

Incentive of wage system (efficiency wages) (proportional to catch value)

Research / analysis

Ranking	Country	Score
1-2	Norway	7.0
1-2	Iceland	7.0

4.2.5.4. Labour cost

Labour cost / total catch value

Hard data

Ranking	Country	Score	%
1	Norway	4.1	37.0%
2	Iceland	3.9	39.2%

4.2.5.5. Training and education

The supply of training and education for fishermen in your country

1 = does not at all meet the needs of the companies | *Survey* | 7 = well meets the needs of the companies

Ranking	Country	Score	SD
1	Norway	4.3	1.4
2	Iceland	4.1	1.7

4.2.8. Research and development

4.2.8.1. Official expenditure on fisheries-related research, other than for marine research.

Total official expenditure relating to research into fisheries, fishing gear etc. (total official expenditure/total catch value)

Hard data

Ranking	Country	score	%
1	Norway	7.0	0.96%
2	Iceland	1.0	0.01%

4.2.8.2. Research and development - fishing technology

Research and development on fishing technology by government and private sector in your country is

1 = highly ineffective | *Survey* | 7 = highly effective

Ranking	Country	Score	SD
1	Norway	4.5	1.4
2	Iceland	4.0	1.7

4.2.8.3. Research and development - fish processing technology and handling of the catch

Research into handling of fish and preserving freshness and quality of the catch by government and private sector in your country is

1 = highly ineffective | *Survey* | 7 = highly effective

Ranking	Country	Score	SD
1	Iceland	5.0	1.5
2	Norway	4.5	1.0

4.3. Competition/cooperation and suppliers

4.3.1. Competition

4.3.1.1. Competition among major suppliers

Competition among major suppliers (fuel oil, fishing gear, maintenance etc.) is

1 = highly ineffective | *Survey* | 7 = highly effective

Ranking	Country	Score	SD
1	Norway	4.3	1.6
2	Iceland	4.2	2.2

4.3.1.2. Competition for fishing rights (quota)

The market with fishing rights (quotas) in your country functions

1 = highly inefficiently | *Survey* | 7 = highly efficiently

Ranking	Country	Score	SD
1	Iceland	5.6	1.6
2	Norway	4.3	1.5

4.3.1.3. Oil price

Average fuel oil (gasoline) price 2004 (EUR/dm^3)

Hard data

Ranking	Country	score	EUR/dm^3
1	Iceland	4.0	0.34
2	Norway	2.5	0.47

4.3.2. Cooperation

4.3.2.1. Fishing gear manufacturers

Current production/design/development of fishing gear in your country

1 = does not at all improve the competitiveness of domestic fishing companies — *Survey* — 7 = greatly improves the competitive-ness of domestic fishing companies

Ranking	Country	Score	SD
1	Iceland	5.1	1.5
2	Norway	4.6	1.2

4.3.2.2. Processing equipment manufacturers

Current production/design/development of processing equipment in your country

1 = does not at all improve the competitiveness of domestic fishing companies — *Survey* — 7 = greatly improves the competitiveness of domestic fishing companies

Ranking	Country	Score	SD
1	Iceland	5.8	1.0
2	Norway	4.4	1.2

4.3.2.3. Maintenance work

Current maintenance services for fishing vessels in your country

1 = do not at all improve the competitiveness of domestic fishing companies — *Survey* — 7 = greatly improve the competitive-ness of fishing companies

Ranking	Country	Score	SD
1	Iceland	4.4	1.7
2	Norway	4.1	1.4

4.3.4. Cooperation among fishing companies

Cooperation among fishing companies in your country

1 = does not exist at all — *Survey* — 7= exists to a high degree

Ranking	Country	Score	SD
1	Norway	4.3	1.4
2	Iceland	4.0	1.8

4.3.5. Market structure of fresh fish distribution

4.3.5.1. Market structure

Market structure (highly restricted vs. totally unrestricted)

