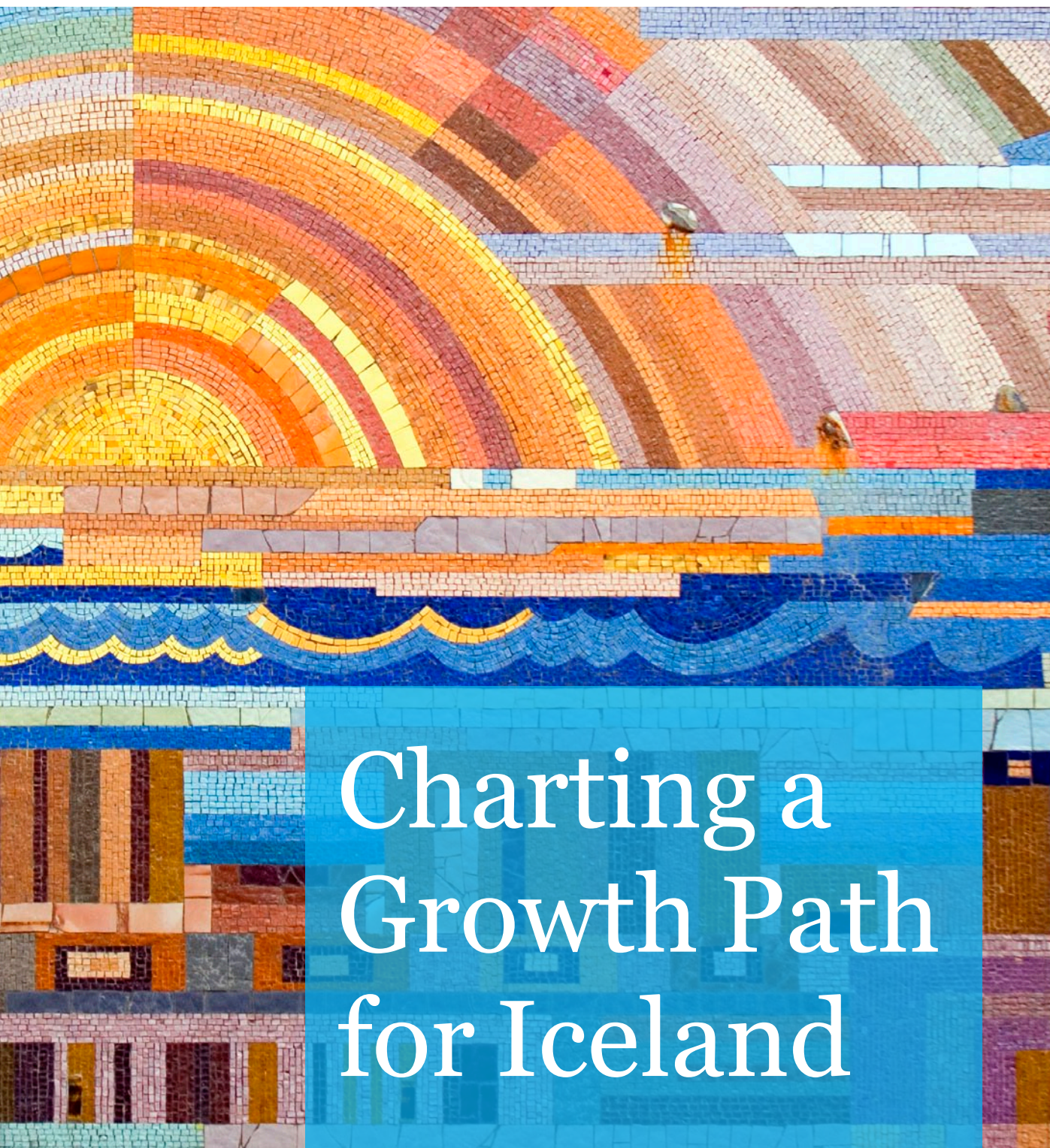


McKinsey Scandinavia



Charting a Growth Path for Iceland

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The photos in this report are courtesy of Pálmi Einarsson and Dimitri Siavelis.

The cover photo of Gerður Helgadóttir's (1928–1975) mosaic artwork on the Icelandic custom house, is made available courtesy of her relatives. Produced by Glasmalerei Dr. H. Oidtmann, and revealed on September 7, 1973, this mosaic is one of the most defining landmarks in Reykjavik.

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Introduction

In autumn 2011 a group of likeminded Icelanders approached the authors of this report to ask if McKinsey & Company could develop an independent perspective on the current state of the Icelandic economy and its future priorities.

After careful deliberation the answer was a resounding 'Yes'. There are several reasons for this, some of which we would like to highlight:

- A broader perspective on the Icelandic economic debate is needed. Iceland is gradually emerging from its deepest economic recession in decades. Now that it has dealt with some of the immediate issues, longer-term policy topics remain. The direction taken will significantly impact on the country's growth trajectory and the Icelandic nation's quality of life.
- The primary focus for the last few years has been on crisis resolution and explaining past events. However, maintaining standards of living requires sustainable growth – and how to achieve this should increasingly be the focus of the economic policy debate.
- The gaps between the worlds of business and politics and the macro world need bridging. Representatives of all stakeholders confirmed this hypothesis during our interview process. It is clear to us that stakeholders agree on the benefits of an independent perspective to facilitate the right level of strategic debate for Iceland
- McKinsey has a long tradition of giving back to society. In Scandinavia McKinsey has written similar economic reports on the Danish, Swedish and Finnish economies, all of which have had a considerable impact on public debate and policy-making.

In line with our tradition of actively contributing to society, this is an independent report, entirely financed and compiled by McKinsey. In other words, we are dependent on nothing but facts and our own interpretation of facts, and we have written this report with nothing but the best interests of the Icelandic nation in mind.

Focus of the report

In this report – *Charting Iceland's Growth Path* – we seek to assess Iceland's current economic performance and chart a way forward. Guiding our efforts is the fundamental belief that sustainable economic growth and national prosperity are strongly intertwined.

Specifically, the report aims to explore and address the following key questions:

- How does Iceland's underlying economic performance compare with that of its peer nations?
- What are the major factors affecting this performance?
- What are Iceland's potential growth engines for the future?
- What is the set of conditions vital to realization of this growth potential?

It is not the intention of this report to provide an exhaustive account of the Icelandic economy nor to address all the options for growth and value creation. Rather, we are relying on objective data and analytical frameworks to identify the sectors, growth drivers and broadly-based enablers that we believe will have the greatest impact on value creation in Iceland in the years to come.

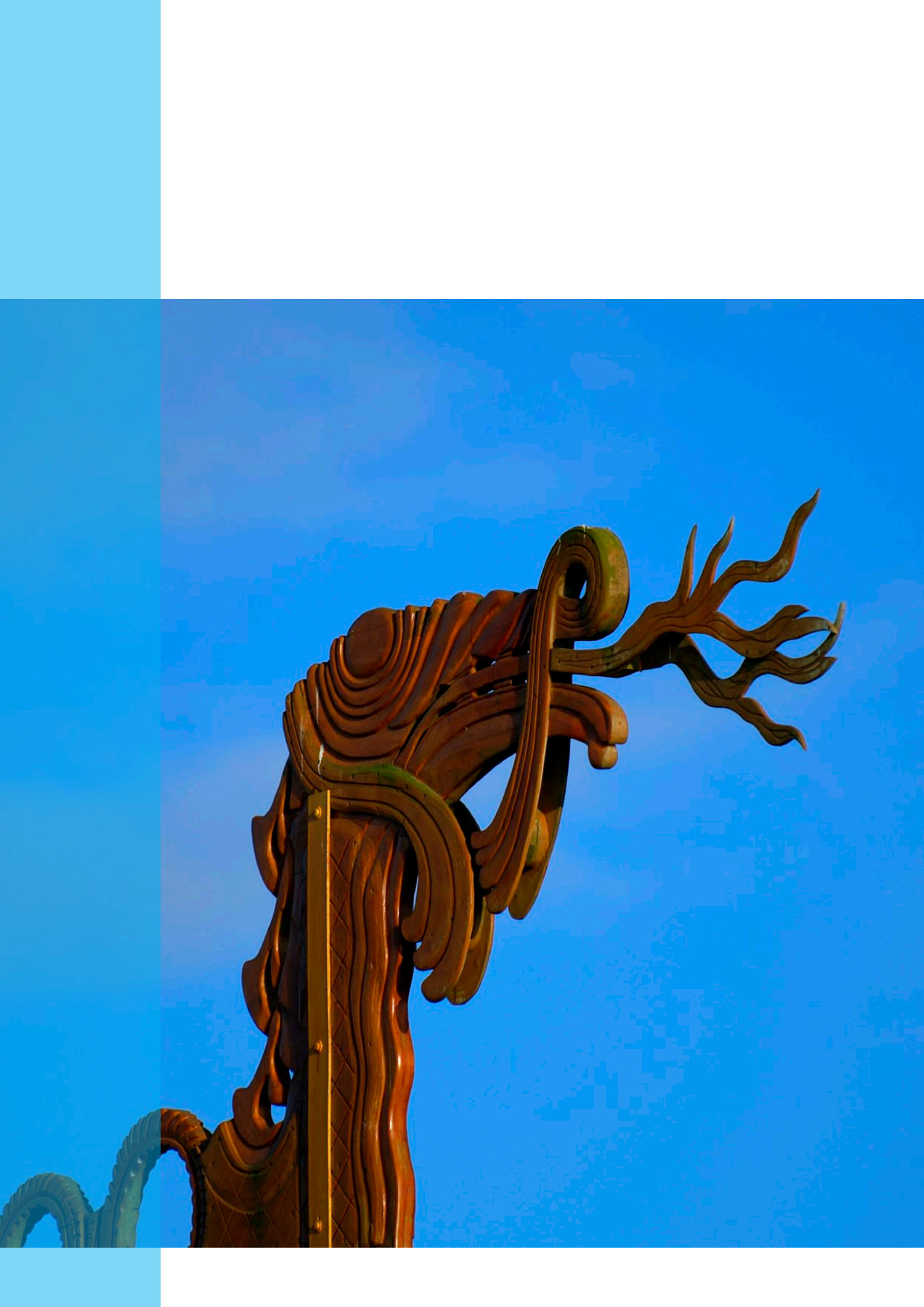
We have also specifically chosen not to address several important issues, e.g. whether Iceland should join the European Union or adopt the euro (or any other currency) instead of the Icelandic króna. It is our belief that the strategic priorities outlined in this report will hold true, regardless of how these issues are resolved.

Furthermore, we have decided to be forward looking in this report. The events and conditions leading up to the 2008 financial crisis are well documented, and we do not seek to add to that debate.

We have chosen to view the Icelandic economy from a production-side perspective. We could have chosen to approach our analysis differently, e.g. from a demand-side or income-side perspective (See Appendix A for a description of the difference between the three methods). As a result of our choice, there are a number of issues that we do not cover in detail in this report, e.g. public finances, private debt and income distribution. These are all important elements of economic prosperity, but an exhaustive description of all aspects of the economy is beyond the scope of this report. We believe that by focusing on a production-side approach we can add more value to the discussion and distil a clearer view of the policy implications for Iceland.

In our work we combine a macroeconomic approach and model with a microeconomic business perspective. We therefore look for insights and inspiration from industry databases, business case reviews, interviews and business sector information. For the simple reason of ensuring analytical comparability of Icelandic statistics and data with our chosen peer economies, in many cases we have had to use 2010 figures.

It is our hope that this report will prove a useful tool to facilitate debate and help Icelandic stakeholders come to agreement on the nation's growth potential and ambitions, a strategy to realize them and an economic policy to enable them.



Executive summary

Over the last 30 years Iceland has occupied a position among the top 15 wealthiest countries in the world, measured in GDP per capita. This status has shaped the lives of the generations of Icelanders who have lived during this period. However, in recent years Iceland has dropped down the list and is now facing the challenge of regaining growth momentum in a challenging environment.

In *Chapter 1* we detail what we perceive as a challenging environment for the Icelandic economy. Over the last 30 years Iceland has sustained a structural current account deficit largely with foreign investment and borrowing. Despite a marked drop in domestic consumption and a reduction in government spending since the 2008 financial crisis, the Icelandic economy runs the risk of slipping back into deficit as consumption normalizes and imports rise, while investment and fundamental export growth lag behind. With this outlook, Iceland could remain trapped in a vicious cycle of sustained capital controls, high capital cost, low investments and low economic growth.

A necessary first step in breaking the vicious cycle is to agree on a credible agenda for real economic growth. This agenda should be anchored in the fundamental strengths of the Icelandic economy and needs to address a various growth challenges across different sectors of the economy.

In *Chapter 2* we examine the forces that drive the Icelandic economy and identify what we regard as major growth challenges to be addressed. We show that Iceland's high per capita GDP is maintained to a considerable extent by high labor force participation and long working hours. This unusually high contribution by the labor force masks a significant productivity problem in most sectors of the economy. In particular, low labor productivity in the domestic service sector and low capital productivity in the energy sector are fundamental issues that must be addressed by means of a broadly backed growth agenda.

In *Chapter 3* we show that a sustainable growth plan for Iceland will need to encompass all industry sectors. First, it will be difficult to fuel real economic growth without efficiency gains in the domestic service sector. The domestic service sector contributes 65% of GDP and employs 70% of the workforce, and achieving productivity gains will enable a long-term reallocation of labor to more productive sectors of the economy. Second, the main objective for Iceland's resource-based sectors must be to increase value capture from scarce resources. Third, the international sector, encompassing businesses that produce tradable goods and services that are largely independent of local natural resources, should be strengthened through renewal, increased availability of "smart" risk capital, and by opening up a globally competitive business environment in Iceland. Growth of the international sector on the back of efficiency gains in the domestic service sector will be a key ingredient in making the external balance of the Icelandic economy more robust.

In *Chapter 4* we show the significance of the domestic sector productivity gap. Closing the productivity gap with peer countries could free up an estimated 13,000 employees for long-term reallocation to more productive parts of the economy. In closing this productivity gap it is imperative to further open up the Icelandic economy to competitive international forces and best-practices and grow more companies to productive scale. In this context, competition authorities will have to play an important role in creatively managing a delicate balance between corporate scale and consumer protection.

In *Chapter 5* we analyze the value creation potential of Iceland's resource industries – the cornerstone of Iceland's exports. We discuss opportunities in three sectors:

- *The fishing industry* is the best example of a sector that has achieved both high labor and capital productivity, enabled by sound regulation and exposure to international competition. However, continued productivity growth driven by further investment and adoption of technology requires a stable and thoughtful policy environment. Finally, resource limits require serious exploration of new sources of growth, e.g. by improving brand value of Icelandic seafood products and exploring fish farming as a potential growth engine.
- *The power industry* has provided the foundation for a strong export-based heavy industry sector. However, capital productivity in the energy sector is the lowest across all sectors of the Icelandic economy. With 25-30% of the capital stock directly or indirectly invested in the energy sector, this is a serious matter for resolution. We identify several important themes to this end, e.g. diversification of the industrial buyer market and systematic enablement of the most profitable expansion projects based on their ability to pay. Additionally, the opportunity to connect the Icelandic electricity market to Europe via a physical interconnector is an attractive option that should be explored in detail.
- *Tourism* has grown substantially in the last few years and plays an important short- to medium-term role in maintaining employment and strengthening the trade balance. The tourism industry accounts for 5% of the total workforce and contributes around 20% of total exports; however, with its relatively low labor and capital productivity, stakeholders should focus on driving value as well as volume – through, for example, increasing capital investment, managing seasonality and targeting more high-revenue visitors.

In *Chapter 6* we delve into the relatively small international sector. Businesses in the international sector compete in the international market and are fundamentally mobile, i.e. they have the option of relocating operations as they do not rely on resources specific to Iceland. Indeed, a number of Iceland's growth successes are going this way with headquarter functions gradually relocating abroad. developing a business environment in Iceland that is similar to that in neighboring countries and effectively harnessing what we see as a strong entrepreneurial spirit in Iceland to promote rejuvenation.

Education is a major factor underpinning innovation and growth in the international sector, and indeed in all sectors. There is considerable scope for improvement in this area: Iceland is failing to get people through secondary education at the same rate as its Nordic peers, the number of people attaining vocational degrees is falling, and, although Iceland is catching up with its Nordic peers in terms of higher education, Icelanders take longer to complete university degrees.

In *Chapter 7*, we pull together what we see as the main threads of Iceland's growth agenda and outline potential policy implications. We also underline the importance of Icelandic stakeholders coming to an agreement on the nation's growth potential and ambitions, a strategy to realize them and an economic policy to enable them.

1



From Boom and Bust to Balanced Growth

Over the past three decades, the Icelandic economy has been characterized by moderate average economic growth rates, large fluctuations in economic activity and significant external imbalances. Real income per capita grew at 1.3 percent per year from 1980 to 2011, which is lower than in most comparable countries. For instance, the Nordic countries and the UK grew at rates of 1.5-1.9 percent per year.

There has been a historical tendency to pursue economic growth one sector at a time. The ebbs and flows of these sectors have created large fluctuations in overall economic activity. First, the fishing industry grew significantly in the 1980s, but faced price and volume declines from the late 1980s, contributing to a deep and lengthy recession into the early 1990s. This was followed by a significant buildout of the energy-intensive industry in Iceland and in the 2000s the buildout of the energy sector was accompanied by an expanding financial sector. High investment and consumption rates created unparalleled current account deficits, which in the end contributed to an economic collapse.

Looking ahead, the creation of a broad-based economic growth plan should be a top priority for Icelandic policy makers, supported by a foundation of a solid external balance to reduce the cyclical vulnerabilities of the past.

1.1 An economy at a crossroad

Maintaining GDP growth has proven essential to sustaining high standards of living and strong welfare states as we know them¹. Exhibit 1 illustrates the development of the 40 richest countries over the last three decades. We call this overview the “GDP League of Nations”. On the left-hand side countries are ranked in terms of GDP per capita in 1980, and on the right hand side the same ranking is illustrated for 2010.

Over the last 30 years Iceland has been in or near the top 15 in the League. This has shaped the lives of the current generation of Icelanders. High general standards of living, high levels of education, high-quality health care, social security and gender equality reflect this.

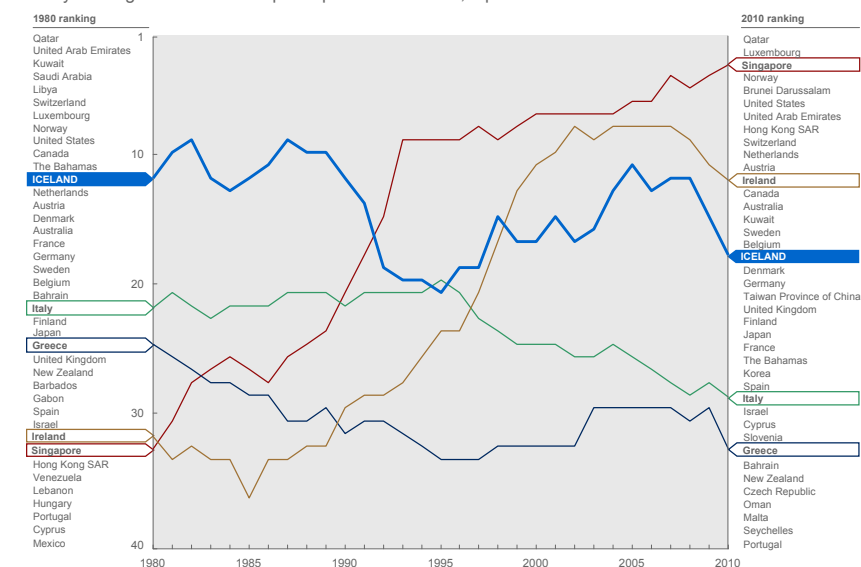
Despite the severe impact of the financial crisis, the Icelandic economy has proved to be resilient and is still among the top 20 in the world. However, Iceland has dropped down the list and faces the challenge of regaining momentum in a challenging environment. Failing to reignite the economic engine could entrench Iceland’s position below the top 15 countries, or in the worst case lead to an ongoing downward trend.

¹ Throughout the report we use GDP per capita as the primary metric for economic performance. See Appendix A for a discussion of why this metric was chosen, as well as an explanation of the different production definitions used in the report.

Exhibit 1

League of nations: Well-founded GDP growth matters

Country ranking in terms of GDP per capita in PPP terms, top 40



SOURCE: IMF World Economic Outlook (April 2012); McKinsey analysis

As Exhibit 1 illustrates, in recent decades the GDP growth trajectory has varied substantially from one country to another. Singapore has steadily climbed up the list and secured its spot among the top performers. Other Asian economies, e.g. Hong Kong and South Korea, have followed a similar path. These countries have pursued an economic policy focused on a long-term strategic vision. Despite recent challenges, the Irish economy has surpassed most of its European counterparts over the same period. On the flip side are countries such as Italy and Greece. For several decades these countries have been unable to stimulate robust growth and have seen a steady decline in their ranking within the League. This underlines the importance of a solid long-term strategy to support economic growth.

The main objective of this report is to outline a roadmap that will enable Iceland to sustainably secure its place amongst the world's top performing economies. With its ample natural resources and small population, Iceland is in a very strong position to develop and implement a successful long-term growth strategy.