Research / analysis

Ranking	Country	Score
1	Iceland	7.0
2	Norway	6.0

4.3.5.2. Fresh fish distribution

The freedom of the fishing companies to sell the catch is

1 = highly restricted — *Survey* — 7 = highly unrestricted

Ranking	Country	Score	SD
1	Iceland	5.9	1.4
2	Norway	4.9	1.6

5. Fish processing companies index

The index for the fish processing companies takes into account factors within this particular industry segment that define competitiveness. These factors are, like the index for the fishing sector, divided into three main categories: the impact of government regulations, the sector's own performance and, lastly, the domestic competitive environment. Each of the categories consists of a number of criteria that are evaluated. In all, there are 34 criteria, 10 hard data sources, 18 survey questions and 6 analyses, in the three categories.

The empirically investigated results for the two nations are presented in the table on the following pages. The final scores for the processing segment are 4.6 and 4.2 for Iceland and Norway respectively. This indicates that the Icelandic segment has a competitive advantage compared to its Norwegian counterpart. In order to identify the areas contributing to this advantage, we investigate by first looking at the categories and then at individual criteria.

The results within category 5.1, describing the impact of government regulation of the segment, show an advantage for Norway with a score of 5.6 versus 4.9 for Iceland. This difference stems from the Icelandic industry experiencing higher restrictions on investment, both from domestic and international sources. This difference is partly balanced by the Icelandic perception that inspection routines are more efficient than felt by the Norwegian counterparts.

For category 5.2, describing the internal performance of the industry segment, the results give Iceland and Norway a score of 4.5 and 3.7 respectively. Here, the Icelandic profit margin, financial strength, labour cost and perception of technology give a noteworthy advantage. On the other hand, the Norwegian supply of labour, the wage system and government spending on R&D draw the equation the other way.

Category 5.3 describes the competitive environment through intra-segment competition and cooperation, as well as competition between suppliers. Here, Iceland has a significant advantage with a score of 4.5 vs. Norway's 3.8. This stems mainly from more readily available and inexpensive fresh water, more even distribution of catch, better relations with processing equipment manufacturers and a freer market structure of fresh fish.

Norway has advantages when it comes to better competition between suppliers and a lower electricity cost.

		Iceland	Norway
5. Fish processing companies		**4.6**	**4.2**
5.1. Special impact of government on fish processing companies		**4.9**	**5.6**
5.1.1.	**Official measures**	**5.4**	**6.6**
5.1.1.1.	Official restrictions on the size of fish processing companies	7.0	7.0
5.1.1.2.	Official restrictions on investment in fish processing companies - domestic enterprises	5.0	5.0
5.1.1.3.	Official restrictions on investment in fish processing companies - foreign enterprises	1.0	7.0
5.1.1.4.	Other official restrictions on the operation of fish processing companies	7.0	7.0
5.1.3.	Special taxation	7.0	7.0
5.1.5.	**Inspection of fish processing companies**	**4.2**	**3.9**
5.1.5.1.	Official inspection of environment and sanitary practice	4.4	4.1
5.1.5.2.	Official inspection of processing facilities and equipment	4.8	4.2
5.1.5.4.	Equality among fish processing companies	3.3	3.3
5.2. Competence of the fish processing companies		**4.5**	**3.7**
5.2.1.	**Business indicators**	**6.2**	**2.8**
5.2.1.1.	Profit margin (EBIT/production value)	6.8	1.2
5.2.1.2.	Capital turnover (production value / invested capital)	4.1	3.9
5.2.1.3.	Financial strength	7.0	5.2
5.2.1.4.	Return on invested capital	6.9	1.1
5.2.3.	**Technology and productivity**	**5.1**	**3.5**
5.2.3.1.	General technology	5.8	4.2
5.2.3.7.	Productivity of labour	4.3	3.7
5.2.3.8.	Productivity of invested capital	5.6	2.4
5.2.4.	Utilisation of processing equipment/factories	4.9	3.6
5.2.5.	**Human resources**	**3.5**	**4.4**
5.2.5.1.	Supply and skills of middle management	3.4	4.2
5.2.5.2.	Supply of skilled labour	2.4	4.9
5.2.5.3.	Wage system	3.0	5.0
5.2.5.4.	Labour cost	6.0	4.0
5.2.5.5.	Training and education	2.6	3.7
5.2.8.	**Research and development**	**3.4**	**4.1**
5.2.8.1.	Official expenditure on fish processing-related research	1.7	6.3
5.2.8.2.	Research and development - fish processing equipment	4.3	3.5
5.2.8.3.	Research and development - handling of fish	4.1	4.0
5.2.8.4.	Product development	3.4	2.7
5.3. Competition/cooperation and suppliers		**4.5**	**3.8**
5.3.1.	**Competition and suppliers**	**4.1**	**3.6**
5.3.1.1.	Competition among major suppliers	3.7	4.4
5.3.1.3.	Cost of electricity	3.3	4.7
5.3.1.4.	Supply and cost of fresh water	4.7	3.3
5.3.1.5.	Distribution of the catch within the year	4.8	3.2
5.3.1.6.	Timing of wethfish availability	4.2	2.3
5.3.2.	**Cooperation**	**4.6**	**3.6**
5.3.2.2.	Processing equipment manufacturers	5.4	3.8
5.3.4.	Cooperation among fish processing companies	3.7	3.4
5.3.5.	**Market structure of fresh fish distribution**	**5.5**	**4.5**
5.3.5.1.	Market structure	7.0	5.0
5.3.5.2.	Fresh fish distribution	4.0	3.9