1.2 The vicious cycle of imbalance and slow growth

This report suggests a growth agenda focused on productivity improvements across the Icelandic economy. This suggested agenda should be considered in the context of a complex economic environment in the aftermath of the crisis, where economic interdependencies play an even more critical role than in a stable environment.

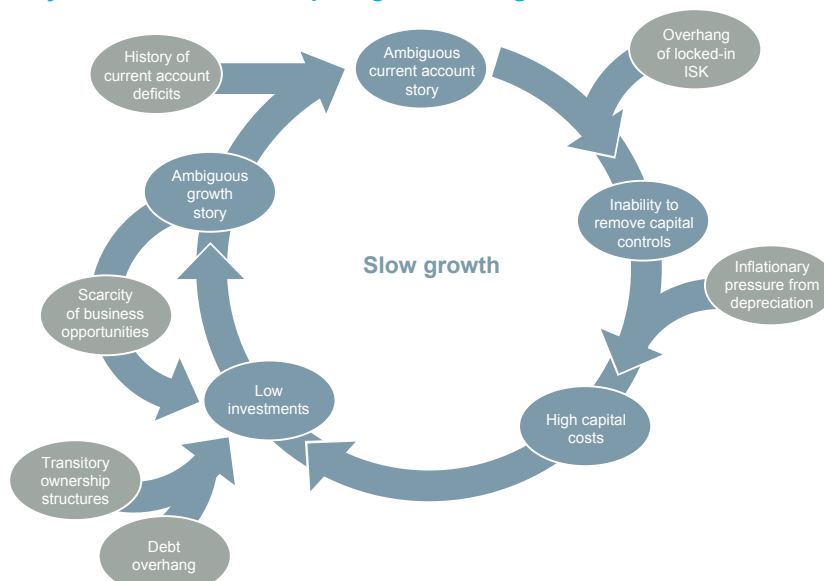
In the wake of the financial crisis market participants lost confidence and capital controls were introduced as a result of severe capital flight. These remain in place today without a clear timeline for their removal.

One condition for removing capital controls is a significant strengthening of Iceland's current account. To achieve this Iceland will have to reverse a history of large current account deficits. Between 1980 and 2008 the average current account balance was close to minus 6 percent per year, with this trend accelerating in the years leading up to the 2008 financial crisis. The savings rate was low by international standards (on average 10% from 2003 to 2008), and the higher rate of investments (27%) was financed by an inflow of foreign capital.

The challenging task for Icelandic policy makers is to address these components in tandem. Unless they do so, future growth prospects are threatened by a vicious cycle, as illustrated in Exhibit 2. In the vicious cycle, low investment rates hinder economic growth, which in turn prevents an improvement in the current account balance that is needed for removal of capital controls, without which funding costs will remain high and investment levels low. This vicious cycle is further strengthened by transitional ownership structures and absence of credible growth plan with broad backing of key Icelandic stakeholders.

Exhibit 2

Today: A vicious circle hampering economic growth



SOURCE: McKinsey analysis

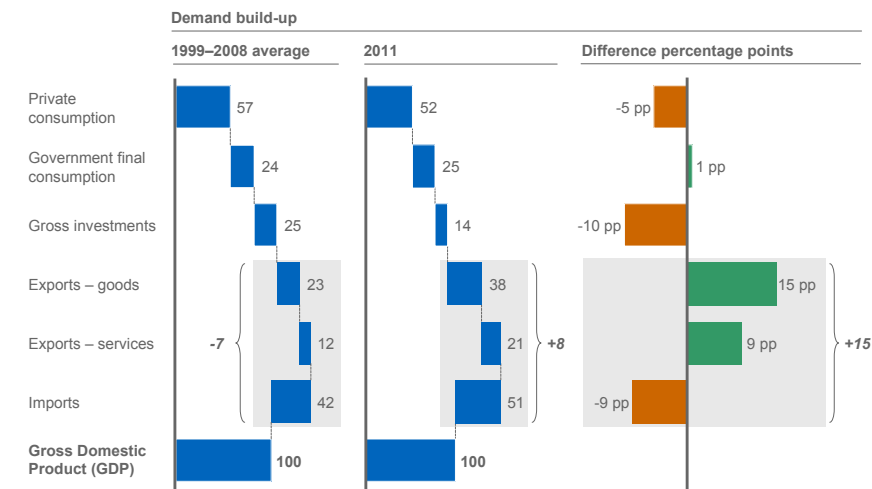
Two simplified illustrations demonstrate the current dilemmas for Icelandic policy makers.

Exhibit 3 shows that the drop in the investment level represents the single largest relative contributor to the fall in demand in the economy, with a drop of 10 percentage points as a share of the economy relative to the decade before the crisis. The exhibit also shows how the economy has moved from its historical state of affairs with large trade deficits, to a trade balance surplus after the crisis, driven by reduced government consumption, currency depreciation and depressed levels of consumption and imports. However, this trade balance surplus is likely to evaporate, once private consumption normalizes.

Exhibit 3

Significant shift in GDP composition with 10 pp drop in investment and 15 pp shift in trade balance

Share of GDP; illustrative



SOURCE: Statistics Iceland; National Account statistics as of medio 2012; Monetary Bulletin no. 3, 2012; Illustrative estimates

While net exports have improved in the short term, the lack of investment is likely to hamper long term growth in exports. Exhibit 4 illustrates the export gap that the Iceland would need to fill under a hypothetical 4% real economic growth path². To balance this level of real economic growth, Iceland would have to close an export gap of roughly ISK 1 trillion with new exports by 2030 – roughly doubling the level of current exports.

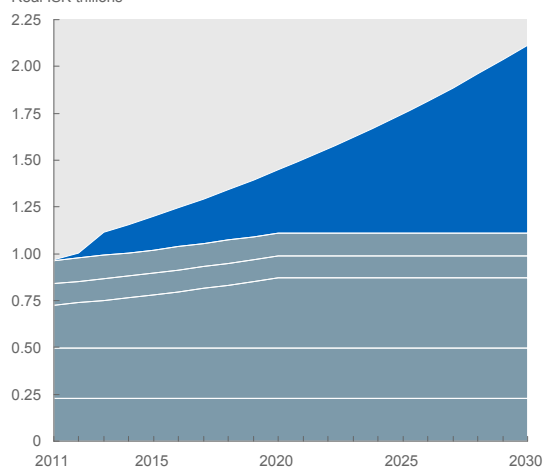
2 Assumes that import levels as a ratio of GDP rebound to somewhat below historic levels, with the fisheries and tourism sectors continuing their current growth trajectory and metals and energy stabilizing at current levels.

Exhibit 4

New sources of exports are needed to support a balanced long-term growth trajectory

Illustrative

Export requirements along a 4% real economic growth path
Real ISK trillions



Industry:	Assumption:
New exports	Residual
Other goods	As is
Other services	As is
Tourism	Historical growth rate 00-12 (6%) extrapolated to 2020
Energy-intensive industry	Constant relative prices, no buildout
Fisheries	Constant relative prices, no volume growth

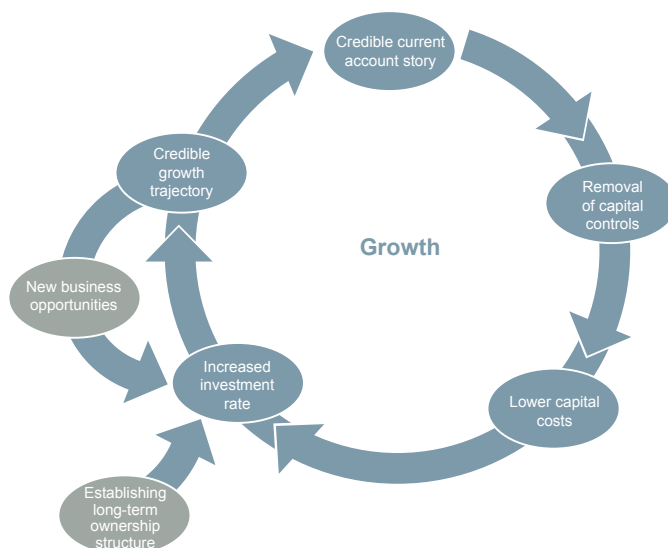
SOURCE: Statistics Iceland; McKinsey analysis

1.3 The virtuous cycle of growth

Releasing Iceland's growth potential requires an end to this vicious cycle. Iceland needs to generate a *virtuous circle* where a credible growth and trade balance agenda contribute to trust in financial markets and a climate where capital controls can be removed, again leading to higher investments through lower funding costs, which supports the growth agenda. This is simplistically illustrated in Exhibit 5.

Exhibit 5

Needed: A virtuous circle based on trust in long-term economic balance



SOURCE: McKinsey analysis

A review of each element of this cycle can help to identify gaps and potential actions required to kick-start the growth engine:

1.3.1 Step 1: Current account credibility

As Exhibit 6 illustrates, net exports improved significantly after the 2008 financial crisis, driven by a reduction in imports. The response in export volumes, on the other hand, has been moderate, especially relative to the extent of the currency depreciation. This is partly driven by capacity constraints in Iceland's main export sectors, such as fisheries and energy-intensive industries. While there are signs of export growth in sectors such as shipping and professional services, they have not been able to grow at scale. In the last year, net exports have declined as imports have started to rebound from low levels.

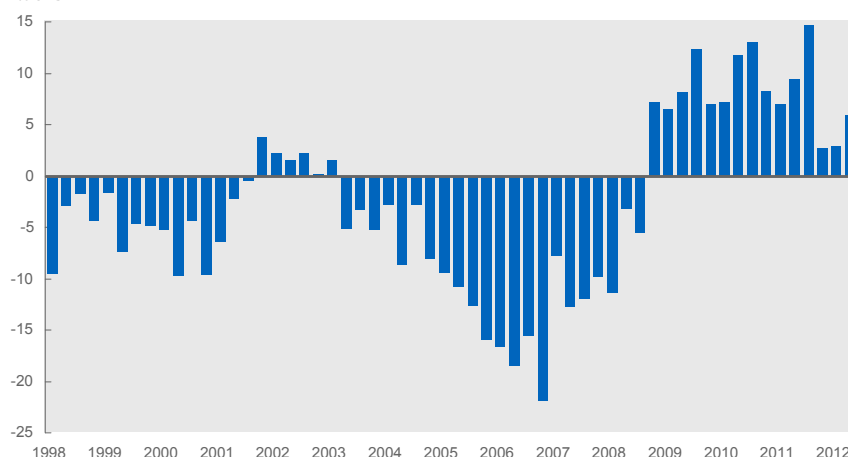
Not surprisingly, post-crisis improvements in net exports led to resultant improvements in the current account. However, owing to the unclear status of the balance of payments, the status of the current account is not fully transparent at present³. Depending on the method of calculation, the current account balance is currently in the range -6 to +3 percent of GDP, see Exhibit 7. Iceland's negative net international investment position and the associated factor payments abroad lead to a current account that is around 3-4 percentage points weaker than the trade balance, according to the Central Bank's estimate. This fact, combined with the recent softening of the trade surplus, show that there is still some way to go to create robustness in relation to the external balance.

In the short to medium term, policies should aim at creating a stable environment for the main export sectors to ensure that production levels are maintained and that new investment decisions can be made.

Exhibit 6

The trade balance has strengthened, but mainly due to import restraint and currency depreciation

Quarterly trade balance as a share of GDP, Q1 1998 – Q2 2012
% of GDP

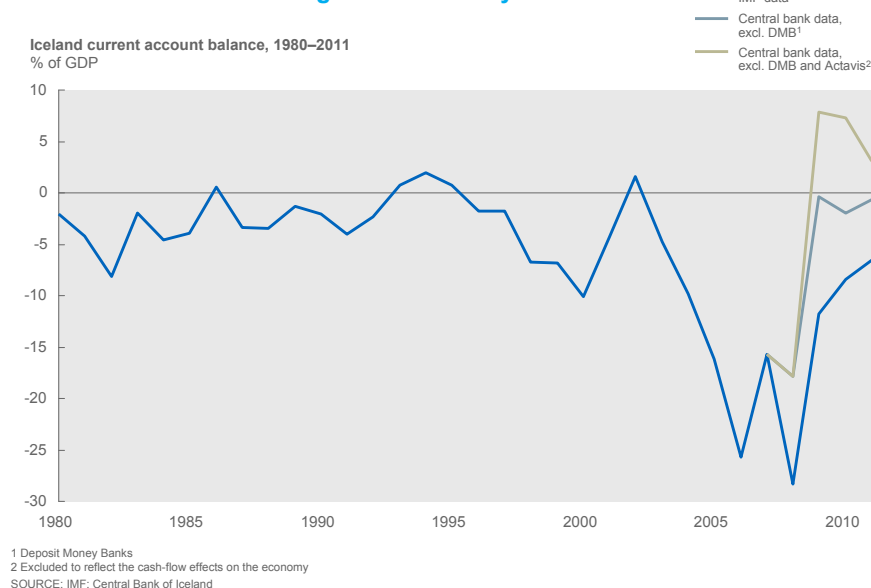


SOURCE: Statistics Iceland

3 Official estimates, e.g. the IMF, tend to underestimate this improvement as they include accrued interest on the debts of banks in bankruptcy proceedings. They also include accrued interest on the debt of Actavis, the pharmaceuticals company, which has no actual cash flow implications until the debt matures. See e.g. the Monetary Bulletin of May 2012 published by the Central Bank of Iceland.

Exhibit 7

Current account strengthened by the trade surplus, but more is needed for long-term credibility



1.3.2 Step 2: Gradual removal of capital controls

The Central Bank is working towards a phased liberalization of capital movements. Implementation of the Central Bank's plan is conditions-based and the first wave involves unwinding liquid krona positions held by foreign investors. The second wave involves lifting controls on general foreign exchange transactions.

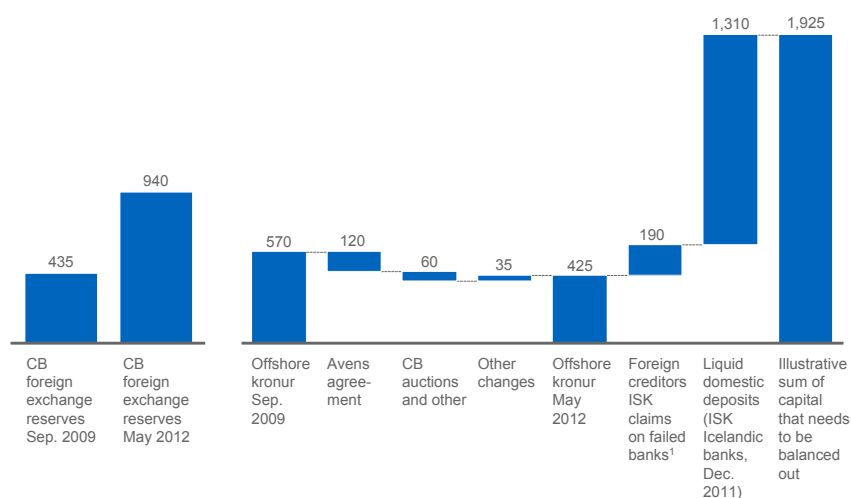
The Central Bank is now in a position to organize auctions whereby foreign investors can swap their kronur for foreign exchange. Exhibit 8 illustrates, as of May 2012, how the situation with regard to phase 1 of the liberalization strategy has developed over the last 3 years.

Today, there remains considerable uncertainty around the exact size of foreign creditor claims on ISK and a resolution framework has not been settled. This settlement is likely to influence the size of the overhang.

Exhibit 8

Foreign reserves are strengthened but economic robustness is needed to balance ISK/FX flows

ISK billions



¹ Conservative estimate: The Central Bank of Iceland has estimated claims as potentially much higher
 SOURCE: IMF; Central Bank of Iceland (Financial Stability Report 2012:1)

However, a normally functioning market can only be established as ISK-holders more broadly, including Icelandic households and businesses, consider ISK placements to be attractive in the long term. Liquid holdings by residents of Iceland is significantly larger than the ISK-holdings of foreigners. ISK-denominated bank deposits alone are around three times higher than the amount of offshore ISK outstanding, as illustrated in Exhibit 8. A broadly-based confidence in ISK placements requires asset holders to believe in the growth prospects and the balance of the economy, or alternatively that international investors are ready to invest in Iceland to the same extent that Icelanders are looking for international diversification of their portfolios.

1.3.3 Step 3: Reduce funding costs

Foreign-currency denominated bond issues by the Icelandic government in June of 2011 and 2012 show that Iceland has renewed access to international capital markets. However, these bonds are priced at a fairly high risk premium. USD denominated bond issues in the spring of 2012 indicate a country risk premium of around 3 percent.

One root cause of the financing challenge is the perceived risk related to capital controls, making investors reluctant to move in. While the Central Bank has adjusted the capital controls legislation to accommodate new investments, many investors see the risks involved as too high. Second, uncertainty surrounds the debt restructuring process.

Legal uncertainties concerning the actual value of loans outstanding increase the risk of investments and the associated funding costs. Third, corporate sector leverage is still high. Corporate sector leverage was at 1.9 times GDP at the end of 2011, compared to 1.3 in 2003. The good news is that if the leverage in 2003 is taken as the benchmark, 2/3 of the deleveraging process had been completed by the end of 2011⁴.

1.3.4 Step 4: Improve investment rates

The investment rate in Iceland is low, and has not recovered as could be expected. Several factors contribute to this low investment rate.

First, low investment rates are a consequence of high funding costs in the post-crisis environment. It is not uncommon that promising investment projects cannot obtain the required funding. Rightly or not, many investors find the investment climate too ambiguous and reject interesting investment opportunities based on this argument alone. Rather than allocating capital to productive but relatively illiquid investments, capital is sitting idle as deposits in banks or is invested in more liquid real estate.

Second, investment rates are dragged down by the time consuming process of company restructuring and the lack of clarity in ownership structures. Of the companies that ended up in bankruptcy during the crisis, 27% were still directly owned by Icelandic banks at the start of 2012⁵.

Third, Iceland is not seen as an especially hospitable country for foreign direct investments. Objective measures like OECD's FDI Regulatory Restrictiveness Index indicate that Iceland is among the most restrictive countries within the OECD for foreign direct investment.

1.3.5 Step 5: Define growth agenda

The final stage in the circle is the credible growth agenda. In recent years, policy makers have focused on crisis management and crisis related decision making. The IMF's focus has been on a combination of fiscal stability, private sector debt restructuring and stabilizing the ISK. What is still to be put in place is a more fundamental shift from crisis mode and ad hoc decision making to the creation of a coherent and aligned growth agenda based on sound, long-term policies.

This report aims to fill this gap by proposing a growth agenda that lays the basis for balanced growth. As such, it addresses the top left part of the virtuous circle. The above discussion already hints at an outline for this growth agenda: Capturing the productivity potential in the domestic sectors to free up labor in order to grow the internationally oriented sectors so as to create long-term economic balance.

⁴ For data, see the Central Bank of Iceland's publication, Financial Stability 2012:1

⁵ Icelandic Competition Authority (3/2012)

2



A stronger competitive pulse is needed

In this chapter, we examine the core growth drivers of the Icelandic economy. Our main conclusion is that, partly because of the historical strength of the resource-based sector and its significant contribution to exports, other sectors of the Icelandic economy have been shielded from the strong competitive pulse seen in many of Iceland's neighboring countries. This, in turn, has contributed to a forgiving corporate environment where productivity suffers. In chapters 3–7, we further build on this guiding thought and outline what we see as key themes of a comprehensive growth story for the Icelandic economy. However, this journey starts with an examination of the high-level structure of the Icelandic economy.

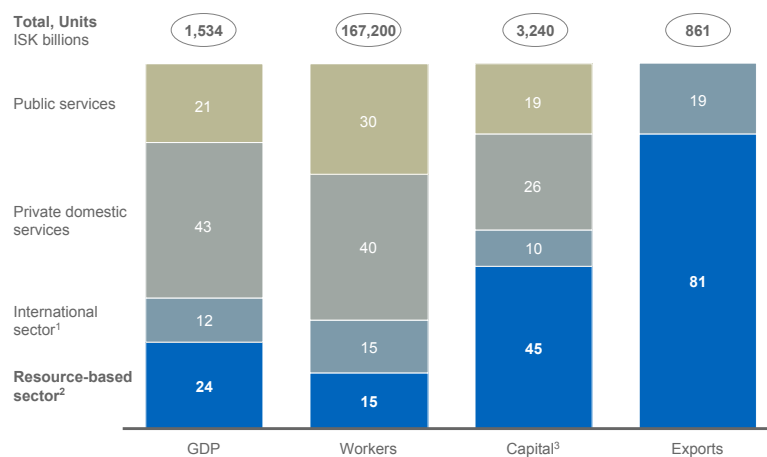
2.1 A resource-based economy

A breakdown of the structure of the Icelandic economy illustrates that natural resources play a very important role (Exhibit 9). The resource based sectors generate a significant share of Iceland's globally tradable goods and services and account for over 80 percent of total exports. In addition to the input of natural resources, the resource based sectors utilize a large proportion of the capital stock in the economy (45 percent of the total). Due to the capital-intensive nature of its main industries, in particular energy and fisheries, the sector requires only a limited number of workers.

Exhibit 9

The resource-based sector is the engine of the Icelandic economy

Percentage of total, 2010



¹ Includes manufacturing (excluding metal manufacturing and fish processing), and internationally exposed share of ITC and business services

² Includes fishing industry, mining, agriculture, oil, energy production, metal manufacturing and 50 percent of tourism & logistics

³ Capital stock does not include residential capital or unclassified activities. Infrastructure is not included, as data is not granular enough (except for harbors and airports, which are included in tourism & logistics)

SOURCE: Statistics Iceland; McKinsey analysis

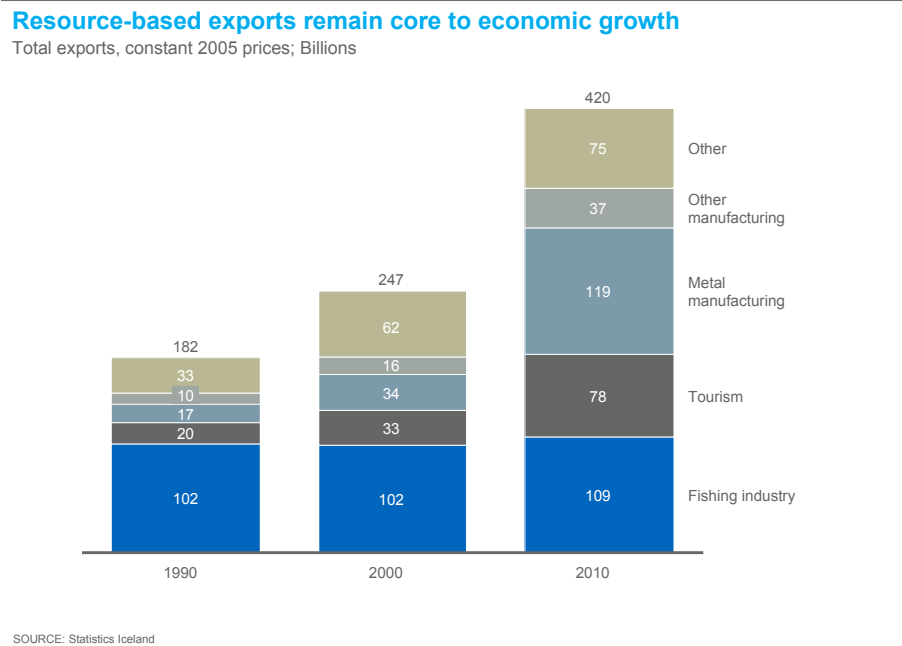
At the other end of the spectrum is the domestic service sector (including both public and private services), which employs over four times as many workers as the resource-based sectors, but roughly the same amount of capital. As in many other advanced economies, the size of the service sector in terms of labor input makes it by far the most important factor with regards to total production.

The international sector, including industries that produce tradable goods and services independently of local natural resources, has a similar composition to the domestic-service sector, i.e. a large number of workers and limited capital. However, unlike the domestic service sector these industries provide exports through both manufacturing and services.

2.2 Export diversity has increased

Exhibit 10 illustrates that both the quantity and diversity of Iceland’s exports have increased substantially over the last two decades. Twenty years ago the fishing industry was the source of more than half of exports. Since then, other exporting industries, e.g. metal manufacturing and tourism, have grown sharply in terms of both value and share of total exports. Despite constituting a smaller slice of the export pie, other manufacturing industries have grown at a pace similar to that of these two industries.

Exhibit 10



Total exports during the period have more than doubled in real terms, totaling 40 percent of GDP in 2010 compared to 28 percent of GDP in 1990. Even though this ratio is still fairly low given the small size of the country, the increased diversity in terms of exports has undoubtedly contributed to the resilience of the Icelandic economy in recent years.

2.3 Limited foreign presence

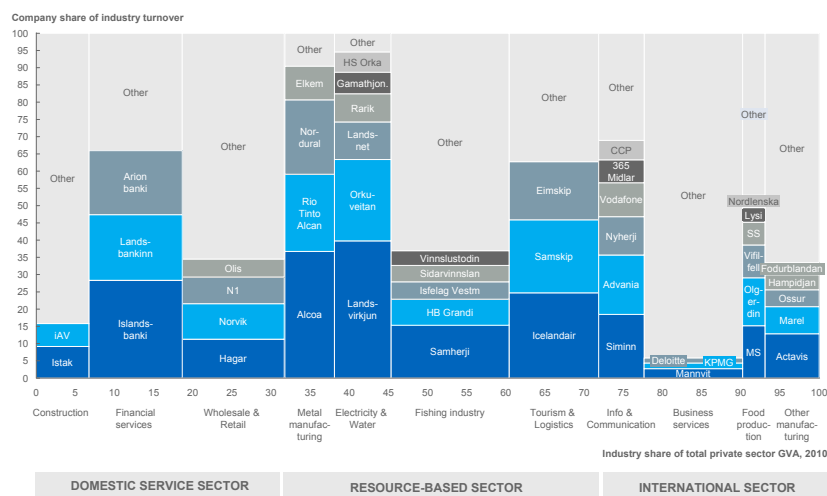
Shifting the focus from the macroeconomic perspective to the microeconomic foundation of the economy further underlines Iceland's current position as a resource economy. Exhibit 11 illustrates the composition of Iceland's largest businesses. The left-hand side includes businesses in resource-based industries, with aluminum and energy production on the far left. Not surprisingly, the degree of consolidation within these industries is high, so as to take advantage of available economies of scale in production. It is noticeable that the direct presence of foreign companies is almost exclusive to the metal manufacturing industry.

The fishing industry, tourism & logistics and certain domestic service industries, e.g. finance and retail, are moderately consolidated, whereas others remain fragmented, e.g. construction and business services.

Exhibit 11

Most Icelandic industries are shielded from international competitive forces

Share of industry turnover, 2010; Percentage



Note: Arts & Entertainment and Mining & Quarrying have been excluded as the turnover for these industries is less than 1% of total turnover
SOURCE: Heimur Publishing "300 Largest"; Statistics Iceland; McKinsey analysis

Exhibit 11 illustrates a fairly diverse business environment, despite the small size of the country, with many of the strongest firms operating in resource-based industries. Multiple industry "champions" exist in the different industries, however, contrary to other Nordic countries, the industrial "champions" are both fewer and operating at far less scale.

2.4 *The Icelandic economy has unique strengths and weaknesses*

Despite recent economic challenges, the Icelandic economy has proven to be resilient, and is still roughly on a par with peer countries, measured in terms of PPP adjusted⁶ GDP per capita⁷. However, a decomposition of this GDP per capita measure shows that the underlying drivers of production in Iceland are different to those in the Nordic countries and the UK (the peer countries that we have chosen to use as benchmarks in many of our analysis⁸). As illustrated by Exhibit 12, these three drivers of growth are⁹:

- Labor utilization (both employment ratio and hours worked)
- Capital intensity (the amount of capital per worker)
- Total factor productivity (output generated per unit of input)

Iceland significantly outperforms its peers in terms of both labor participation and hours worked, but capital intensity is slightly below average. However, the biggest performance gap is in total factor productivity, where Iceland trails far behind its peers. In the following sections we will examine each of these underlying growth drivers.

6 Purchasing power parity (PPP) is an economic theory and a technique used to determine the relative value of currencies, estimating the amount of adjustment needed on the exchange rate between countries in order for the exchange to be equivalent to (or on a par with) each currency's purchasing power. It asks how much money would be needed to purchase the same goods and services in two countries, and uses that to calculate an implicit foreign exchange rate.

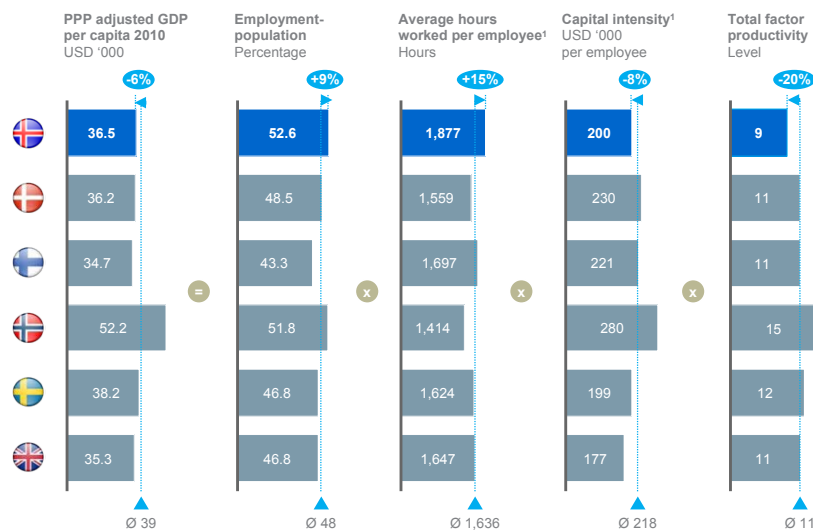
7 Using market exchange rates, Iceland's GDP per capita was approximately 25% lower than the average in the Nordic countries and the UK in 2010. This is primarily because of higher price levels in the Nordic countries than in Iceland.

8 For many examples and relative comparisons of economic performance we use the Scandinavian countries and the UK as a peer base. Much like Iceland, these countries are welfare states and, arguably, culturally similar to Iceland. Additionally, the countries are major trading partners of Iceland.

9 The decomposition is based on the Cobb-Douglas version of the Solow model, where GDP (Y) equals the product of capital input (K) to the power of alpha, labor input (L) to the power of (1-alpha) and total factor productivity (TFP). Alpha represents the output elasticity of labor input. We define labor input as employment times average hours worked per employee.

Exhibit 12

Iceland lags behind selected peer countries in terms of productivity



¹ The capital intensity should be lifted to the power of 0.3 (alpha) and average hours to 0.7 (1 - alpha) when multiplying

SOURCE: National Statistical Bureaus; Central Bank of Iceland; OECD; McKinsey Global Economic Growth Database; McKinsey Global Institute; McKinsey analysis

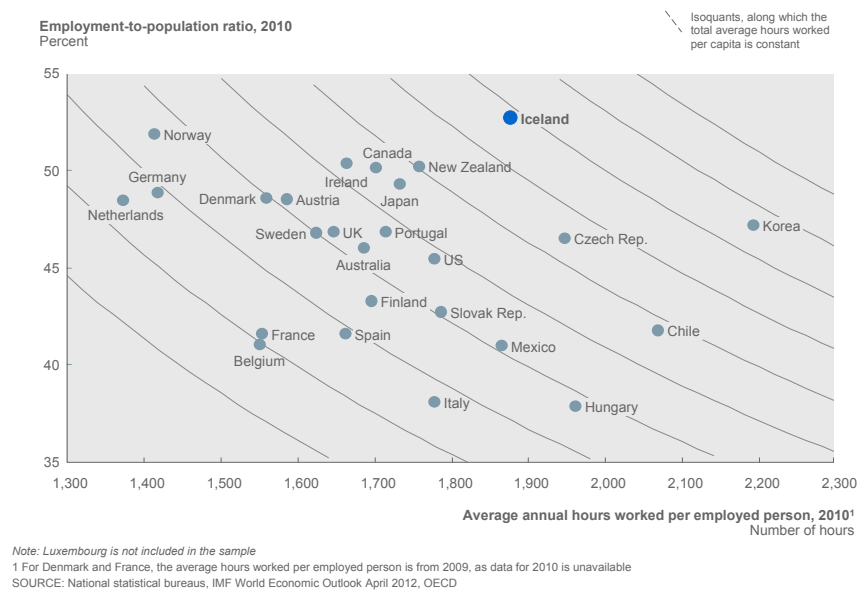
2.5 One of the hardest-working countries in the world

Iceland's labor-market conditions are very favorable compared with the rest of the world. Approximately 53 percent of the total population was employed in 2010, compared with an average of 48 percent in its peer group (Exhibit 12). A relatively low unemployment rate in comparison with current international levels (although very high compared to historic Icelandic levels), combined with a high female and youth participation rate explains this positive difference. On top of high participation rates, Icelanders work considerably longer hours on average than their peers, further adding to the supply of labor. Finally, structural unemployment has historically been very low.

Exhibit 13 compares Iceland to a large sample of developed countries. The horizontal axis represents the average annual hours worked per employee, and the vertical axis represents the employment to population ratio. With Iceland's combination of an employment to population ratio of 53 percent and average annual hours worked per employee reaching ~1,900, South Korea is the only country in the sample that is more hard-working than Iceland.

Exhibit 13

Working more offers limited growth opportunities for Iceland

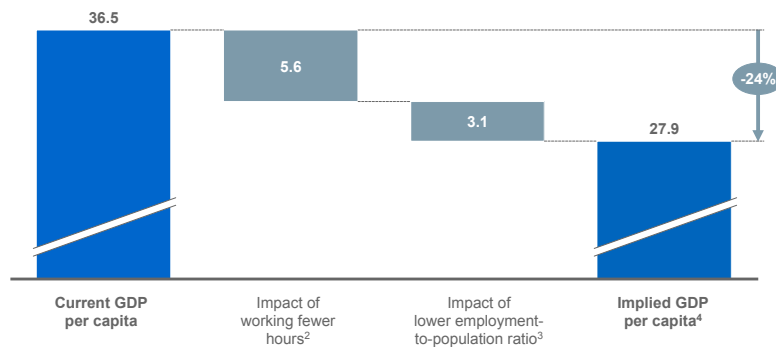


However, as the comparison of GDP per capita in Exhibit 12 reveals, Iceland does not fully reap the benefits of its hard work. Nordic peers have managed to keep the same level of production with much less labor input. In fact, if the labor supply (measured as the total number of hours worked per inhabitant) in Iceland matched that of our selected peer group, Iceland's production would illustratively drop by almost a quarter, leaving its per capita production level closer to that of Greece and Slovenia (Exhibit 14).

Exhibit 14

If Icelanders worked the same number of hours as the peer group¹ average, the GDP per capita would be significantly lower

Estimated decrease in Icelandic GDP per capita; USD thousands (PPP adjusted), 2010



¹ The Nordic countries and the UK. For this group the average hours worked per employee is 1,588 and the employment-to-population ratio is 47

² Calculated as the difference in hours worked times the GDP per hour worked. Implicitly assumed that the productivity is constant for all working hours

³ Calculated as the difference in employment-to-population ratio times hours worked per worker times the GDP per hour worked

⁴ Based on PPP-adjusted GDP per capita for 2010

SOURCE: Statistics Iceland; OECD; IMF World Economic Outlook April 2012

This has a fundamental implication for Iceland's growth strategy. First, given Iceland's high labor input, there seems limited scope for boosting production through increased supply of labor. Second, it becomes important for policy makers to consider the composition of the labor pool, i.e. whether the supply of educated workers is sufficient and whether the education system and other labor- and policy incentives support the appropriate mix of skills needed.

2.6 Higher investment rates needed to fuel growth

On the second driver of growth, capital intensity¹⁰, Iceland falls slightly below average compared to its peers (Exhibit 12). As capital is a necessary input for driving workforce productivity, it is particularly important to maintain and build up capital stock in a labor constrained economy like that of Iceland.

What is most important for growth is whether capital intensity is increasing or decreasing. In the years preceding the financial crisis, Iceland experienced a spike in investments, but since the crisis the investment rate has dropped significantly and is currently barely keeping up with wear and tear on the existing stock of capital.

With current investment levels well below its 15-year average (across business sector investment, residential construction and public investment – see Exhibit 15), and six

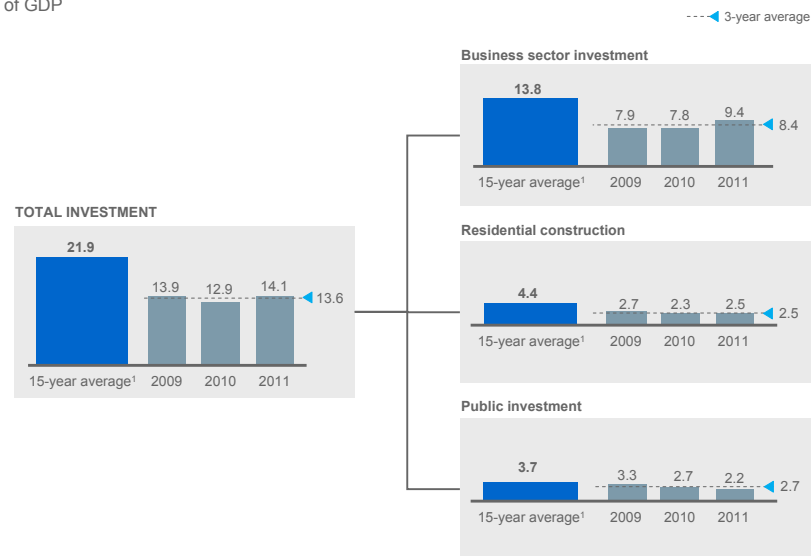
¹⁰ The capital intensity measures the amount of capital stock in the economy against labor input. The capital stock is defined as fixed capital stock including residential capital.

percentage points below the Nordic average, Iceland is only able to support a one percent annual long-term growth in real GDP per capita¹¹.

Exhibit 15

By historical standards, investment levels are very low

% of GDP



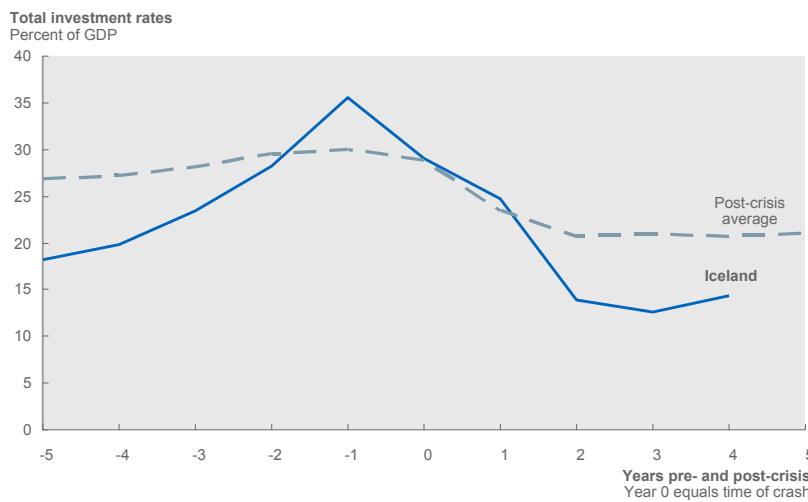
¹ Over the period 1997–2011
SOURCE: Statistics Iceland; McKinsey analysis

While the financial crisis has undoubtedly had a negative effect on investment, it is worrying that the post-crisis investment rebound has not been stronger. Exhibit 16 illustrates this point: comparing the investment trajectory in Iceland to that in other countries affected by the financial crisis, it can be observed that the fall in investment in Iceland is both steeper and slow in picking up post-crisis.

¹¹ Based on a Solow model simulation in which marginal returns on capital are assumed to be 0.3, and depreciation at historical levels, employment to population and capital stock to total output ratios remain constant.

Exhibit 16

Iceland's current investment rates are low compared to levels in other post-crisis countries¹



Note: Crises considered are Norway 1998, Japan early 1990s, Sweden 1991–1993, East Asian crisis 1997/1998 (Hong Kong, India, Korea, Malaysia, Philippines, Thailand), Argentina crisis 1999–2002, financial crisis 2007 (US and Iceland). This is the sample used in economic literature such as Reinhart and Rogoff (2009)

¹ Consists of Argentina, Colombia, Finland, Hong Kong, India, Japan, Korea, Malaysia, Norway, Philippines, Sweden, Thailand and United States.

SOURCE: IMF WEO April 2012, Reinhart and Rogoff "The Aftermath of Financial crises" (2009)

Despite a modest uptake in business-sector investment (Exhibit 15), the trajectory is still fragile owing to downside risks. Business leaders and investors highlight policy uncertainty, capital controls and lack of skilled labor as the main barriers to further investments. Unless the investment level rises substantially, Iceland is likely to face a serious challenge in terms of improving wealth creation and regaining its position as a high performer in terms of GDP.

2.7 Productivity is the Achilles heel

We identify productivity growth¹², the third and most fundamental driver of long-term economic growth, as a critical focus area for improving Iceland's long-term economic performance.

To better understand the root causes of the productivity challenge illustrated in Exhibit 12, we decompose productivity further into labor productivity and capital productivity, and compare relative performance across sectors of the Icelandic economy on those two measures.

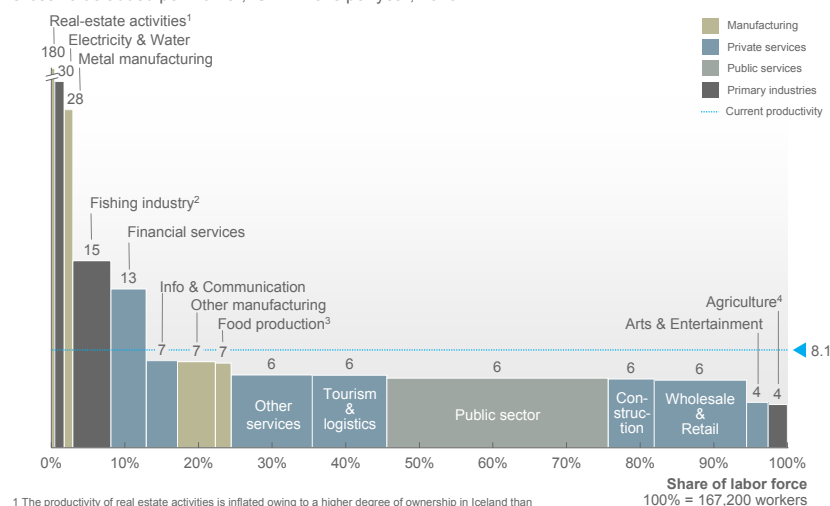
¹² Measured as total factor productivity, TFP, which measures the extent to which more output can be produced for a given level of labor and capital. Importantly, TFP growth incorporates the effects of changes in the degree of factor utilization, innovation and technological progress, as well the role of technology, scale and organization in contributing to labor productivity.