5.1. Special impact of government on fish processing companies

5.1.1. Official measures

5.1.1.1. Official restrictions on the size of fish processing companies

Official restrictions with regard to the size of fish processing companies

Research / analysis

Ranking	Country	Score
1	Iceland	7.0
1	Norway	7.0

5.1.1.2. Official restrictions on investment in fish processing companies - domestic enterprises

Official restrictions on the investment of domestic enterprises in fish processing companies (other restrictions than in 5.1.1.1.)

Research / analysis

Ranking	Country	Score
1	Norway	7.0
2	Iceland	5.0

5.1.1.3. Official restrictions on investment in fish processing companies - foreign enterprises

Official restrictions on direct investment of foreign enterprises in fish processing companies in your country.

Research / analysis

Ranking	Country	Score
1	Norway	7.0
2	Iceland	1.0

5.1.1.4. Other official restrictions on the operation of fish processing companies

Official restrictions on investment in equipment and factory buildings etc.

Research / analysis

Ranking	Country	Score
1	Iceland	7.0
1	Norway	7.0

5.1.3. Special taxation

(proportion of production value)

Hard data

Ranking	Country	Score	%
1-2	Norway	7.0	0.0%
1-2	Iceland	7.0	0.0%

5.1.5. Inspection of fish processing companies

5.1.5.1. Official inspection of environment and sanitary practice

Official inspection of environment and sanitary practice is

1 = highly inefficient — *Survey* — 7 = highly efficient

Ranking	Country	Score	SD
1	Iceland	4.4	1.8
2	Norway	4.1	1.4

5.1.5.2. Official inspection of processing facilities and equipment

Official inspection of processing facilities and equipment is

1 = highly inefficient — *Survey* — 7 = highly efficient

Ranking	Country	Score	SD
1	Iceland	4.8	1.9
2	Norway	4.2	1.3

5.1.5.4. Official inspection - equality among fish processing companies

In their requirements regarding fish processing companies, official inspection bodies

1 = do not at all treat companies equally — *Survey* — 7 = maintain the principle of equality