Exhibit 17 shows a labor productivity comparison of the Icelandic economy. On average, each worker in Iceland created ISK 8.1 million in Gross Value Added¹³ in 2010. However, there is a large variation in relative value creation between different sectors of the economy, partly driven by the characteristics of the individual industries. To the left, we see more productive sectors, such as the fishing industry, electricity and water, and metal manufacturing. These sectors are generally capital intensive in nature and among the most consolidated in Iceland. They also require a limited number of workers; for example, the number of workers in the Icelandic fishing sector has declined by 35% from the late 90s. Financial services also deliver above-average gross value added on a relative basis to other sectors¹⁴.

Exhibit 17

The Icelandic economy has a long tail of sectors with low labor productivity

Gross value added per worker, ISK millions per year, 2010



¹ The productivity of real estate activities is inflated owing to a higher degree of ownership in Iceland than in Nordic peer countries and larger non-official rental markets

² Includes fishing and fish processing

³ Excluding fish processing

⁴ Agriculture gross value add includes subsidies; as result, gross value added per worker is inflated

SOURCE: Statistics Iceland, McKinsey analysis

Apart from these sectors that are productive in terms of labor, the Icelandic economy has a long tail of relatively low value-adding sectors, such as agriculture¹⁵, wholesale and retail, and tourism and logistics, all relatively labor-intensive industries. Public sector gross value add per worker also comes out as relatively low; however, for the public sector this really only measures the cost of running public services, and is not indicative of important public service measures (e.g. the breadth, availability and quality of public services).

¹³ We measure labor- and capital productivity in terms of *Gross Value Added* per unit of labor and capital, which is equivalent to market value of products and services sold, less cost of intermediate goods used in production.

¹⁴ Due to the nature of financial services, the industry provides high relative value-add in most developed countries. However, growth potential is limited to domestic market, unless productivity levels are competitive in international context.

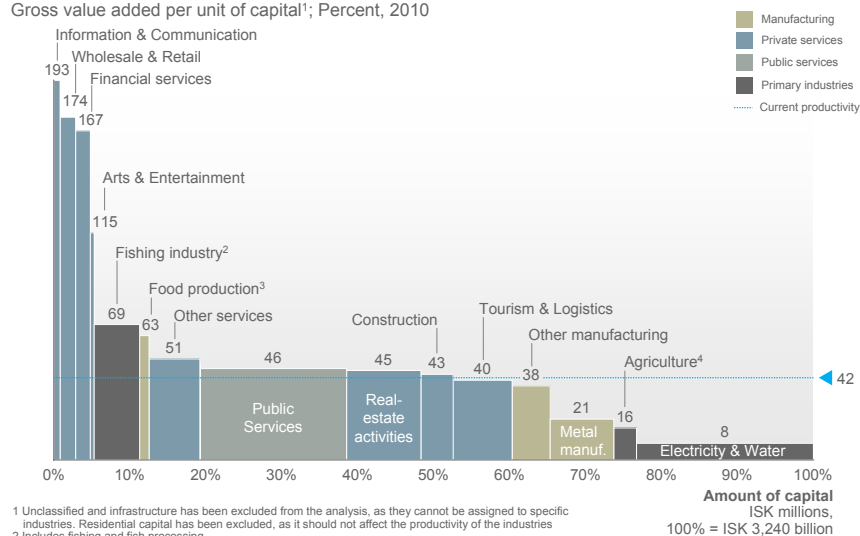
¹⁵ Gross value add for agriculture is not adjusted for government subsidies; as result, numbers for both labor and capital productivity in agriculture are inflated.

Turning our attention to capital productivity (Exhibit 18), the picture is almost turned upside down. Two industries perform well for both labor and capital productivity, namely the fishing industry (we cover fishing industry productivity in more detail in Chapter 5.2) and financial services. Electricity, water and metal manufacturing, on the other hand, now appear on the right hand side, indicating a low return on capital invested in these sectors. With roughly 25-30% of invested capital in Iceland committed to these two sectors, this is indeed detrimental to the overall capital productivity of the Icelandic economy.

Exhibit 18

Overall capital productivity depressed by a low performing electricity and energy-intensive industry value chain

Gross value added per unit of capital¹; Percent, 2010



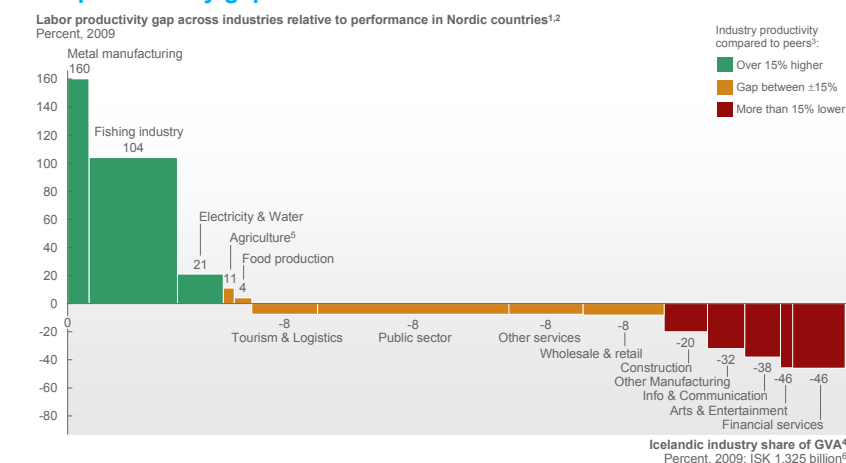
1 Unclassified and infrastructure has been excluded from the analysis, as they cannot be assigned to specific industries. Residential capital has been excluded, as it should not affect the productivity of the industries
 2 Includes fishing and fish processing
 3 Excluding fish processing
 4 Agriculture gross value add includes subsidies; as result, gross value added per worked is inflated
 SOURCE: Statistics Iceland, McKinsey analysis

Exhibits 17 and 18, however, only paint a relative picture of Icelandic productivity¹⁶. To facilitate a better understanding of how different Icelandic industries perform in an international context we have compared labor productivity within each industry to the average for the Nordic counterpart. Exhibit 19 illustrates this performance comparison, the horizontal axis showing the relative size of the industry in Iceland (based on gross value added (GVA) contribution) and the vertical axis shows the percentage difference in labor productivity within the respective industry compared to the Nordic average.

¹⁶ Appendix B includes a breakdown and further discussion of capital and labor productivity within different industries.

Exhibit 19

Relative to the Nordics, the resource-based industries perform well, while productivity gaps exist for all other industries²



1 Icelandic GVA per worker compared to average of Denmark, Norway and Sweden measured in terms of market based prices (industry breakdown of subsidies was not available. Public sector productivity is cost-based (no market prices exist for public services))
2 Due to the currency depreciation, the relative productivity levels in internationally oriented sectors (e.g., metal manufacturing, fishing and electricity industries) are inflated by this measure. On market exchange rate terms, the electricity & water sector, for instance, would be -16% and not +21%.
3 Numbers have been adjusted according to the overall difference between Iceland's implied PPP adjustment rate and the average of Denmark's, Norway's and Sweden's implied PPP adjustment rates.
4 Owing to the relatively high proportion of home ownership in Iceland, the labor productivity of real-estate activities is very hard to compare.
5 Thus, real-estate activities have been taken out of this comparison and other industries' share of GVA adjusted upwards accordingly.
6 Due to data limitations it was not possible to correct for subsidies to agriculture at the time of writing this report; as result, Icelandic labor productivity in agriculture is inflated.
7 GVA measures production value before indirect taxes and subsidies (see appendix A for further description).
8 SOURCE: National statistical bureaus; IMF World Economic Outlook April 2012; McKinsey analysis

Icelandic productivity is approximately 20 percent below the average of Scandinavian peers. This simply means that the equivalent level of factor input (labor and capital) returns less output in Iceland than in peer countries.

This analysis further underlines the importance of the resource-based sector. There are three sectors that significantly outperform their Scandinavian peers: metal manufacturing, the fishing industry and energy production. These are highlighted in green in Exhibit 19. With its large relative share of gross value add and its strong advantage in terms of productivity, the fishing industry is particularly important. Furthermore, as described earlier, the fishing industry has managed to deliver high returns on both capital and labor, despite operating in an environment constrained by the supply of natural resources. Agriculture is also resource based and is shown in Exhibit 19 as outperforming the Nordic productivity average by 11%. This, however, is not a reflection of high productivity but rather due to higher subsidies to Icelandic agriculture than is the case in other Nordic countries on average¹⁷.

Compared to its Nordic counterparts, most of the domestic service sector¹⁸ underperforms – though with significant variance. Large sectors, e.g. public services¹⁹,

17 Due to data limitations it was not possible to correct for subsidies to agriculture at the time of writing this report. A recent and detailed comparison of subsidies to agriculture in Iceland and other OECD countries is given in *Agricultural Policy Monitoring and Evaluation 2012: OECD Countries*, OECD, September 2012.

18 Chapter 5 includes a description and definition of the three segments of the economy.

19 It should be taken into account that in this comparison, public service productivity is assessed at cost-based value as there are no market prices. The difference in public sector productivity indicated in Exhibit 19 may therefore be an indication of lower salaries rather than low output per worker. As shown in Section 6.3 employment in health services, education and public administration is similar in Iceland as in other Nordic countries.

business services and wholesale & retail, lag slightly behind the Nordic average, while productivity in other service industries, e.g. financial services and construction, lags much further behind. Finally, the international sector – in particular manufacturing – lags far behind.

A pari passu comparison of productivity in Iceland versus a Scandinavian average is inherently difficult. Clear factors distorting such a comparison are the small size of the Icelandic economy and the geographic distance to key trade partners. In our view, however, these are factors that must be compensated for, rather than accepted, in solving the Icelandic productivity challenge.

3



The path to sustainable growth

Although overall productivity in Iceland is lower than that of its peers, relative performance varies substantially from one industry to another. Some industries generate as much (or more) value per unit of input, while others lag far behind.

There is therefore no single growth measure that applies universally across the economy. In order to capture the growth opportunities for the Icelandic economy and drive up living standards, it is necessary to implement a comprehensive and broadly-scoped strategy that focuses on both industry-specific measures and enablers of growth. The common objective is to increase the productivity of the Icelandic workforce – both through sectoral efficiency improvements and by growing the share of high-value added sectors.

Even though the current unemployment rate is high in historical terms, Iceland's labor market conditions are extremely favorable in international terms. This advantage largely compensates for the low overall productivity in the economy. Iceland's biggest growth opportunity involves increasing the value generated by each worker. From a long-term perspective, the focus should consequently be as much on creating the right jobs as on creating just any new jobs.

3.1 The Icelandic economy's three industry segments

For the purpose of developing a suitable growth strategy for the different industries in Iceland, we have split the economy into three broad segments: the domestic service sector, the resource based sector and the international sector:

- *The domestic service sector* includes industries that mostly provide non-tradable goods and services for the domestic market. In general these industries are mature, with a demand that is highly dependent on development in domestic economic activity. Exposure to foreign competition is generally low²⁰, and productivity is fairly low across most industries within the sector. Since most businesses operating in the sector mainly service local markets²¹, their mobility, i.e. the potential to move operations to other countries, is limited.
- *The resource-based sector* includes industries that require domestic natural resources as an input for their production. The bulk of this segment in Iceland belongs to three industries: the fishing industry, the energy sector²² and tourism. These are chiefly mature industries, producing tradable goods and facing a high level of exposure to foreign competition. Average value added is high, though this varies from one industry to another.

20 New information technologies may provide opportunities for international growth in certain services. However, those activities are included in the international sector discussed later.

21 Owing to the lack of international competitiveness and an ongoing transformation phase in Iceland's financial sector, we decided to include it within the domestic service sector, even though it is categorically a service that can be provided across borders.

22 Metal manufacturing and energy production are combined in this coverage due to the heavy reliance on energy. In view of the large proportion of Iceland's energy production utilized for metal manufacturing (81% of total), this was considered appropriate

- *The international sector* includes businesses that produce tradable goods and services that are largely independent of local natural resources. These industries typically compete in an international environment, although trade policies protect or hinder some of them. There is thus a high level of growth potential, mainly limited by the competitiveness of the companies themselves. Value added and the maturity of businesses varies significantly within the sector. As this sector includes knowledge export, it can expand through generation of new businesses and ideas from the other two sectors of the economy, e.g. development of geothermal technology or software solutions in fisheries that can be sold abroad.

Owing to differences in current productivity levels, growth constraints and exposure to global forces, each segment requires a unique approach to improving productivity and unlocking growth potential.

Exhibit 20 summarizes the key elements of each segment and outlines the industries it includes. The domestic service sector is the largest sector in all three regards: GDP share, employment and capital stock. This also illustrates the different factor composition in these industries, with a high level of labor utilization in the domestic service sector and the international sector, whereas the natural resource based segment is more capital intense.

Exhibit 20

Iceland's industries can be split into three segments based on their nature and their operating environment

	Domestic service sector	Resource-based sector	International sector
Nature and operating environment	▪ Mature, mostly non-tradable, local market and limited foreign competition, low average value add and growth potential based on domestic economic activity	▪ Mature, tradable, global market, exposed to foreign competition, high value add (excl. Tourism & Agriculture), constrained growth opportunities and limited mobility of businesses	▪ Maturity varies widely, domestic and international customers, exposed to foreign competition, value add varies, high growth potential and high mobility of businesses
Industries	▪ Financial services ▪ Retail & Wholesale ▪ Construction ▪ ICT¹ – local ▪ Business services – local ▪ Tourism & Logistics – local ▪ Arts & Entertainment ▪ Public Services	▪ Fishing industry ▪ Energy & Water ▪ Metal manufacturing ▪ Tourism & Logistics – global ▪ Agriculture	▪ Manufacturing ▪ Business services – global ▪ ICT – global ▪ Innovation
% of GDP	65	23	12
% of employment	70	15	15
% of capital stock	45	45	10

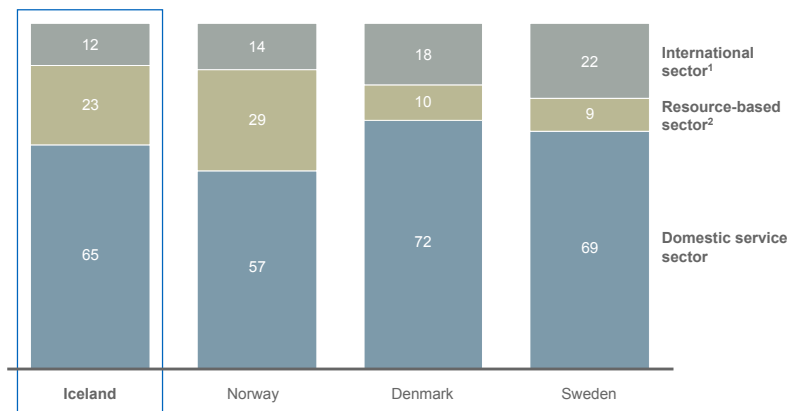
¹ Information and communication technology
SOURCE: Statistics Iceland; McKinsey analysis

Comparing the size of these three sectors with Nordic peers further underlines the nature of Iceland as a resource-based economy (Exhibit 21). The current structure is comparable with that of Norway, with its major contribution from the resource-based sector and its relatively low contribution from the international sector.

Exhibit 21

Compared to Scandinavian peers, Iceland is characterized by a large resource-based sector and a small international sector

Total share of value added by sector group, 2009; Percent



¹ Includes manufacturing (excluding metal manufacturing and fish processing), and internationally exposed share of ITC and other services

² Includes fishing industry, mining, agriculture, oil, energy production, metal manufacturing and half of tourism value add

SOURCE: Statistics Iceland; Statistics Denmark; Statistics Norway; Statistics Sweden; McKinsey analysis

3.2 A comprehensive plan is needed

There are two complementary levers for increasing productivity: directly increasing sectoral productivity and steering resources towards higher productivity sectors of the economy (the former having more impact than the latter).

In order to maximize the impact of sound economic strategy, it is necessary to focus on the overall economy instead of limiting the scope of strategy to specific sectors. We believe that Iceland should combine a wide range of industry specific measures with broader initiatives to produce enduring and stable productivity growth.

However, historically, Iceland's economic policy has focused on narrower sector-focused growth enablement. Policy development and investment in the fishing industry were the main drivers of industrialization in Iceland. As a result, until the latter part of the 20th century, economic welfare was largely dependent on fish stocks. The next wave of growth came from energy, with large investments in hydro, geothermal and metal manufacturing. At the beginning of this millennium the focus shifted towards financial services and global investments. The crisis of October 2008 brought this last wave to an abrupt end.

Going forward, policy makers should think about more systematic and longer-term promotion of growth. In addition to achieving increased stability and more sustainable growth, pursuing an integral policy based on sound economic principles would help restore Iceland's credibility in the global markets. Exhibit 22 outlines the different priorities in each sector of the economy.

- *The domestic service sector* makes up the core of the economy, employing more than two-thirds of all workers. Low productivity indicates major opportunities for improvements within the sector. Improved productivity would not only fuel overall economic growth but also free up competent personnel. Facilitating relocation of surplus labor from the domestic service sector to other sectors with higher value generation potential would further contribute to economic welfare. Key measures to drive this development include enhancing competition, simplifying the customs environment and removing trade barriers, building up scale in the relevant industries and managing the public sector efficiently. Establishing a “pull” from other sectors would naturally ease this process.
- Because of the constrained supply of natural resources, efforts to generate growth within the *resource-based sector* should focus on maximizing the value of available resources. Opening up new markets, creating brand value and investing in equipment and infrastructure that support value generation are key measures towards that goal.
- *The international sector* offers a large, unharnessed opportunity for growth, but is also the most challenging sector to develop. To date, the economic importance of the international sector has been less critical, owing to the strength of the resource industries. Considering the mobile nature of the international sector industries, it is particularly important for policy makers to facilitate a competitive business environment that allows current and new players to grow and develop. This primarily relates to policy stability, availability of skilled and qualified human resources and access to capital. While established companies form the backbone of the international sector, facilitating rejuvenation and building a strong entrepreneurial environment will ensure the long-term sustainability of the sector.

Exhibit 22

Different priorities apply to each segment of the economy



SOURCE: McKinsey analysis

It is our view that this strategic outline, which covers all segments of the Icelandic economy, can serve as the path for Iceland's journey towards sustainable economic growth. The following chapters include a more detailed strategic roadmap for each segment of the economy and outline both key barriers to productivity and opportunities for improvements. In the final chapter of the report, the common elements across segments are explored further to help synthesize possible policy implications for Icelandic decision makers and stakeholders

4



Increased efficiency in the domestic service sector

4.1 Significant slack in domestic service sector

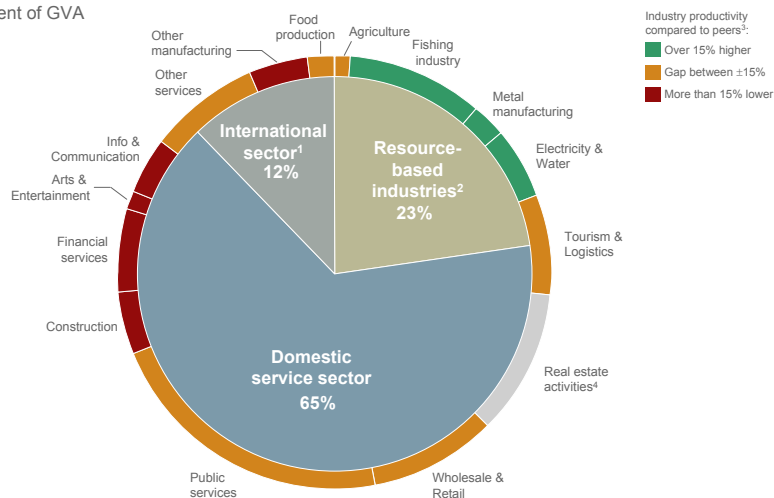
By supporting competition and facilitating further openness in the economy, substantial productivity improvements can be unlocked in the domestic service sector. The sector plays a vital role in Iceland's economic performance, as it currently contributes 65 percent of GDP and employs over 70 percent of workers. Productivity improvements will not only fuel growth through expansion of the portfolio and quality of domestic services, but will also stimulate growth of globally competing industries through improved access to labor and more cost-competitive intermediate inputs.

Owing to its large share of the economy, it is virtually impossible to make meaningful overall productivity gains without improvements to the service sector. As described in Chapter 2, productivity within the sector is significantly below the average of Iceland's peers, indicating substantial scope for improvement (Exhibit 23)²³.