Ranking	Country	Score	SD
1	Norway	3.4	1.4
2	Iceland	3.3	2.5

5.2. Competence of the fish processing companies

5.2.1. Business indicators

5.2.1.1. Profit margin

EBIT / production value

Hard data

Ranking	Country	Score	%
1	Iceland	6.8	14.6%
2	Norway	1.2	2.5%

5.2.1.2. Capital turnover

Production value / invested capital

Hard data

Ranking	Country	Score	Value
1	Iceland	4.1	2.0
2	Norway	3.9	1.8

5.2.1.3. Financial strength

Owners' equity ratio

Hard data

Ranking	Country	Score	%
1	Iceland	7.0	29.8%
2	Norway	5.2	22.6%

5.2.1.4. Return on invested capital

EBIT / invested capital

Hard data

Ranking	Country	Score	%
1	Iceland	6.9	28.8%
2	Norway	1.1	4.6%

5.2.3. Technology and productivity

5.2.3.1. General technology

The general technological level of fish processing companies in your country is

1 = of a very low technical standard — *Survey* — 7 = of a very high technical standard

Ranking	Country	Score	SD
1	Iceland	5.8	1.1
2	Norway	4.2	1.4

5.2.3.7. Productivity of labour

Value added / man year

Hard data

Ranking	Country	Score	€/man-year
1	Iceland	4.3	70,105
2	Norway	3.7	61,800

5.2.3.8. Productivity of invested capital

Value added / invested capital

Hard data

Ranking	Country	Score	%
1	Iceland	5.6	68.5%
2	Norway	2.4	30.1%

5.2.4. Utilisation of processing equipment / factories

By how much can you increase production in your fish processing plant without additional investment?

1 =+90% 2=75-89% 3=60%-74% 4=45%-59% 5=30-44% 6=15-29% 7=0%-14%

Survey

Ranking	Country	Score
1	Iceland	4.9
2	Norway	3.6

5.2.5. Human resources

5.2.5.1. Supply and skills of middle management

Skilled middle managers are

1 = not readily available

Survey

7 = readily available

Ranking	Country	Score	SD
1	Norway	4.2	1.3
2	Iceland	3.4	1.5

5.2.5.2. Supply of skilled labour

Skilled fish processing labour is

1 = not readily available

Survey

7 = readily available

Ranking	Country	Score	SD
1	Norway	4.9	1.2
2	Iceland	2.4	1.2

5.2.5.3. Wage system

Are monetary incentives built into the wage system (e.g. proportional to sales value)

Research / analysis

Ranking	Country	Score
1	Norway	5.0
2	Iceland	3.0

5.2.5.4. Labour cost

Average cost of fish processing labour

Survey (Hard data)

Ranking	Country	Score	EUR/h
1	Iceland	6.0	17.2
2	Norway	4.0	21.0

5.2.5.5. Training and education

The supply of training and education for fish processing labour in your country

1 = does not at all meet the needs of the companies

Survey

7 = well meets the needs of the companies

Ranking	Country	Score	SD
1	Norway	3.7	1.2
2	Iceland	2.6	1.6

5.2.8. Research and development

5.2.8.1. Official expenditure on fish processing - related research

Total official expenditure relating to research in fish processing etc. (total official expenditure/total processing value)

Hard data

Ranking	Country	Score	%
1	Norway	6.3	1.6%
2	Iceland	1.7	0.4%

5.2.8.2. Research and development - fish processing equipment

Research and development in fish processing equipment by government and private sector in your country is

1 = highly ineffective — *Survey* — 7 = highly effective

Ranking	Country	Score	SD
1	Iceland	4.3	1.6
2	Norway	3.5	1.2

5.2.8.3. Research and development - handling of fish

Research into handling of fish and preserving freshness and quality by government and private sector in your country is

1 = highly ineffective — *Survey* — 7 = highly effective

Ranking	Country	Score	SD
1	Iceland	4.1	1.6
2	Norway	4.0	1.3

5.2.8.4. Product development

Development of new fish products in your country is

1 = highly inefficient — *Survey* — 7 = highly efficient

Ranking	Country	Score	SD
1	Iceland	3.4	1.6
2	Norway	2.7	0.8

5.3. Competition/cooperation and suppliers

5.3.1. Competition and suppliers

5.3.1.1. Competition among major suppliers

Competition among major suppliers (energy, transportation,wrappings, maintenance etc.) is

1 = highly ineffective — *Survey* — 7 = highly effective

Ranking	Country	score	SD
1	Norway	4.4	1.0
2	Iceland	3.7	1.7

5.3.1.3. Cost of electricity

Price of electricity (EUR/kWh)