Exhibit 23

The service sector makes up the majority of the economy and includes many of the least productive industries

2009; percent of GVA



¹ Includes manufacturing (excluding metal manufacturing and fish processing), and internationally exposed share of ITC and other services

² Includes fishing industry, mining, agriculture, oil, energy production, metal manufacturing and half of tourism and logistics value added

³ Productivity gaps compared to PPP-adjusted industry average of Denmark, Norway and Sweden

⁴ Owing to the relatively high proportion of home ownership in Iceland, labor productivity of real estate activities is not compared with the other Nordics countries

SOURCE: Statistics Iceland; Statistics Denmark; Statistics Norway; Statistics Sweden; McKinsey analysis

In our definition, the domestic service sector includes wholesale & retail, construction, arts & entertainment, financial services and the public sector, as well as the domestic component of tourism & logistics, information & communication and business services.

Improved efficiency in these industries makes a direct and significant contribution to economic growth, as well as having an indirect impact on growth through two main channels. Firstly, increased productivity may reduce the labor requirement within the sector, allowing reallocation of surplus employees to more labor-constrained parts of the economy. Secondly, increased productivity generates scope for a decrease in relative

²³ Owing to the relatively high proportion of home ownership in Iceland, labour productivity in relation to real estate activities gets substantially inflated when compared to the peer group. Labor productivity within real estate activities is therefore not included in this comparison.

prices of domestic services, lowering input costs for other sectors. In combination, these effects will serve to strengthen growing industries and facilitate the quality and breadth of available domestic services.

By moving to the same level of productivity as the other Nordic countries, almost 20 percent of labor could be freed up for improved production in the domestic sector or in other sectors. This is equivalent to the productive capacity of 13,000 employees.

Productivity gaps in the public sector are likely to be similar to those observed in other Scandinavian countries. Illustratively, a productivity gain of 10% in the public sector could, over the long-term, release an additional 4,000–5,000 workers into potential growth sectors of the economy.

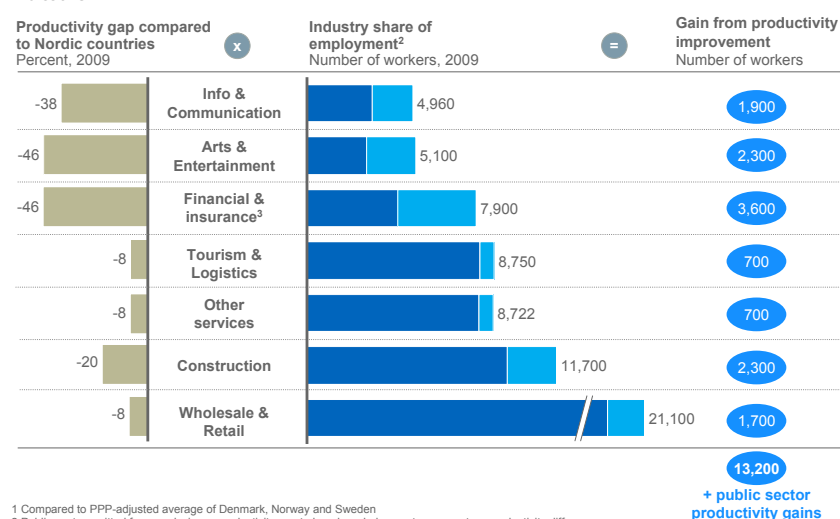
As an example of an adjustment process, the number of banking sector employees fell by 8% in Norway from 1990 to 1998, partly reflecting the impact of the financial crisis in Norway in the early 90's. Norwegian experience showed that the skills of financial sector employees were of significant value to other sectors. With the right policy mix, a transition such as this should take place without a prolonged increase in unemployment.

Exhibit 24 illustrates the labor available for improved services or redeployment from each domestic sector, assuming that Iceland catches up with the productivity of its Nordic peers. Even though this is a simplified version of reality, it shows that such an improvement would have a substantial impact. As an example, the productivity gap in the broad financial and insurance services indicates that the industry could deliver the same output with almost half as many employees, potentially allowing longer-term reallocation of 3,000–4,000 employees to other sectors. In addition to financial services, all other industries in the domestic service sector (wholesale & retail, construction, information & communication, the public sector and arts & entertainment) offer significant scope for productivity improvement.

Exhibit 24

The equivalent of ~13,000 employees could be redeployed to other value-generating jobs if Iceland catches up with Nordic countries' productivity¹

Indicative



¹ Compared to PPP-adjusted average of Denmark, Norway and Sweden

² Public sector omitted from analysis, as productivity gap to benchmark does not measure true productivity difference

³ Broad financial and insurance service, as defined by Statistical classification of economic activities in the European Community (NACE)

SOURCE: Statistics Iceland; Statistics Denmark; Statistics Norway; Statistics Sweden; IMF World Economic Outlook April 2012; McKinsey analysis

Importantly, it should be noted that some of these sectors could realize a productivity gain by increasing volume of output, rather than maintaining current output levels with less resources.

4.2 Competition as a key driver of productivity

Creating a competitive environment will enable substantial productivity gains within the service sector. Academic research generally focuses on three mechanisms through which competition affects productivity:

- Competition facilitates reallocation of resources to the most productive firms²⁴. Competition allows successful, productive firms to gain market share and efficiencies of scale. It also facilitates the entry of new players, whilst ensuring that less productive firms either improve or exit from the market.
- Competition encourages managers to reduce inefficiencies²⁵. The degree to which firms adopt best-practice techniques, e.g. leveraging economies of scale, ensuring efficient division of labor, offshoring and minimizing input costs, drives a firm's efficiency. Research conducted by McKinsey & Company and the London School of Economics has shown a strong correlation between the level of perceived competition and management quality, which in turn is closely linked to a firm's productivity growth.
- Competition exposes firms to new ideas and provides an incentive for innovation²⁶. Empirical evidence shows that increased competition facilitates adoption of new technology, leading to substantial productivity gains.

4.2.1 Gaps in the competitive environment

Iceland's institutional structure and its competition laws are similar to those of its peers, though there are two challenges of particular concern to Iceland in creating a healthy competitive environment:

- **Size of the economy:** The small size of the Icelandic economy places substantial constraints on how much companies can grow without gaining a dominant market

24 Arnold, Nicoletti and Scarpetta, for example, find that resources were allocated at industry level less efficiently across firms in countries where service regulations are less market-friendly. See *Regulation, Allocative Efficiency and Productivity in OECD Countries* (2008).

25 There are two streams of literature regarding the effects of competition on incentives – the first analyses competition effects in terms of the comparative performance information that other firms can provide, enabling the principal to estimate agent effort with greater precision (e.g. Meyer and Vickers, *Performance Comparisons and Dynamic Incentives* (1997)); the second analyses the direct effects of product market competition on agent effort (e.g. Schmidt, *Managerial Incentives and Product Market Competition* (1997)).

26 Academics debate the exact relationship between competition and innovation. Some find clear evidence of a positive relationship between competition and innovative activity at industry level, e.g. Nickel (*Competition and Corporate Performance* (1996)), while others, such as Aghion et al. (*Competition and Innovation: An Inverted U-Relationship*, (2005)), find that the impact of competition on innovation depends on specific industry characteristics (e.g. the distance of a given firm to the technology frontier).

position. In general, scaling up efficient firms and consolidating industries are important contributors towards higher overall productivity. However, in a small market like Iceland, competitive distortion can easily outweigh the productivity upside in terms of scale, and this balance must be effectively managed.

- **High level of leverage and corporate ownership structure.** The restructuring process in the aftermath of the financial crisis has created substantial challenges for the competitive environment due to a high general level of corporate leverage and issues caused by a lack of defined private ownership. A high level of leverage and foreign currency exposure wiped out a large part of the equity in Iceland's corporate sector during the financial crisis, leaving the majority of companies unable to service their debt. As a result, banks acquired ownership of a large proportion of the sector, peaking at 68 percent shortly after the height of the crisis²⁷.

In addition to these economy-wide issues, there are various industry specific gaps in the competitive environment. The Icelandic competition authority (ICA) has published a comprehensive report outlining over 100 industry-specific gaps in the competitive environment and suggestions for improvements²⁸. The report published by the ICA is complementary to the broader strategic discussion in this chapter.

4.2.2 Supporting competition through increased openness

As the Icelandic market is relatively small, creation of a favorable competitive environment is a challenge. Expanding market size through global integration would allow Iceland to benefit from economies of scale while preventing single firms from acquiring too much market power.

Mitigating the trade-off between operating scale and market dominance by increasing the openness of the economy is even more relevant for Iceland, owing to the relatively low productivity levels of domestic service industries. Higher global exposure complements effective domestic competition policy and drives up productivity. As described in previous chapters, comparing productivity across Iceland's industries illustrates the fact that the export industries are the most productive. This relationship is well documented by academic research²⁹ and can be attributed to the fact that competing in the global marketplace leaves far less scope for wasted resources and forces companies to optimize efficiency.

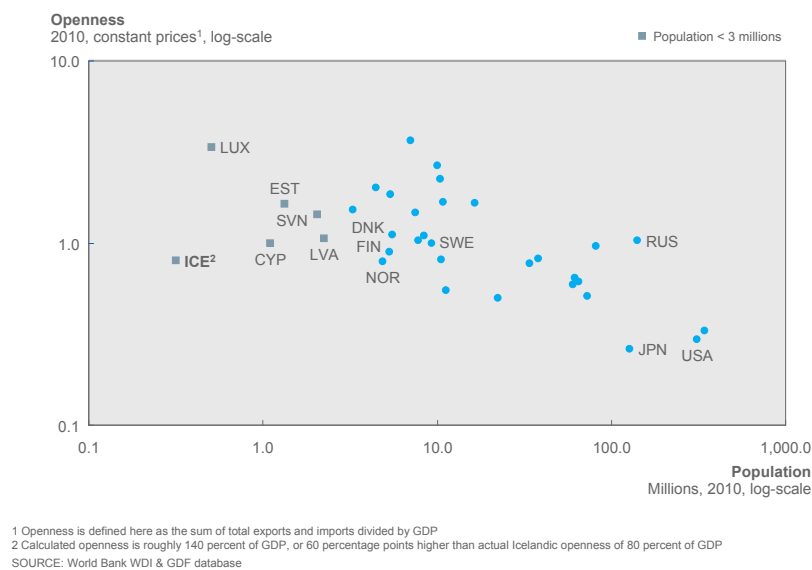
27 Icelandic Competition Authorities (Report 2/2011).

28 Icelandic Competition Authorities (Report 2/2008).

29 Melitz (*The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity* (2003)) shows how the exposure to trade induces only the more productive companies to enter the export market, while some less productive companies continue to service only the domestic market. He also shows how the aggregate productivity growth generated from this process leads to a welfare gain, thus further underlining the benefit from trade.

Exhibit 25

Icelandic openness, measured as total imports and exports to GDP, is low in an international comparison



Measured as the sum of imports and exports over GDP, Iceland's economy is far less open than expected, given the country's population. Exhibit 25 is a simple illustration of the interplay between population size (horizontal axis) and the openness of economies (vertical axis)³⁰. Iceland's position falls significantly below the expected position in general terms. Several other factors come into play, e.g. distance to markets and the fact that Iceland has its own currency, but the extent of the deviation indicates that Iceland's lack of openness to trade goes beyond those factors.

Further economic openness would facilitate productivity gains through improvements in efficiency of domestic companies. This would impact on the Icelandic economy in two important ways: lower input costs and allowing offshoring of low value-adding activities. Input costs drive a large share of overall costs in many service industries, e.g. construction, transport and communication. Lowering these input costs would lead to direct efficiency gains. Past McKinsey Global Institute (MGI) analysis³¹ has shown that up to 11 percent of worldwide service employment could be offshored³². There is significant potential for value creation – MGI estimates that 30-40 percent cost savings in service sectors are achievable through improvements in task and process re-engineering. Offshoring is one of the means to this end.

30 Even though Exhibit 25 is a simple version of this relationship, the correlation between size and trade has been confirmed and documented, e.g. by Spolare and Wacziarg (*Trade, Growth and the Size of Countries* (2005)).

31 See *The Emerging Global Labour Market: The Demand for Offshore Talent in Services*, MGI (June 2005).

32 There is significant variation in the amount of labor that industries can employ remotely, e.g. only about 3% of retail sector jobs could be performed remotely, compared to almost half of all employment in the packaged software industry.

Additional opportunities exist for a more direct global integration of the domestic service sector by attracting foreign direct investment (FDI) into the sector. Currently, FDI in the service sector is almost exclusively the result of credit restructuring, and important industries remain without the presence – either direct or indirect – of a non-domestic player. Further competition from foreign players would expose local firms to best-practice processes, stimulate adoption of new technologies, boost competition and partially offset the trade-off between scale and competition.

Box 1.

Unlocking productivity potentials in retail through increased openness

Iceland can substantially improve retail sector productivity by reducing and simplifying customs and tariffs and liberalizing retail sales of regulated consumer goods. The Icelandic retail market is very small by international standards, with a total turnover of under EUR 2bn in 2011. By way of comparison, Walmart's total turnover was around EUR 350bn for the same period. This small market size places considerable constraints on the potential for scaling operations.

The highly concentrated grocery market accounts for almost half the turnover in retail. Between 80 percent and 90 percent of total turnover is in the hands of three players, with the largest controlling nearly half the market. These players' buying power is assumed to be very strong, potentially leading to more favorable terms with wholesalers than smaller stores are able to obtain. Offering quantity discounts is standard practice, but with such a level of concentration this generates significant barriers to entry. However, despite the major retail companies' large market share, their scale is still limited compared to that of regional and global players. The Icelandic retail industry consequently lags behind peer countries in terms of both labor and store space productivity.

Competitive intensity is a key driver in retail, providing an incentive for ongoing innovation and the adoption of better practices, whilst at the same time ensuring that productivity gains are passed on to consumers through more attractive products and lower prices. This in turn boosts demand, creating a virtuous circle of expanding domestic demand and sector growth. Business turnover tends to be high, with productive companies gaining market share and replacing less productive ones.

The most effective way of promoting competition within Iceland is to simplify and liberalize customs regulations and substantially reduce tariffs and other trade barriers. This will encourage international players to enter the market and reduce domestic retailers' dependency on local suppliers. Breaking up large retail companies is not necessarily an advisable measure, as their scale is already low in an international context, and, moreover, competition laws are intended to prevent abusive behavior by dominant players.

Experience shows that while trade protection has helped create local industries in some countries it generally leads to low productivity and vested interests. Currently

only a third of groceries sold in Iceland are imported, with the remainder coming from domestic agriculture and food production. Reducing trade barriers would thus create productivity benefits beyond retail, stimulating further specialization and efficiency improvements through competition within those two industries.

Exhibit 26

Despite consolidation within the retail industry, the scale of the largest player is still limited in an international context



¹ Based on annual reports, using average exchange rates for 2010
SOURCE: Icelandic competition authorities; Euromonitor; Centre for retail studies; Statistics Iceland; McKinsey analysis

4.2.3 High corporate debt levels and lack of private ownership can still distort competition

The high level of leverage in the corporate sector, bank ownership of companies owing to companies not being able to service their debt, and a complex and lengthy restructuring processes and in the aftermath of the financial crisis have all posed challenges to the competitive environment in Iceland. This is particularly the case for the domestic service sector, which was left with a very high average level of leverage after the financial crisis, largely owing to foreign currency liabilities not being matched with sufficient foreign currency earnings.

According to an assessment made by the Icelandic competition authorities³³ the average debt-to-EBITDA ratio of Iceland's largest business was 5.9 in 2010 and the average equity ratio was only 21%. These ratios had improved to 5.1 and 31%

33 Icelandic Competition Authorities (Report 2/2011)

respectively in the beginning of 2012, which is still more than twice the average leverage of European benchmarks³⁴.

Significant improvements have been made in moving ownership from banks to private investors with this ratio gradually dropping. However, the ratio of firms considered to be under bank ownership still remained at around 27% in the beginning of 2012.

The Icelandic competition authorities have pointed out a number of potential conflicts of interest and competitive distortions that may result from the current widespread bank ownership, e.g. the fact that bank ownership may:

- a. Discriminate between a company they own and a competing customer with regard to access and terms of funding;
- b. Keep business-to-business transactions within their portfolio and direct their own business to companies owned by them;
- c. Have access to confidential information about direct competitors of companies within their portfolio;
- d. Be tempted to fund temporary losses so as to increase market share before commencing sales processes.

These are all factors that can damage the competitive environment and harm productivity. A delayed restructuring process and a high level of corporate leverage are also likely to generate productivity losses, as

- a. Debt overhang can lead to an inefficient investment strategy or insufficient investments;
- b. Valuable resources are used for accountants, lawyers and other advisors in non-operational activities such as debt negotiations and restructuring activities;
- c. Companies may be overleveraged, owing to inefficiencies rather than external events. Keeping such “zombie companies” alive, instead of liquidating them, is harmful for the overall economy³⁵.

To prevent long-term competitive distortion as a result of the corporate restructuring process, it is important that policymakers equip competition authorities with the tools, capabilities and resources to deal efficiently with these circumstances. At present, long processing times by the competition authorities create uncertainty in important matters for many businesses. Addressing this through increased resources, clearer guidelines or improved efficiency within the competition authorities would be beneficial for both regulators and businesses.

³⁴ Icelandic Competition Authorities (Report 3/2012)

³⁵ See Caballero, Hoshi, and Kashyap (Zombie Lending and Depressed Restructuring in Japan, (2008)) for an empirical analysis of the subject

To facilitate the process of moving ownership from banks to long-term owners, competition authorities need to enforce sales time constraints, ensure that companies currently under bank ownership have clear guidelines on acceptable market behavior and act firmly and quickly when competition laws are broken.

Policy makers can further facilitate the process by creating a favorable environment for banks to divest and/or list positions. Key policy objectives should include promoting sales process transparency, providing incentives for banks to list/divest the companies with an optimal capital structure and to support rebuilding of domestic capital markets.

Box 2.

Unlocking productivity potential in finance through foreign competition

Compared with peers, there seems significant scope for cost consolidation and increased productivity within the Icelandic banking sector.

The past decade has been a turbulent period for the industry. – A period that started with rapid expansion and internationalization up until 2008. The system collapsed at the height of the financial crisis, and it has since undergone an extensive restructuring process. Inefficiencies in the system are thus to some extent a consequence of the pronounced shrinkage of the banks' balance sheets and the extra resources needed to manage the restructuring and recovery process.

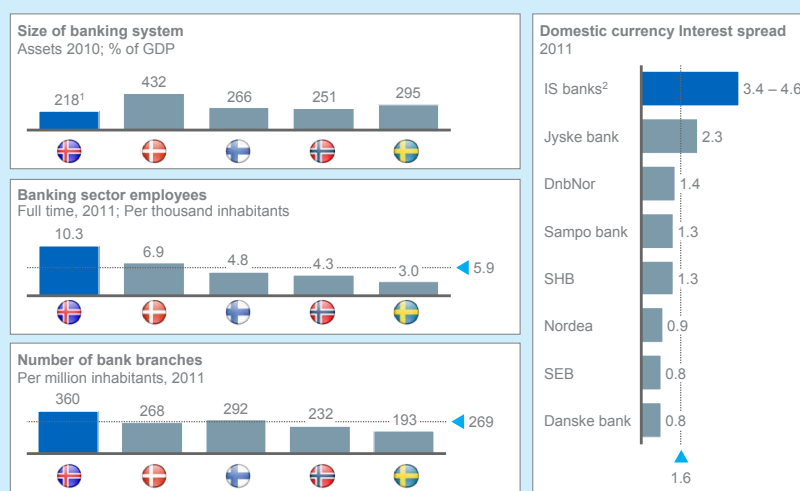
The Icelandic banking sector employs twice as many employees per capita as its peers, and operates nearly 50 percent more branches per capita. On the other hand, it has the smallest asset base relative to GDP within the peer group. On the positive side, the Icelandic financial sector has a very modern infrastructure (e.g. payment and clearing systems) and a high level of technology adoption, offering good prospects to minimize costs. Part of the new banks' restructuring process involves deciding on a future business model that will bring adequate returns with an acceptable risk.

If there is scope for it in the competitive environment, there is a risk of banks rolling over the cost of their inefficiencies onto customers. Exhibit 18 shows that Icelandic banks currently have higher interest spreads than those of the main Nordic banks. In a competitive environment, raising premiums on loans or lowering the interest offered to depositors would drive customers away and damage profitability. Enabling competition is thus a key element in ensuring that inefficiencies in the system are unsustainable in the long term. The most effective way to enhance competition would be to attract foreign players into the market.