Hard data

Ranking	Country	Score	EUR/kWh
1	Norway	4.7	0.053
2	Iceland	3.3	0.076

5.3.1.4. Supply and cost of fresh water

Supply and cost of sufficient fresh water

1 = does not at all meet the needs of the processing companies — *Survey* — 7 = well meets the needs of the processing companies

Ranking	Country	score	SD
1	Iceland	4.7	2.1
2	Norway	3.3	2.0

5.3.1.5. Distribution of the catch within the year

Distribution of fresh landed catch by month in most important species (a:demersal, b:pelagic species)

Hard data

Ranking	Country	Score	Distribut. factor
1	Iceland	4.8	0.36
2	Norway	3.2	0.53

5.3.1.6. Timing of wethfish availability

Distribution of catch (timing of landed fresh fish) in most important species is		
1 = not at all according to the needs of the domestic processing companies	*Survey*	7 = very much according to the needs of the domestic processing companies

Ranking	Country	Score	SD
1	Iceland	4.2	1.8
2	Norway	2.3	1.3

5.3.2. Cooperation

5.3.2.2. Processing equipment manufacturers

Current production/design/development of fish processing equipment in your country		
1 = does not at all improve the competitiveness of domestic fish processing companies	*Survey*	7 = greatly improves the competitive-ness of domestic fish processing companies

Ranking	Country	Score	SD
1	Iceland	5.4	1.2
2	Norway	3.8	1.5

5.3.4. Cooperation among fish processing companies

Cooperation among fish processing companies in your country		
1 = does not exist at all	*Survey*	7 = exists to a high degree

Ranking	Country	score	SD
1	Iceland	3.7	1.7
2	Norway	3.4	1.6

5.3.5. Market structure of fresh fish distribution

5.3.5.1. Market structure

Market structure (highly restricted vs. totally unrestricted)		
	Research / analysis	

Ranking	Country	Score
1	Iceland	7.0
2	Norway	5.0

5.3.5.2. Fresh fish distribution

The freedom of the fish processing firms to source raw fish		
1 = highly restricted	*Survey*	7 = highly unrestricted

Ranking	Country	Score	SD
1	Iceland	4.00	2.3
2	Norway	3.90	1.8

6. Marketing index

Again, this index takes the relevant factors within this industry segment into account for our estimation of competitiveness. It is, like the two other segment indexes, divided into the impact of regulations, segment performance and cooperation and competition. The index consists of 11 criteria, of which 5 are hard data, 4 are survey questions and 2 are analysis based.

The results for the two countries are shown in the table on the next page. For this index, the difference is only 0.3, or 4.3 for Iceland and 4.0 for Norway. In the three categories, however, we find quite big differences.

The category describing government impact consists of only one criterion, access to markets. The score here is even, as both countries are members of the same trade alliance, EFTA.

For the second category, describing the performance of the segment, Iceland has quite a large advantage with a score of 4.1 compared to Norway at 3.1. This is primarily due to delivering higher value-added products. Furthermore, high concentration in the export and marketing of seafood contributes to a significant marketing effort.

In the third category, describing the competitive environment, the roles are reversed with Norway at 4.9 and Iceland at 4.1. This difference is almost exclusively due to the common generic marketing of Norwegian seafood. The competition between Norwegian exporters is also fiercer and they claim to enjoy better cooperation with transporters. The Icelandic operators, on the other hand, claim to have a better coordination with the distributors.