Box 2. (continued)

Exhibit 27

The Icelandic banking sector has ample room for cost rationalization and productivity gains



¹ Calculations based on mainland GDP

² Reported interest spread (range) for three largest Icelandic banks

SOURCE: World Banking Intelligence, Nordic Bank Statistic 2011; Annual statements; McKinsey analysis

4.3 The public sector also has significant improvement potential

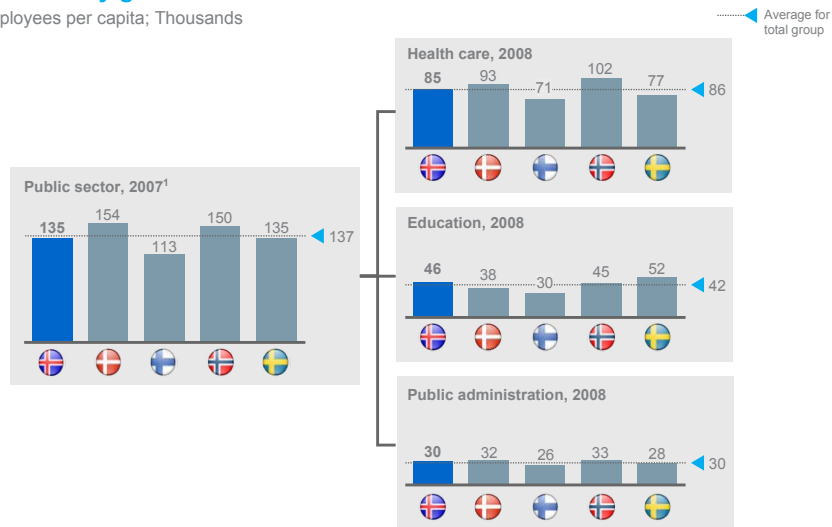
Although not addressed in detail in this report, improvement to public sector productivity is an important part of an economy-wide growth strategy. The sector represents almost a third of total employment in Iceland, and total government expenditure was approximately 46 percent of GDP in 2011. As public sector wage increases have generally followed suit with the private sector, it is paramount that public sector productivity improves in tandem with the private sector. Otherwise there is a risk of the so-called “Baumol Effect”, whereby the public sector requires an increasing level of taxation to finance its activities over time³⁶.

³⁶ Baumol’s cost disease (a phenomenon described by Baumol and Bowen (*On the Performing Arts: The Anatomy of Their Aconomic Problems*, (1965)). It involves salary rises in jobs that have experienced no increase in labor productivity in response to rising salaries in other jobs that have experienced growth in labor productivity.

Exhibit 28

Public sector employment levels indicates a similar opportunity for productivity gains in Iceland as in other Scandinavian countries

Employees per capita; Thousands



¹ Aggregates do not add up, since figures for each segment are not for the same year as the total. However, the figures are consistent across countries
 SOURCE: Statistics Iceland; Nordic Statistical Yearbook; ILO; Eurostat; National Statistics; McKinsey analysis

The number of public sector employees per capita is currently in line with the average for other Nordic countries in all three major segments: health care, education and public administration (Exhibit 28). However, considering experience from other Scandinavian countries, there is still significant potential for improvement. A recent McKinsey & Company report³⁷ on growth potential within the Swedish economy outlines a number of examples of proven productivity improvements within the Swedish public sector, e.g. a 60 percent reduction in the time taken to process asylum applications by using lean manufacturing principles, and a doubling of productivity in thorax surgery in pilots at Karolinska Hospital in Stockholm. There is undoubtedly scope for corresponding improvements within the public sector in Iceland.

³⁷ See *Tillväxt och förnyelse i den svenska ekonomin – Utveckling, nuläge och prioriteringar inför framtiden*, McKinsey & Company (June 2012).

Box 3.

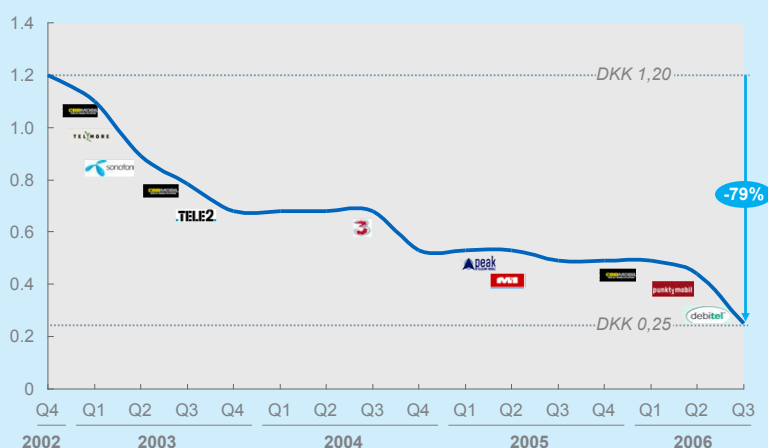
Flexibility is necessary when optimizing scale versus competition

Economies of scale in certain infrastructure services, e.g. telecommunications, require regulators to find the right balance between the economic benefit of cost savings from single large-scale operators and the incentives competition offers in terms of attractive and affordable service for the customer. Additionally, the wider goal of these services is typically to ensure broad penetration and high quality in order to support productivity and output growth in other sectors.

Exhibit 29

Call prices fell by ~80% in Denmark following competition reforms

Lowest price per minute¹; DKK



¹ Per minute price is for residential customers and excludes setup charges and subscription costs
SOURCE: OECD; Bank of America Merrill Lynch Industry Overview, July 9 2010

This trade-off between scale and competition can become stronger in a small, geographically isolated island like Iceland. It is thus important that competition authorities are flexible when it comes to assessing the benefits of scale versus competitive forces. This can be achieved in infrastructure heavy industries by carving out, consolidating and sharing parts of the value chain without significantly affecting competition when it comes to end products.

There are several opportunities for this type of horizontal production agreement in Iceland:

- **Mobile telecom networks.** By (partially or fully) consolidating or sharing build-out, telecom operators in Europe have been able to save up to 30-40% of investment and operating costs, whilst improving network quality and coverage
- **Telecom transmission.** In Iceland, energy utility and telecom operators have been deploying duplicate fiber networks for households (FTTH), while a single network could carry the traffic of all operators and service providers, reducing

joint parallel investment by 30-40%. In the same way, different industries and players in Iceland (telecom operators, energy utilities, sea cable providers) operate partially overlapping fiber backbone networks with 24/7 monitoring

- **Transportation industries.** By sharing the burden of expensive, underutilized infrastructure, other industries such as oil- and general transportation could reduce costs whilst improving service levels.
- **Other industries.** Iceland is a sparsely populated country with a high cost of serving rural areas. By allowing horizontal sharing in rural areas, service levels and cost efficiency can be achieved, e.g. by sharing bank branches

In Scandinavia and other markets these principles have been successfully applied so as to drive efficiency across industries. In Sweden, all telecom operators have entered into extensive network sharing agreements with the objective of driving efficiency and rural deployment of mobile networks (for example, TeliaSonera and Tele2 share 3G infrastructure through Svenska UMTSNat, and Hi3G and Telenor share 3G infrastructure through 3GIS). In Denmark, the telecom industry underwent a series of reforms, including enhancement of competition through interconnection and carrier pre-selection reforms (see Exhibit 29), leading to one of the lowest prices for telecoms services among the OECD countries.

However, these types of agreement increase the importance of solid regulatory frameworks and strong competitive authorities, so as to prevent competitive distortion through collusion or market power.

4.4 Fueling growth through competition and openness

In this chapter we have highlighted the difficulty of achieving large productivity gains in the overall economy without improving productivity in the domestic service sector. Creating a strong competitive environment is important in driving the necessary productivity gains within the sector.

The two main levers are:

- Increasing the openness of the Icelandic economy:
 - Policymakers should carefully review opportunities to remove trade barriers and simplify the overall customs environment, as well as increasingly open Iceland up to foreign markets. This will help to mitigate the trade-off that frequently arises between scale and market power, whilst simultaneously creating opportunities to directly improve corporate efficiency through lower input costs.

- Research by MGI has shown that market size is a critical determinant of location and investment decisions by multinational corporations³⁸. A small country like Iceland therefore needs to market itself to attract best-practice international businesses. These players would generate operational discipline within the domestic sector and help boost productivity by exposing local firms to best-practice processes and approaches, as well as through the pressure to change introduced by this additional competition.
- Equipping competition authorities with the resources and regulatory framework to handle temporary and permanent intricacies within the Icelandic economy:
 - In order to prevent long-term value destruction from delays to corporate sector restructuring, it is important that policymakers address long processing times in the competition authorities through increased resources or improved efficiency
 - Competition authorities need to enforce sales time constraints for companies currently under bank ownership, ensure they have clear competitive guidelines and act firmly and quickly when competition laws are broken
 - Policymakers can facilitate the process further by creating a favorable environment for banks to divest and/or list their positions
 - Equip competition authorities with flexibility and the capacity to assess the benefits of scale versus competitive forces, e.g. when infrastructure heavy industries seek efficiency improvements by carving out, consolidating and sharing parts of the value chain
 - Policymakers should collaborate with the Icelandic Competition Authorities to close industry specific gaps in the competitive environment that have been identified and documented in recent ICA publications

³⁸ See *Growth and Competitiveness in the United States: The Role of its Multinational Companies*, MGI (June 2010).

5



Capturing more value from resources

5.1 A cornerstone of exports

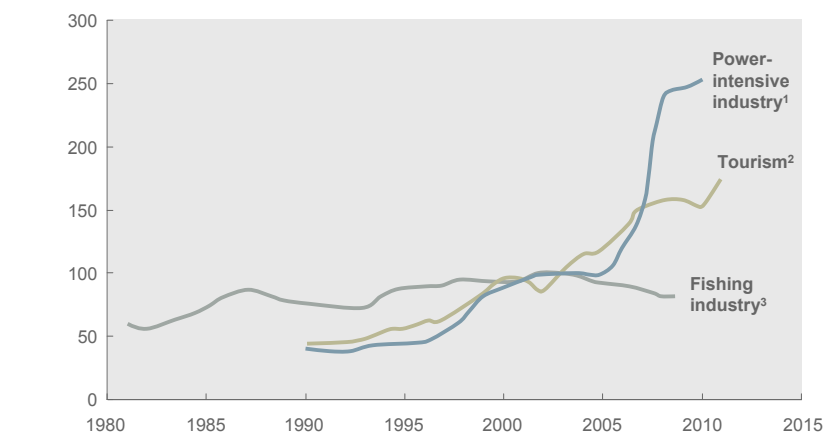
Resource-based industries have always been the cornerstone of Iceland's exports and high standards of living. Together they have consistently contributed to 70-80 percent of Iceland's exports, delivered jobs with a high added value and generated major investment opportunities.

The last decade has seen major shifts in the underlying momentum of Iceland's resource-based industries. The volume of fish caught in Iceland reached a peak in 2003, achieving a level twice that of the early 1980s. Since then, as Exhibit 30 shows, two other waves of resource-based industries have taken over: the tourist industry has grown by 75 percent since 2003, and the power-intensive industry, fed with low-cost renewable energy, has more than doubled. Furthermore, both industries grew their number of employees both in the years prior to the 2008 financial crisis and after 2008. In contrast, the number of employees in the fishing industry reduced pre-2008, but employment levels have risen again since then.

Exhibit 30

The resource-based export industries have grown in three waves

Volume indices for main export sectors; Year 2003 = 100



¹ GWh consumed by the power intensive industry

² Number of foreign visitors per year

³ Tons of fish caught

SOURCE: Statistics Iceland; McKinsey analysis

However, as has been observed, all three main resource-based industries face obstacles to growth:

- Sustainable access to wild catch and the size of the stock naturally represent a constraint for the fishing industry, with mitigating measures including even better stock management, increased value-added production, extended geographic reach and expansion into marine farming and bio-production. Expanding the industry would be highly desirable, as there is a high level of both capital and labor productivity in the Icelandic fishing industry.

- The energy-based industries deliver a challenging combination of low capital productivity and a high demand for capital. Additionally, environmental factors constrain the growth potential within the industry.
- Finally, the tourism and logistics industry, on the other hand, delivers both capital and labor productivity below the Icelandic average. Although contributing to an improved external balance, volume growth without focusing on value will contribute to stagnant, as opposed to growing, GDP per capita.

Finally, keeping in mind that the three resource-based sectors account for the majority of Iceland's exports, they will inevitably play a critical role in the economy. However, in the longer term GDP will suffer if this is made solely a volume game, and not a value game.

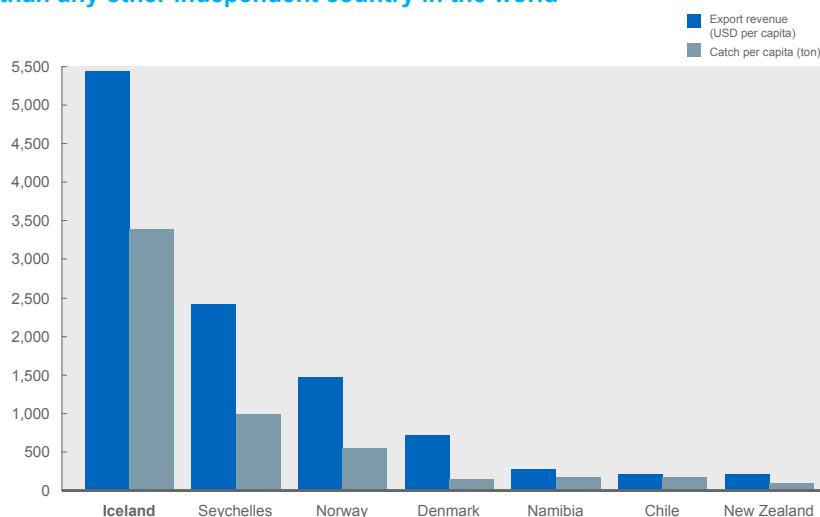
This chapter will focus on how Iceland can make this transition from pursuing a volume game to capturing increased value from its resources. We will start with the fishing industry, where this transition is already underway, and then move on to the energy and tourism industries.

5.2 Safeguard productivity in the fishing industry

The fishing industry created the basis for Iceland's economic prosperity, and it remains the most important export industry. A series of reforms has enabled Iceland to establish a highly efficient fishing policy, both biologically and economically. The industry has proven particularly important in recent years, helping to restore the economy after the financial crisis and banking collapse. To support future economic growth, it is crucial that the industry retains its current high level of productivity and captures further improvement opportunities available so as to expand the value of this constrained resource.

Exhibit 31

Iceland generates higher export revenues per capita from fisheries than any other independent country in the world

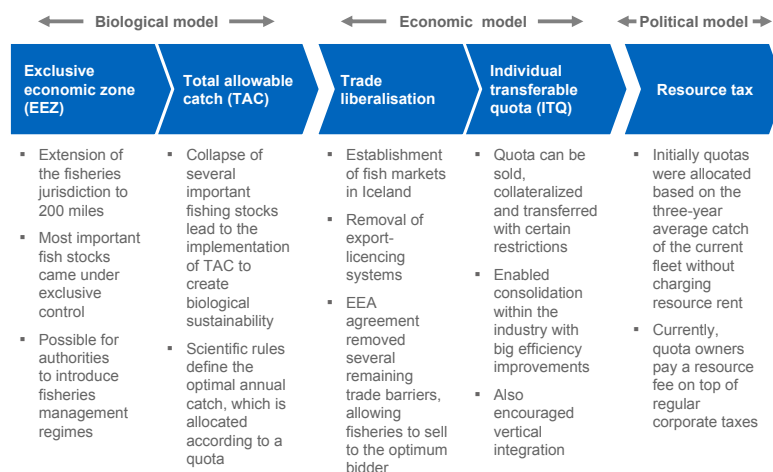


SOURCE: FAO; McKinsey analysis

In 2011 the fishing industry contributed nearly 11 percent to GDP, generated more than a quarter of all export revenues and directly employed over 9,000 people. In an international comparison, no independent country captures more relative value from fisheries than Iceland. Exhibit 31 shows the top performing countries, defined as exporting revenue per capita. Despite having only 0.004 percent of the world population, Iceland had over 1.2 percent of the global catch in 2010. To sum up, it is safe to say that the industry remains the backbone of Iceland's economy.

Exhibit 32

The current system has developed into an efficient biological and economic model, but remains contested from a social standpoint



5.2.1 The fishing industry is a great productivity story

Heavy dependence on fisheries has forced Iceland to develop a sustainable model that prevents fishing stocks from declining and promotes economic efficiency. This system has developed in phases, with several important milestones. As a first step, extending fishing jurisdiction to 200 miles brought the most important stocks under exclusive control, allowing Icelandic authorities to introduce fishery management regimes. After the collapse of several important fishing stocks, a total allowable catch (TAC) system was implemented. Under this system a decision on the optimum annual catch is made centrally on the basis of scientific methods, and the catch is then allocated in accordance with a quota. In parallel with this, trading in fish was liberalized in several stages, the most important one being the EEA agreement.

Economic efficiency was further enhanced by the introduction of an individually transferable quota (ITQ) system, meaning that the quota could be sold, collateralized and transferred. Furthermore, the quotas are not linked to use of inputs, e.g. labor or capital, thus disincentivizing excessive usage. In some countries the quotas are linked to the size of each vessel and number of vessels, thus leading to idle capacity, surplus investments

and lock-in of employees, damaging the overall productivity of the sector. Exhibit 32 gives an overview of the development of the system.

The results are profound. The reforms drove extensive structural changes in the industry, with significant consolidation taking place in almost all parts of the value chain. An integral part of this development has been a concentration of quota holdings. In 2011 the ten largest quota owners held 53 percent of the total quota, compared to only 26 percent in 1995. Transferability of quota has shifted the fishing rights to the most efficient users, allowing them to capitalize on economies of scale, develop expertise in utilization and restructure operations by combining or exchanging quotas while optimizing the use of capital.

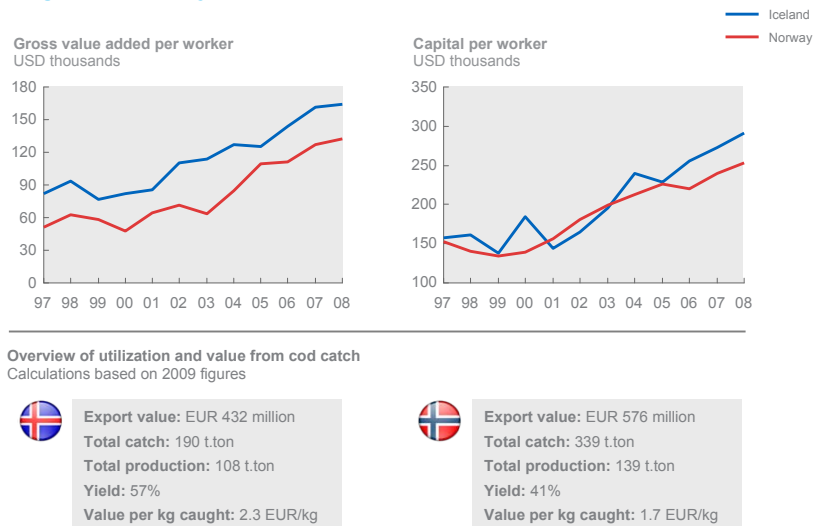
From the early 1990s, the number of fishing companies dropped by almost half, mostly through mergers and acquisitions. The number of trawlers has dropped by more than half from its peak, while the number of decked vessels has remained fairly stable. Thus consolidation and streamlining in the fisheries have removed much of the fleet's surplus capacity, with some remaining within the small vessels fleet. In parallel with this the number of fishermen has dropped by over a third, despite the fact that an increasing proportion of the catch is processed at sea. Similar structural changes have taken place in fish processing. The number of people employed in fish processing has dropped by almost 60 percent from its peak, and productivity has risen significantly.

Economies of scale have brought substantial benefits to the industry. Investment in equipment and technology has greatly improved yield and overall quality, and improvements in transportation, storage and logistics have added to this. Simultaneously, the overall structure of the industry has moved towards increased vertical integration, with fisheries also operating processing companies. This has brought several benefits, e.g. generated more stability in supply and improved quality of input for processing. The greatest benefit, however, has been in the quality of customer service. By gaining control of almost the entire supply chain companies have been much more able to adapt to customer needs and channel information throughout the supply chain. This is reflected in very flexible processing methods and product attributes.

Compared to Norway, the Icelandic fishing industry is highly productive. Gross value added per worker has followed the same trend over the past decade, but remained above the Norwegian level. The positive development of the fishing industry's gross value add in both countries seems to have been partially driven by increased capital intensity, indicating better utilization of capacity and a higher level of technology adoption. Iceland performs better on input utilization, with a 57 percent yield on their cod catch compared to 41 percent in Norway. This translates directly to higher value per kilogram caught for Icelandic fisheries. This is further outlined in Exhibit 33.

Exhibit 33

High productivity in fisheries is driven by both high capital intensity and high utilization yield of raw material



SOURCE: Statistics Iceland; Statistics Norway; Matis; McKinsey analysis

5.2.2 Further value capture should be pursued

There are several interrelated approaches to further increase the value contribution from the fishing industry: increase of total quantity harvested, reduction of harvesting cost, capture a larger part of the value chain and obtain higher prices for the product.

Total available fishing stock constrains the growth in volume. TAC contributes to gradual growth, and estimates have indicated that optimum stock levels could be almost twice the current stock³⁹. Additionally, investment in innovation and technology could improve yield, with a consequent increase in catch value.

Further cost improvements are possible through renewal of the shipping fleet, which has experienced a gradual increase in average age over recent decades. Long term optimization of the fleet and the capital stock is highly dependent on policy stability within the industry. Further consolidation could also offer better utilization of resources⁴⁰.