			Iceland	Norway
6. Marketing			**4.3**	**4.0**
6.1.	**Special impact of government on marketing**		**6.0**	**6.0**
	6.1.4.1	Access to foreign markets	6.0	6.0
6.2.	**Competence of marketing companies/exporters**		**4.1**	**3.1**
	6.2.1.	Relative size of export companies	4.2	3.8
	6.2.8.	**Marketing operations**	**4.0**	**3.0**
	6.2.8.2.	Official marketing support	1.0	1.0
	6.2.8.3.	Marketing operations	4.6	4.6
	6.2.9.	Product processing level. How close is the product to the consumer?	6.2	1.8
	6.2.10.	Diversity in exported fish products	4.1	3.9
	6.2.11.	Value of exported fish products categorized according to species	4.4	3.7
6.3.	**Competition/cooperation and suppliers**		**4.1**	**4.9**
	6.3.1.	**Competition**	**5.2**	**5.8**
	6.3.1.1.	Competition between companies that market and distribute fish and fish products	5.2	5.8
	6.3.2.	**Cooperation**	**3.7**	**4.6**
	6.3.2.1.	Transport companies	5.0	5.2
	6.3.3.	Jointly planned marketing of seafood products from your country	1.0	4.0
	6.3.5.	Cooperation of marketing companies/ distributors with seafood producers	5.2	4.6

6.1. Special impact of government on marketing

6.1.4.1. Access to foreign markets

Free trade agreements and participation in trade organizations

Research / analysis

Ranking	Country	Score
1	Iceland	6.0
1	Norway	6.0

6.2. Competence of marketing companies/exporters

6.2.1. Relative size of export companies

Gini-index of exporters' turnover

Hard data

Ranking	Country	Score	Gini
1	Iceland	4.2	0.89
2	Norway	3.8	0.80

6.2.8. Marketing operations

6.2.8.2. Official marketing support

Official marketing support as proportion of export value

Hard data

Ranking	Country	Score	%
1-2	Norway	1.0	0.0
1-2	Iceland	1.0	0.0

6.2.8.3. Marketing operations

Marketing operations with your main seafood products are

1 = very insignificant

Survey

7 = very significant

Ranking	Country	Score	SD
1	Iceland	4.6	1.3
1	Norway	4.6	1.6

6.2.9. Product processing level. How close is the product to the consumer?

Export value of headed and gutted or gutted fish as proportion of total export volume of most important species.

Hard data

Ranking	Country	Score	%
1	Iceland	6.2	6.7%
2	Norway	1.8	23.0%

6.2.10. Diversity in export of fish products

Proportion of export value of most important trade code categories in main species

Research / analysis

Ranking	Country	Score	%
1	Iceland	4.1	0.80
2	Norway	3.9	0.82

6.2.11. Value of exported fish products categorized according to species

Average price of total catch (ungutted fish) in main species (EUR/kg)

Hard data

Ranking	Country	Score
1	Iceland	4.4
2	Norway	3.7

6.3. Competition/cooperation and suppliers

6.3.1. Competition

6.3.1.1. Competition between companies that market and distribute fish and fish products

Competition with regard to the distribution and selling of seafood products from domestic companies

1 = does not exist at all (monopoly) — *Survey* — 7 = exists to a high degree

Ranking	Country	Score	SD
1	Norway	5.8	1.1
2	Iceland	5.2	1.7

6.3.2. Cooperation

6.3.2.1. Transport companies

Your cooperation with transport companies is

1 = highly inefficient — *Survey* — 7 = highly efficient

Ranking	Country	Score	SD
1	Norway	5.2	0.9
2	Iceland	5.0	1.4

6.3.2. Cooperation

6.3.3. Joint planned marketing of seafood products from your country

(Total cost of joint marketing operation is / export value)

Hard data

Ranking	Country	Score	%
1	Norway	4.0	0.7%
2	Iceland	1.0	0.0%

6.3.5. Cooperation of marketing companies/distributors with seafood producers

Your cooperation with marketing companies or distributors is

1 = highly inefficient — *Survey* — 7 = highly efficient

Ranking	Country	Score	SD
1	Iceland	5.2	0.9
2	Norway	4.6	1.2

Appendix

The importance of the fisheries sector

Iceland

Description

The fisheries sector is of great importance to the Icelandic economy, and directly contributes some 9% of the GDP. The value of export of fish and fish products was 1,404 million EUR (FOB) in 2004, or 39% of total export revenue. In the same year 11,700 persons were employed in the industry, or 7.4% of the total labour market.
Many other industries depend on the fisheries to a considerable extent, such as the technical and service industries.