Exhibit 34 illustrates the value chain for a fresh, chilled cod fillet on the UK market. Though there are some variations in terms of species and processing methods, this example is representative of the value chains in Icelandic fisheries. A large share of total value has already been captured in the domestic part of catching and processing the fish. Some large, vertically integrated companies – primarily companies with large, long standing clients abroad – have expanded into exports and distribution.

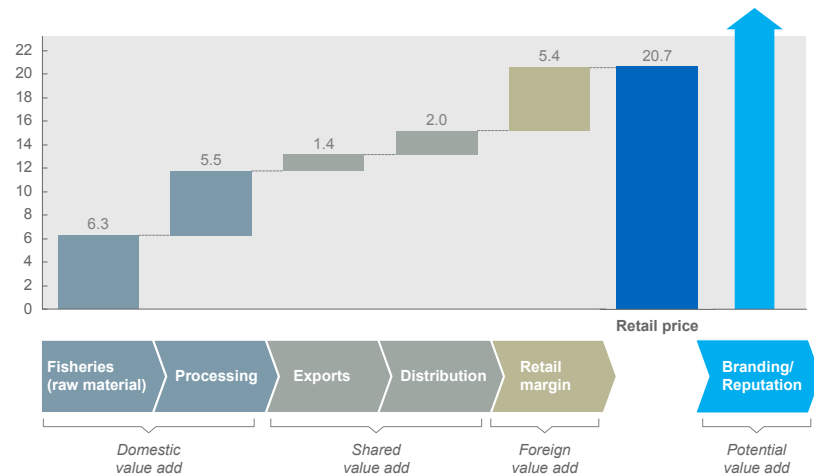
³⁹ Based on expert calculations of optimum level of cod - the most valuable species among Icelandic fishing stocks. See *Skýrsla samráðsveitvangs sjávarútvegs- og landbúnaðarráðherra um nýtingu helstu nytjafiska* (2011).

⁴⁰ At present no single company can own more than 12% of the total quota, and gaining too large a share of a particular fish species is also restricted. If policymakers feel that further consolidation is feasible, this limit should be adjusted.

Exhibit 34

Icelanders have managed to capture a large share of the value chain, but opportunities may still remain

Breakdown of cod value add on UK market¹: EUR/kg, 2008



¹ Chilled fresh cod fillets in April and May 2008
SOURCE: Knutsson, Klemmenson and Gestsson (2008); McKinsey analysis

However, interrelated with the price of the fish, further opportunities might be available to build a quality reputation and a brand around Icelandic fisheries. Examples of branding of, for example, poultry and beef are well known in several consumer markets. Furthermore, certain brands, and in particular country of origination, command a premium in marine products.

5.2.3 Volume growth more likely from fish farming than wild catch

In addition to increasing the value capture from the wild catch fishing industry, it is possible to expand the industry further through increased fish farming, given the appropriate biological, technological and economic conditions. Globally, total wild catch has been stagnant for the last 20 years, while the farmed portion has tripled, with its ratio relative to wild catch moving from 20 to 60 percent.⁴¹

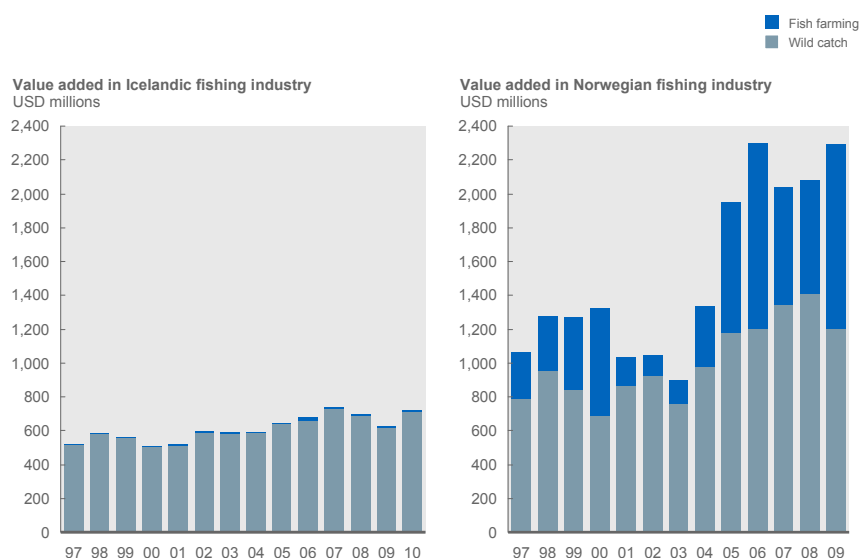
Exhibit 35 illustrates the potential of fish farming by comparing the evolution of the Icelandic and Norwegian fishing industries. In nominal USD terms, the value added of wild catch fishing increased by around 40 percent in Iceland and Norway between 1997 and 2009/2010.

In contrast to Iceland, however, Norway has added fish farming as a significant growth engine to the fishing industry. Currently, the value added in the Norwegian fish farming industry is almost as large as it is in wild catch, and has contributed to more than doubling the value added in the fishing industry as a whole in the same period. In Iceland, the fish farming industry has been through a series of false starts, experiencing major setbacks in each market downturn.

⁴¹ Reasons for this include an increase in the non-marine feed ratio for salmonids from around 20% in 1995 to 50-60% in 2010, representing almost the entire growth in feed usage. This has most likely had a negative impact on the value of the Icelandic wild catch, both for human consumption and as feed for farmed marine products. However, going forward the parallel shortfall on marine ingredients may also represent opportunities for wild catch players.

Exhibit 35

Growth in Norwegian fishing industry sustained through fish farming



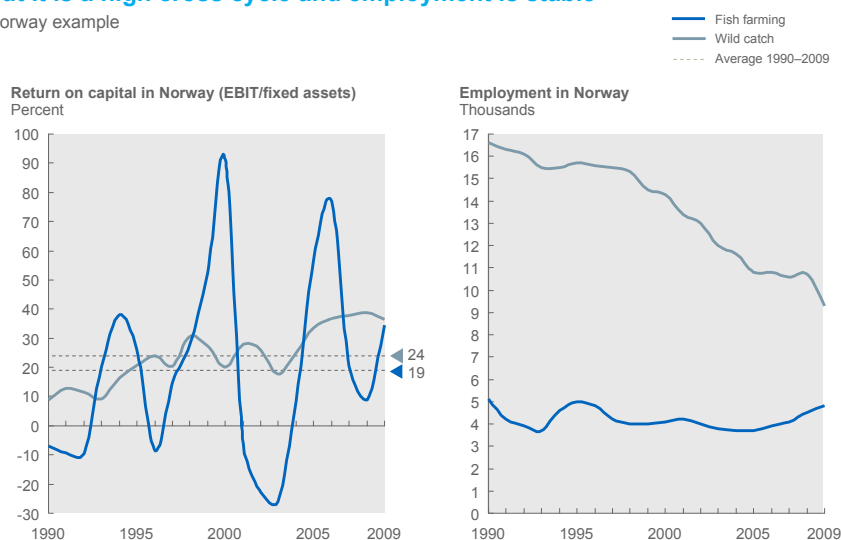
SOURCE: Statistics Iceland; Statistics Norway; McKinsey analysis

The fish farming industry has been a challenging industry in which to succeed. Exhibit 36 illustrates the wide fluctuations in the return on capital in the Norwegian fish farming industry relative to the wild catch industry. The Norwegian fish farming industry has been in dire straits several times, in the early 1990s, the mid 1990s and the early 2000s. However, it has managed to bounce back stronger after each crisis. While each crisis has produced a number of bankruptcies, they have also given the best companies an opportunity to consolidate the industry and improve productivity levels. As an example, labor productivity quadrupled in the period 1992 to 2002.

Exhibit 36

In fish farming, the return on capital fluctuates significantly, but it is a high cross cycle and employment is stable

Norway example



SOURCE: Statistics Norway; McKinsey analysis

Fish farming continues to represent an opportunity for Iceland to build an industry with clear synergies to the fishing industry and create fresh momentum in export growth. New initiatives in recent years combined with a longer-term dedicated capital infusion may finally establish the basis for the Icelandic fish farming industry to really get underway.

5.2.4 Sound regulation promotes productivity

Few dispute the fact that the Icelandic fishing system is both biologically sustainable and economically sound in its current form, but it remains contested from a social standpoint and in terms of fairness. There are three main reasons for this:

- The initial quota allocation took place on the basis of historical catches (without charging of resource rents).
- There are different views on the just ownership structure of what many see as a common resources.
- The consolidation process has had a significant impact on regional development and recruitment into the industry.

Fishing policy is thus one of the most heavily debated political issues. A draft for a revised legal framework around fisheries was recently introduced to address the issues outlined above through structural reforms of the industry. Moreover, a bill was passed in 2009 allowing coastal fisheries to use small vessels, with an Olympic fishing structure⁴². These bills will not be covered in detail, and the ultimate decision regarding resource utilization is certainly not simply economic but also political.

However, due to the profound impact the industry has had on living standards, it is worth elaborating on the proposed structural changes:

- Restrictions on transferability and collateralization of quota are likely to be detrimental to the efficiency of the system. There are considerable efficiency gains to be made from consolidation, as the discussion in this chapter has illustrated. If the most efficient producers do not hold the quota licenses, total resource rent will likely drop and overall productivity in the industry will suffer. Additionally, not being able to collateralize quota may seriously impact on investment rates in the industry, with a consequent drop in cost efficiency⁴³.
- Uncertainty regarding the period and magnitude of quota utilization can have a negative impact on the biological soundness of the system and, more importantly, on

42 When fishing is based on shared quota instead of individual quota ownership, vessel owners compete over the available quota. This implies catching as much as possible as fast as possible, which explains the Olympic reference. There are certain constraints on coastal fisheries, e.g. maximum number of hours per day, only one license per person, equipment used etc. However, these conditions are aimed at limiting pursuit time rather than improving efficiency.

43 Furthermore, possible adverse effects may be adjusted for specific requirements, e.g. a “fit and proper” requirement and second and third order side-effects of the system (e.g. certain financial dispositions) shouldn’t necessarily be seen as a consequence of the system as such.

the framework for investments (as does any lack of alignment between quota holders and decision makers). If current quota holders do not reap the benefit from building up stocks to a maximum level, the risk of discarding and other similar activities will increase, thereby decreasing the biological efficiency of the system (as compared to an ideal situation where all quota holders work jointly to optimize the stock). Similarly, investment decisions may be distorted and investments capped with additional uncertainty on the effective investment horizon. Additionally, they are less likely to invest in research and development that could lead to long-term yield improvements. Hence, the key is to jointly establish a predictable quota and regulatory regime that is sustainable in the long-term.

- If there is to be reallocation of quota, it is critical that it is done without reducing the quality of catch and cost efficiency. The level of quality and flexibility in processing, which have been largely driven by economies of scale and vertical integration, have been important value generators in recent years. Reports suggest that the catch quality of smaller vessels is lower compared to larger vessels, mostly due to inferior chilling and storage technology⁴⁴.

An effective fisheries strategy should aim to optimize the value of the stock and incentivize the right level of investments, technology, use of labor and right level of integration. Fairness issues, distributional issues and possible broader policy considerations could be implemented through other targeted measures, e.g. resource taxes, that do not distort the soundness of the system.

A broadly-based agreement on a permanent structure for the fishing policy would be highly beneficial to all stakeholders. Removing uncertainty facilitates long-term strategic- and investment planning and limits resources wasted on rent-seeking and other activities that do not contribute to value.

5.2.5 For economic growth in fishing a new approach is needed

Average annual growth in GDP in the fisheries sector in the last decade was lower than the growth in the Icelandic GDP even when taking the financial crisis into account, leading to a decline in the GDP-share from 7.6 percent in 2001 to 7.1 percent in 2011 after reaching a bottom level of 4.3 percent in 2007. The indexed, fixed price value of the catch has also declined slightly from 2002 to 2012. Hence, a fundamental change is needed if the fisheries sector is to materially contribute to improved economic growth, overall productivity gains and sound development of the external balance. This should be the lead discussion in the debate surrounding policy development, and as noted, broad agreement is needed.

As a starting point for this work, we see four elements for a program to productively grow the macro contribution from Icelandic fisheries industries that should be analyzed and specified in greater detail:

- Continue to work towards a consensus based fisheries policy that maximizes the value of the sustainable harvest,

44 See *Gæði strandveiðiafla 201* (Mátís, 2011)

- Build deeper market positions and review and pursue mechanisms that can enhance the brand value of Iceland's wild catch and its companies,
- Review mechanisms that might allow Iceland to benefit from the advance in farming technologies and economics (including feed for marine farming),
- Continue to pursue international opportunities, while taking sustainability and regulatory matters into account as appropriate.

5.3 Increase value capture from the energy sector

Iceland has natural, low-cost, renewable energy resources in the form of hydropower and geothermal energy. Compared to other developed economies, this puts Iceland in a unique position. Firstly, power cost are low in an international comparison⁴⁵. Secondly, Iceland can develop along a low-carbon trajectory without investing in costly alternatives.

As a consequence, Icelandic households spend a lower proportion of their disposable income on electricity and heating. Low prices also benefit businesses, which buy electricity at a price significantly below the international average.

Further, the availability of low-cost electricity provides the foundation for a sizable power-intensive industry that has grown to become one of the economy's fundamental building blocks. The industry creates around one-third of Iceland's exports and has attracted significant foreign direct investment.

A low-cost domestic energy makes Iceland's trade balance more robust. If Iceland had to import energy, e.g. natural gas, for household consumption, this by itself would have a negative impact on the trade balance of an estimated 3 percent of GDP. Furthermore, the power-intensive industry would not exist with the concomitant negative impact on the trade balance.

The capacity of Iceland's energy sector has gradually increased over the past four decades, with a steep build-up in recent years. The system's electricity generation is currently around 17 TWh, with approximately 80 percent of that devoted to power-intensive industries. Even though there is scope for further expansion, it is also important to maximize value of the existing resources.

Theoretically, only 20-25 percent of the available hydro and geothermal energy has been harnessed up to now, but environmental considerations and the economic feasibility of the investments available make the scope for expansion more constrained. Despite a longstanding process, projects that could almost double current capacity⁴⁶ by 2025 are still disputed due to environmental and economical considerations.

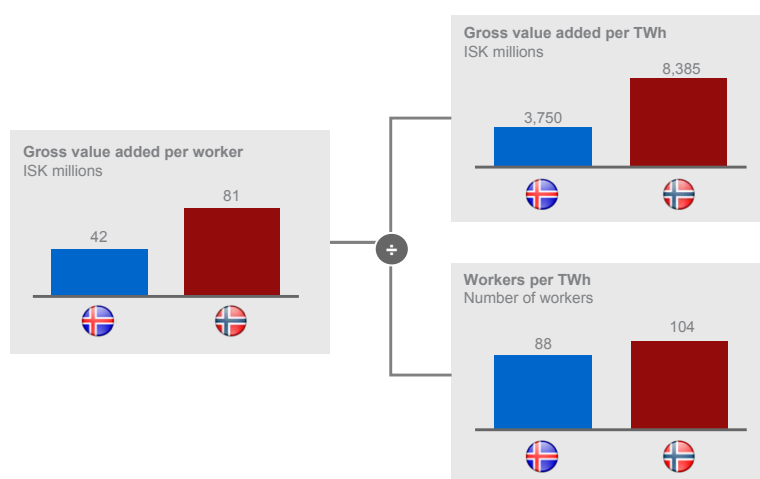
45 In 2011 household energy prices were approximately 45% lower than the EU27 average (based on exhibits published by Statistics Iceland and Eurostat). Prices for energy intensive companies have also been highly competitive.

46 See the Government's *Master Plan for Hydro and Geothermal Energy Resources in Iceland*.

Exhibit 37

The Icelandic power industry has efficient operations but low prices

ISK millions, year 2010



SOURCE: Statistics Iceland; Statistics Norway; McKinsey analysis

Exhibit 37 analyses gross value added per worker in the Icelandic power industry and provides a comparison with Norwegian levels. Given the relatively narrow base of employment in the industry, it is not surprising to see high labor productivity – Iceland uses fewer workers to generate a single TWh than does Norway. However, the Icelandic system generates far lower gross value added per TWh than does Norway, indicating a major need for a different approach to resource development and power allocation in the future.

As a consequence the capital productivity of the energy sector is the lowest of all industries in Iceland (see Appendix B).

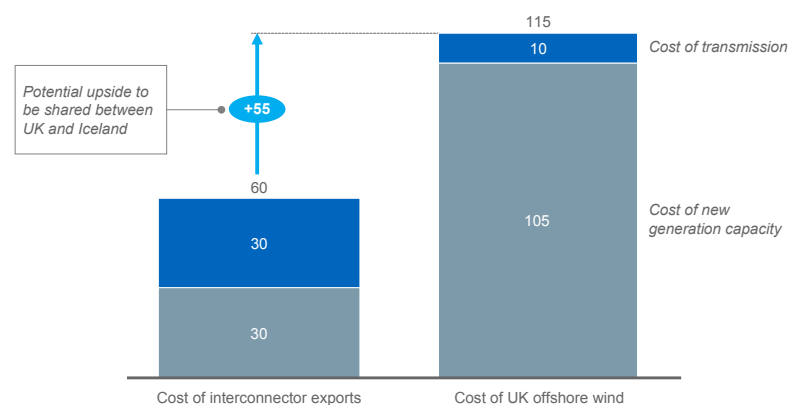
The Icelandic power system is an island system that lacks integration with other markets. This, and the fact that the amount of rainfall varies from year to year, means that there is significant slack in the system to ensure that sufficient margins are in place to meet domestic demand. The isolated market is also reflected in the design of hydro plants where investments have been optimized accordingly, i.e. with relatively small reservoirs allowing surplus water to bypass generation as there are no alternative markets available. Hence, on average, nearly 15 percent of the energy available for electricity production is wasted each year.

These factors will have to be taken into consideration during the next growth phase to maximize the value captured.

Exhibit 38

Significant upside can be shared if UK chooses to meet parts of its 2020 renewables target via Iceland

2020 cost comparison of Icelandic exports vs. offshore wind – UK example; Real 2011 EUR/MWh



SOURCE: McKinsey analysis

An attractive modification to the current business model would be to build an interconnector to Europe. This could be the UK, but other markets are also possible. The economic rationale for an interconnector is based on the opportunity of supplying the receiving market with green energy and thus contributing to decarbonization more efficiently than through other means e.g. offshore wind power. Iceland could share the benefit of such cost savings with the partner. Taking into account generation costs in Iceland, the cost of the interconnector itself and the anticipated cost of offshore wind power in 2020, cost savings of around EUR 60/Mwh could be shared. This is further illustrated in Exhibit 38.

Neither energy production nor metal manufacturing are particularly labor intensive industries, the economic value added within these industries is thus mainly derived from the return on investments. As illustrated in Exhibit 39, the current price to produce for households is EUR 22-25/Mwh⁴⁷ and approximately EUR 15-22/Mwh⁴⁸ for power intensive industries.

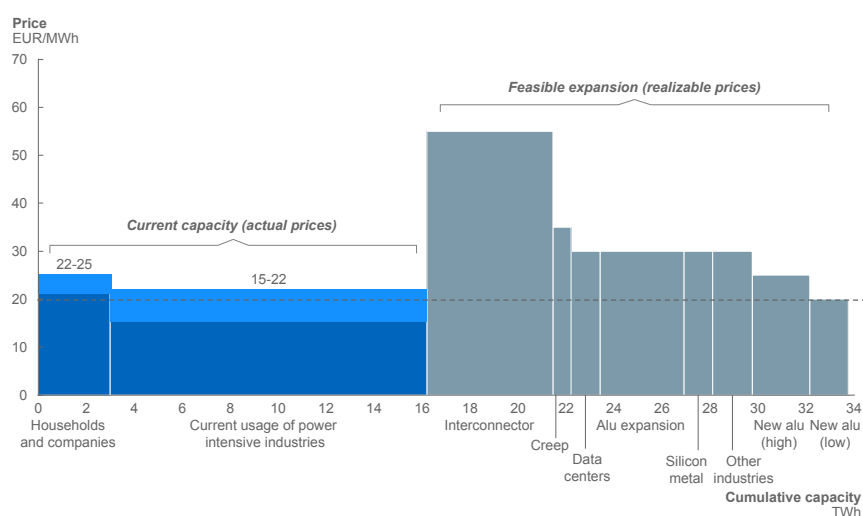
47 Based on Landsvirkjun price in 2011, published in their annual report, and the EUR/ISK exchange rate for the same year. It should be emphasised that this is the production price, i.e. the price for the energy producer, not the retail price.

48 Estimate based on Landsvirkjun price in 2011, published in their annual report, with an interval representing fluctuations in aluminum price and EUR/USD exchange rate. These are estimates based on a McKinsey analysis and publicly available data.

Exhibit 39

The realizable price for an interconnector is high compared to the different alternatives within domestic power-intensive industries

Estimates



SOURCE: McKinsey analysis

Exhibit 39 also illustrates the fact that a well negotiated interconnector is an interesting option, with a high estimated realizable price compared to alternatives.