The Icelandic fisheries sector 2004	
Fishing	
Total catch (tonnes)	1.727.786
Value of landings (EUR, millions)	784
EBITDA / catch value *	21,3%
Employment (persons)	5.180
Fleet size, total (GT)	191.221
Fleet power, total (kW)	539.375
Fish processing	
Production value (EUR, millions)	956
EBITDA / production value *	17,3%
Employment (persons)	6.550
The Fisheries sector total	
Export value (EUR millions)	1.404
Imported raw fish material (EUR millions)	75
Value added (EUR, millions) *	857
Employment total (persons)	11.730

Source: Statistics Iceland

** Data for year 2003*

Fisheries

The Icelandic fishing zone is about 758,000 km^2. The national fleet also has fishing rights in other areas, e.g. in Norwegian and Russian territorial waters, the Flemish cap and the Barents Sea. Total catch in 2004 was 172 million tonnes, with a value of 784 million EUR. Most of the catch value is from Icelandic fishing grounds, or 94% in 2004.

The Icelandic fishing fleet is very heterogeneous, ranging from small coastal boats to factory trawlers. The total size of the fleet is 191,221 GT. About 67% of the value of landed fish was caught by vessels bigger than 300 GT. Fishermen in Iceland were about 4,500 in 2004.

Catch 2004 most important species	Tonnes	EUR (millions)
Cod	227,258	323
Haddock	84,563	88
Capelin	515,581	47
Greenland halibut	15,479	45
Redfish	47,688	43

Source: Statistics Iceland

The landed value of cod and cod products was about 41% of total catch value in 2004. Haddock is in second place with about 12% and the next three species were all under 6% of total catch value. The value of landed catch of demersal fish constitutes some 70%, flatfish 9%, pelagic 17%, crustacean and shellfish about 4%.

Fish processing

The value of fish caught by Icelandic vessels landed for domestic processing was about 331 million EUR or 42% of catch value. Fish frozen at sea for export was 32% of total catch value.

The most important fish processing methods in Iceland are the production of chilled, frozen and salted fish, fish meal and fish oil, as well as shrimp processing.
In line with trends in other manufacturing industries, Icelandic fish processing companies are getting fewer and bigger.
In 2004, the total revenue of fish processing companies was 956 million EUR and approximately 6,550 individuals were employed in the sector.

Marketing

The export value of fish and fish products was 1,404 million EUR in 2004. The most important market for Icelandic fish products is the EEA with 77% of total exported fish products. Classified by country, the UK bought 27% of exported fish products from Iceland.

Export 2004	EUR (millions)	Percentage
UK	375	27%
Spain	144	10%
USA	133	9%
France	81	6%
Portugal	76	5%
Denmark	72	5%
Germany	70	5%
The Netherlands	64	5%
Japan	62	4%
Norway	50	4%
Other markets	276	20%

Source: Statistics Iceland

In the export of seafood products, the value of frozen fish weighs about 50%, salted fish 18%, chilled fish 16% and fish meal and fish oil 13%

The cod is highly important for the Icelandic economy with 39% of fish product export and more than 15% of total export revenue (merchandise and service receipts). Total income from the five most important species comprises more than 71% of fish product export value.

Export 2004 Production method	EUR (millions)	Percentage
Frozen	708	50.4%
Salted	245	17.5%
Chilled	223	15.9%
Fish meal and fish oil	185	13.1%
Dried fish products	37	2.6%
Other	6	0.4%

Source: Statistics Iceland

Fisheries management

The basic structure of the current Icelandic fisheries management system was formulated by law in 1983. Since then, the system has been developed and today the Fisheries Management Act of 1990 is the backbone of the system, which is based on individual transferable quotas (ITC). Each year, total catch (TAC, total allocated catch) is determined with regard to commercially important species. The catch quota is allocated to each vessel every year, according to the vessel's proportion in TAC. Each vessel can freely trade its quota on the open market. Fishing rights holders (Quota holders) have to pay "a rent-tax" to the state as a fee for use of the resource. The fee is proportional to calculated profit in fishing and the first payments are for the fishing year 1 September 2004 – 31 August 2005.

Current trends

In the past few years, the export of chilled fish has increased considerably and is expected to become one of the major processing methods in the near future. Increased emphasis is also placed on the freezing of the pelagic species, especially herring. The process is taking place both onshore and in big modern freezing vessels. The shrimp industry has slackened considerably, both because of diminished catches and low prices. Although there has been an acceptable rise in the prices of fish products in foreign currency, this has been more than counterbalanced by a considerable strengthening of the Icelandic krona, which has heavily outweighed the increase in foreign prices. Consequently, profits in the fishing industry are currently at a very low level.

Norway

Description

The fisheries industry has long traditions in Norway, but its importance to the national economy has declined steadily over a long period. To some regions in the northern and western part of Norway, however, it is still the main source of income and work. Total contribution to GDP (excluding aquaculture) was in 2003 below 1% and about 1.1% of the workforce was employed in this sector. If effects from supporting industries are counted, importance and employment increases.

The Norwegian fisheries sector 2004	
Fishing	
Total catch (tonnes)	2 521 000
Value of landings (EUR, millions)	1 250
EBITDA / catch value	21,0%
Employment (persons)	12 677
Fleet size, total (GT)	
Fleet power, total (1000 kW)	880
Fish processing*	
Production value (EUR, millions)	2 861
EBITDA / production value	4,8%
Employment (persons)	10 500
The Fisheries sector total	
Export value (EUR millions)	3 395
Imported raw fish material (EUR millions)	
Value added (EUR, millions) *	1156
Employment total (persons)	23 177

Various sources

** Including aquaculture*

Fishing

The Norwegian fishing fleet is very heterogeneous, ranging from small one-man coastal vessels to 75 m long purse seiners and onboard processors. In total, there are about 8,000 vessels registered. This number has been steadily decreasing since the 1960ies. The size distribution is heavily skewed towards smaller vessels. The number of fishermen has also declined sharply during the last decades. In 2004, there were 12,677 registered with fishing as main occupation.

The fleet can roughly be divided in two; the ocean-going and coastal fleet. The aforementioned fish with trawl, purse seine and longline in the Barents, Norwegian and North Sea, while the latter fish in the fjords and close to the coast. Cod is distributed with about 40% for the off-shore fleet and 60% for the coastal.

Total catches amounted in 2004 to 2,521,000 tonnes. The first-hand value of this catch was 1,250 billion Euro. The economically most important species are cod (27%), herring (20%), mackerel (13%), saithe (8%) and blue whiting (7%).

Catch 2004 most important species	Tonnes	EUR (millions)
Cod	231 076	335
Herring	616 221	243
Mackerel	157 357	160
Saithe	210 623	100
Shrimp	58 799	98

Source: Directorate of Fisheries

Fish processing

Just like the vessels, the processing plants are equally heterogeneous with respect to size and processing strategies. In 2004 there were 400 operating companies which employed about 10,500 persons. Both the number of processors and employment is steadily declining.

The industry can roughly be divided into the 4 following main categories with accompanying revenue shares. Salting, drying (30%), pelagic processing (21%), filleting white fish (11%), and meal/oil (7.5%).

Marketing

The export value of fish products was in 2004 3,395 million Euro. Main markets are Denmark (10%), Japan (9%), Russian Federation (9%) and France (9%). The main products are (excluding salmon) frozen mackerel (8%), dried and salted cod (6%), frozen herring (6%) and salted cod (3%).

Export 2004	EUR (millions)	Percentage
UK	360	11 %
Spain	316	9 %
USA	308	9 %
France	295	9 %
Portugal	204	6 %
Denmark	191	6 %
Germany	177	5 %
The Netherlands	173	5 %
Japan	144	4 %
Norway	114	3 %
Other markets	1 115	33 %

Source: Norwegian Seafood Export Council