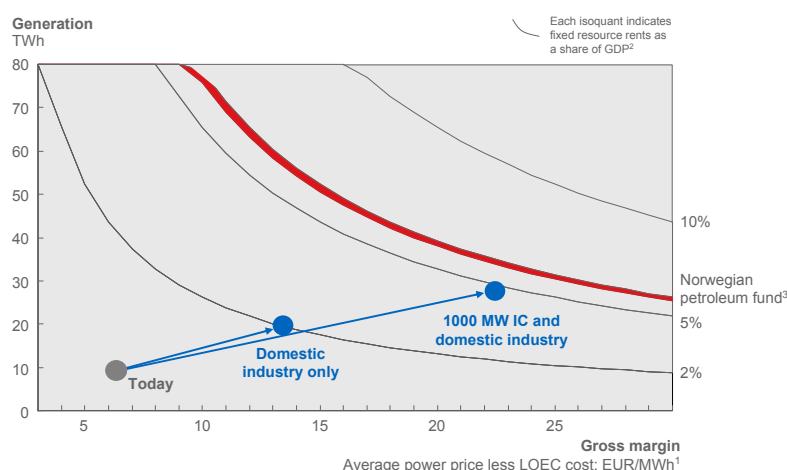
However, this will never be an either/or decision. The power-intensive industries constitute an important part of the Icelandic economy and foreign investors have contributed to economic growth and job creation. Treating them fairly and maintaining long term contracts is crucial. However, going forward the allocation of power to the sector should be done thoughtfully. The best example is that expanding existing aluminum and metals plants is a much better economic option than allocating power to new, small-scale greenfield plants due to the superior economies of scale of larger smelters.

With the appropriate expansion strategy, there is significant resource-rent potential in the energy industry, comparable to the rents Norway captures from the petroleum industry.

Exhibit 40

By 2025 Iceland could capture resource rents from renewable energy amounting to 4–6% of GDP with an interconnector

Estimates



¹ Estimated using operating cash flow minus annualized capex for existing generation and operating cash flow minus levelized cost of capital expenditures for new generation

² Iceland's estimated 2020 GDP

³ 3.4% return on estimated value of Norwegian Petroleum Fund as share of expected GDP in 2020

SOURCE: Pöyry; World Economic Outlook; NBIM; McKinsey

Exhibit 40 illustrates how production and margins from electricity sales contribute to resource rents from low-cost energy. At around 1 percent of GDP⁴⁹ the resource rents from the current power sector are small, but with an interconnector Iceland can push this resource rent to 5 percent of GDP.

The comparable resource rents from petroleum operations in Norway are around 6 percent of GDP, given that the petroleum fund is 150 percent of GDP and the return on investment around 4 percent.

Iceland should act swiftly to substantiate and eventually realize this potential. Clean Icelandic energy can contribute to renewable targets in Northern Europe, but delays will invite competition from other renewable energy technologies such as wind energy and solar power, which have rapidly reducing cost levels. Development of shale gas resources in Europe also pose a longer term risk to the viability of an interconnector business case.

Top priorities in the short term should be to intensify the dialogue with partners in Europe and to further advance impact assessments at home. On top of this, Iceland needs to develop a regulatory regime that ensures that resource rents from energy resources are distributed fairly within Iceland, to create support among the population and to stimulate timely, sustainable and efficient expansion of new generation capacity.

⁴⁹ This does not take into account the benefits of low-cost energy and the opportunity cost of energy imports, described above.

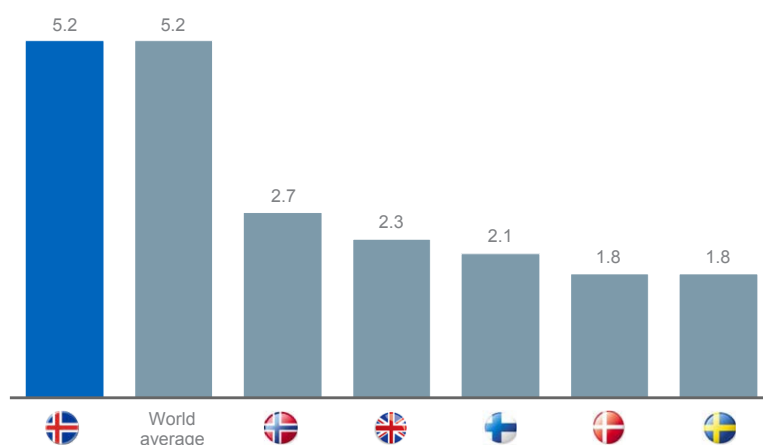
5.4 Focus on value as well as volume in tourism

Tourism in Iceland has become more important to the economy over the last two decades. Its share of total exports has almost doubled, increasing from 11 percent to 19 percent between 1990 and 2010. In recent years, the tourist industry has played an important role in strengthening Iceland's trade balance, and it will continue to do so in the years ahead. The GDP contribution from tourism is almost three times greater for Iceland than the average for its peers. Estimates indicate that the direct contribution to GDP in 2011 was 5.2 percent, despite a global decrease in demand post-crisis (Exhibit 41). In addition, the tourism sector directly accounts for around 5 percent of the total workforce⁵⁰.

Exhibit 41

Tourism is a large and important sector for Iceland

Contribution to GDP; Percentage points, 2011



SOURCE: WTTC Iceland report, 2012; Statistics Iceland

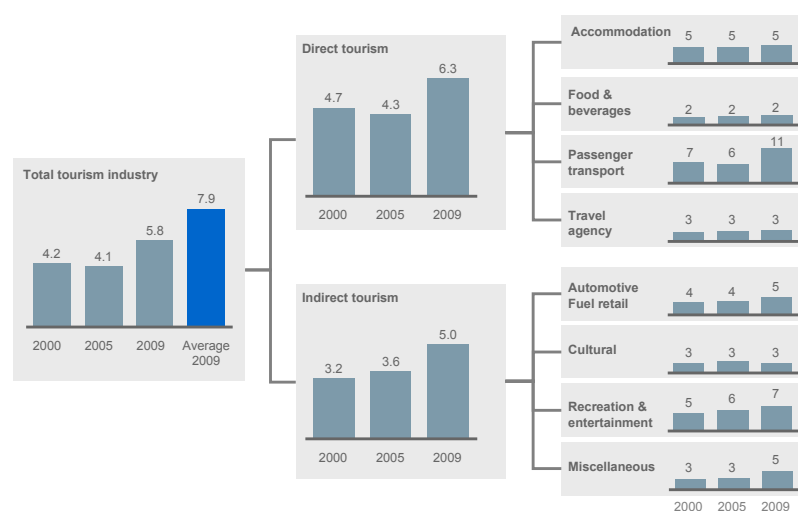
⁵⁰ Based on 2009 data, Statistics Iceland.

While the tourist sector will play a role in creating external balance for the Icelandic economy, the question of how it should do so in the longer term needs to be addressed. The gross value added per employee in the tourism sector is currently below the country average⁵¹. This gap is consistent across all subsections of direct and indirect tourism except for passenger transport (Exhibit 42). This means that productivity must increase if the sector, as it grows, is to both contribute to export earnings and an increase of GDP. Improvements did take place between 2005 and 2009, and further improvements are likely as utilization of the capacity in the sector improves.

Exhibit 42

A breakdown of tourism GVA per worker shows that the industry has low value added per worker

GVA per worker, constant 2005-prices¹; ISK millions



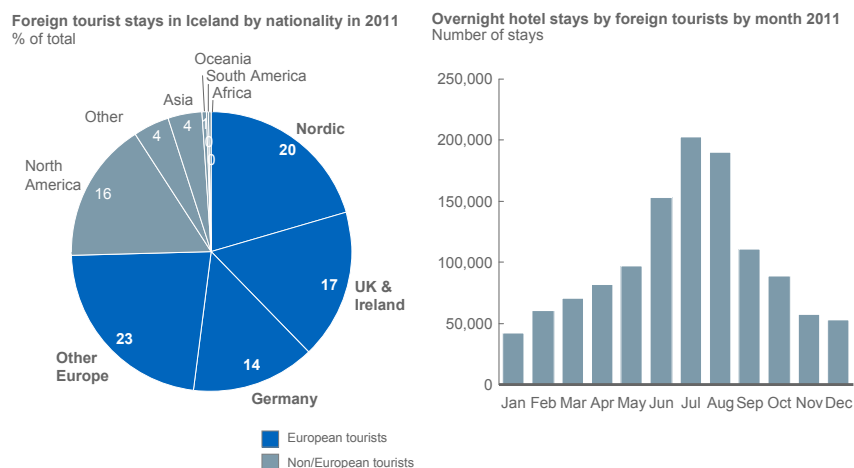
¹ Based on GDP deflator with 2005 as the base year
SOURCE: Statistics Iceland; McKinsey analysis

The solid growth in tourism has benefited the economy in many ways. It has increased the diversity of export industries, helped counteract the output gap resulting from the financial crisis and had a positive indirect economic and social impact, e.g. a greater variety of tourist related services for domestic citizens and new business opportunities in rural areas. However, growing tourism in its current form does not offer much opportunity to increase overall productivity. As unemployment approaches its structural level and unskilled labor becomes scarcer, resources may be put to better use in other industries unless the productivity level is raised.

⁵¹ GVA calculation for the tourism and logistics sector do not take into account possible distortions from black market / non-taxed operations. We assume that this issue is at similar scale in Iceland as in peer countries.

Exhibit 43

The tourism industry attracts a homogenous group of tourists and faces a seasonality challenge



SOURCE: Statistics Norway; McKinsey analysis

As the sector continues to grow the focus should thus be on increasing the productivity of each worker through increased value per tourist. There are several initiatives that could help realize that objective:

- Further strengthening coordination and a common strategy** for decision makers and policymakers. Overall collaboration is necessary to lift the overall productivity of the tourism sector, as local initiatives will be insufficient. One example of this strategy is Denmark, where responsibility for tourism is centralized in one agency that handles everything from strategy and branding through to communication; this ensures a focused and coherent vision for tourism⁵².
- Capturing the most valuable growth opportunities** by focusing on attracting tourists from high-value rather than high volume segments. As shown in Exhibit 43, the traditional types of tourists dominate in Iceland; more than 90 percent are from Europe and North America and 65% are from Northwestern Europe. Experience from Denmark shows that tourism from BRIC countries in particular is much more valuable than traditional European tourists⁵³. To capture demand from the new wave of tourists from emerging regions, Iceland needs to adapt what it offers. Portugal is a case in point, with the country having managed to turn away from mass-market, low-value tourism by focusing on golf to attract affluent customers. Another simple example is the German city of Cologne, which publishes a special map for Chinese visitors and offers Chinese-speaking tour guides.

52 For a more in-depth discussion see *Beyond Austerity: A Path to Economic Growth and Renewal in Europe*, MGI (October 2010).

53 Data from Visit Denmark shows that the average daily expenditure in Denmark for a Russian tourist is ~EUR 360 (DKK 2,354), for a Chinese tourist ~EUR 235 (DKK 1,762) and for a German tourist ~EUR 60 (DKK 431). www.dr.dk "Rige russere er flittige med kreditkortet".

- c. **Investing in infrastructure and diversifying flows** by encouraging investment in new facilities and attractions. Many of the most popular current tourist destinations are public areas. This undermines the possibility of constructing a proper tourism infrastructure, as visitors are not charged for their usage. Revenue from moderate admission fees could be used for investment in current tourist attractions and development of new ones. This would further benefit the industry by diversifying tourist flows, thus mitigating the risk of capacity constraints in the most popular destinations. Further investments in major infrastructure assets such as airports should be done based on sound economic arguments supporting the evolution of the industry.
- d. **Overcoming seasonality** is one of the most important growth opportunities for Iceland. As shown in Exhibit 43, the number of overnight stays in hotels by foreign tourists is five times higher in July and August than in January. The four months from May to August accounted for more than half of foreign tourist stays in Iceland in 2011. These facts suggest that addressing seasonality has great potential to improve utilization rates. Success in this regard would increase the yearly occupancy rate in hotels, leading to a more profitable and value adding sector. There are signs of a change in strategy in this direction in the form of local initiatives such as Meet in Reykjavik⁵⁴ and Iceland All Year Round⁵⁵. Meet in Reykjavik focuses on attracting business tourists all year by branding Reykjavik as a conference city. The share of business tourism in Iceland is roughly 10 percent⁵⁶. As these tourists often have a higher value, success with this strategy would be fruitful for the Icelandic economy. Iceland All Year Round is a joint program between government and the tourism industry, aimed at overcoming seasonality. Beyond this, Icelandair has continued to actively market Iceland as a winter- and shoulder season destination.

54 www.meetinreykjavik.is

55 www.saf.is/is/starfsemi/island_-_allt_arid/

56 Statistics Iceland

6



Growing an entrepreneurial international sector

6.1 A small sector with important success stories

The international sector offers unharnessed opportunities for growth. Because of the historical strength of resource based industries, Iceland has had limited dependence on exports of knowledge or manufactured goods up to this point. The sector is thus relatively small compared with other developed countries, employing close to 15 percent of the workforce and contributing 20 percent of exports.

Nonetheless, in recent decades several Icelandic companies have gained a strong international foothold in their field. More often than not, these companies have emerged from industries that have been historically important in Iceland, e.g. fisheries and geothermal energy. Information technology has also opened up a large range of opportunities that geographical isolation would have previously prevented.

We define the international sector as industries in which businesses are mobile, i.e. they have the possibility of relocating their operations, as they do not rely on resources specific to Iceland. Many of the companies in the international sector operate in global markets and face a high level of competition and pressure for operational excellence.

Several of the biggest success stories in Iceland grew out of the long recession in the late 1980s and early 1990s and the significant policy changes in the years that followed. In this period, Iceland became a member of the European Economic Area, several industries were deregulated and companies privatized, and corporate tax rates were gradually reduced from 50% in 1991 to 18% in 2002. These new policies combined more broadly with a stable policy environment to establish a basis for investment and growth of new companies. The growth of companies like Marel, Össur and Actavis started to take off during this period.

Twenty years on, Iceland is again coming out of a recession, and new engines for growth in the international sector are needed.

6.2 Identifying the barriers to continued growth

At a formal level, Iceland's business environment is comparable to that of its neighboring countries. The regulatory environment builds on the European Economic Area framework, and the institutional infrastructure is similar to that of its neighbors. The tax environment is also generally in line with European standards, even though there are certain deviations⁵⁷.

In some areas Iceland has a competitive advantage over many other developed nations. Communication channels are relatively short and simple, facilitating flexibility and efficient decision making. The country is among the top performers when it comes

⁵⁷ The most noticeable deviations are in the structure of dividend taxation and withholding taxes. However, as public finances are not within the scope of this report, tax policy will not be covered in detail.

to technology adoption⁵⁸, and both cost of energy and energy access is world-class. Furthermore, Iceland ranks among the top ten countries in the world with regard to ease of doing business – a situation that testifies to these strengths⁵⁹.

Still, to create a vibrant international sector, Iceland needs to overcome a set of challenges.

6.2.1 Living with the propensity of successful firms to relocate

The small size of the domestic market combined with the distance to core export markets implies that many of the companies that have seen greatest growth and success over time will relocate significant parts of their business abroad. In fact, most of the success stories in recent years seem to confirm this.

While policymakers should ensure that relocation is not caused by specific policy disadvantages of being located in Iceland, there are limits to the ability to prevent relocation.

A benefit of having successful firms is that they often drag new firms with them and create clusters of excellence, either by creating a demand from suppliers or employees moving on to create new companies. With the relocation of the leading firms, there is a danger of losing momentum in emerging clusters. If anything, Iceland therefore needs to be particularly good at ensuring continuous renewal and emergence of promising new startups.

6.2.2 Company growth is constrained by a shortage of talent

Based on interviews with many of the leading Icelandic companies, it is clear that several companies would be able to scale up significantly if the talent they need was accessible in the market. This is particularly the case for companies with a science and engineering focus.

In the longer term, productivity improvements in the domestic service sector may help to reduce these constraints through reallocation of excess labor to the international sector. However, this shift will take time, and the match of talent in the existing and up and coming sectors will not be perfect.

It is thus important to improve access to qualified labor more directly. There are two complementary channels for doing so: developing the required labor mix domestically through training and education, and attracting highly skilled foreign labor.

While the share of the labor force with tertiary education is catching up in Iceland relative to other countries, there is still an insufficient supply of talent in the sciences and engineering. Exhibit 44 shows the proportion of science and engineering degrees in

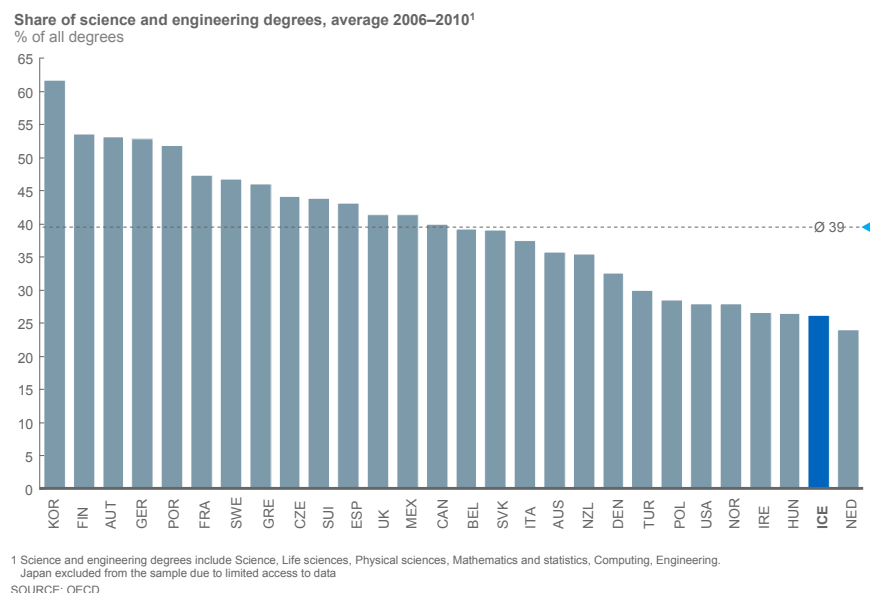
58 Examples include being among the top five OECD countries regarding broadband connections per 100 inhabitants, a higher number of mobile subscriptions than the total population and high overall usage of online services.

59 In the 2012 Ease of Doing Business ranking by the World Bank, Iceland ranks 9th out of 183 countries.

thirty OECD countries. Iceland is second from last on this list. In the overall composition of the workforce, where approximately 2 percent have an engineering education in Iceland compared to an average of 4.5 percent among Nordic peers. The lack of labor supply in these areas is hindering the growth of Icelandic companies, and often forces them to grow abroad rather than doing so domestically.

EXHIBIT 44

Low levels of science and engineering degrees in Iceland



Given the weakness of international labor markets, there is an opportunity to import talent from abroad. However, many companies perceive the required procedures as too time consuming and bureaucratic.

6.2.3 Ensuring the supply of competent risk capital

In Iceland, there are two domestic funds providing the bulk of venture capital funding; Frumtak, funded by the government, banks and pension funds, and the New Business Venture Fund, a public evergreen fund. The combined capital for these funds is around 10 ISK billion. Both of these funds focus on promising international Icelandic startups.

As noted above, Iceland needs to excel at creating new companies. Taking venture capital investment levels in the US as a benchmark, Iceland would need to invest around 3 ISK billion annually to have the same level of venture capital investments as a share of the economy as the US. This represents around 1/3 the total capital of these funds that would have to be re-invested annually, and illustrates the challenge of achieving venture capital investment levels on a par with the US over the long term.

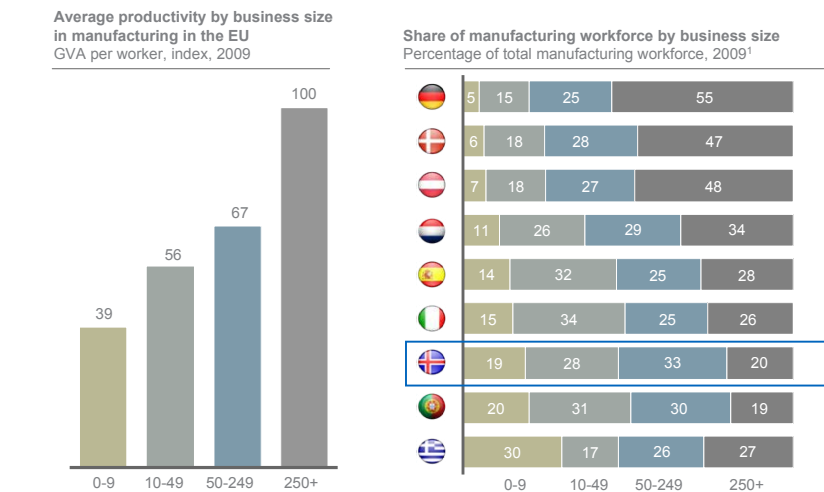
Capital from international players has a role to play in supplementing domestic venture capital and, everything else being equal, intelligent international risk capital should have good reason to be interested in investments in core sectors of the Icelandic economy. However, many of international investors have turned away due to unpredictable regulation and a complicated capital controls regime.

6.2.4 Addressing productivity gaps in subscale companies

Even though the international sector includes many of the economy’s most productive companies, productivity varies significantly within the sector. Average productivity in other manufacturing⁶⁰ is well below that of the country’s Nordic peers (as described in chapter 3), offering significant scope for improvement. Low productivity is undoubtedly impacted by lack of operational scale in Icelandic companies. As Exhibit 45 illustrates, the productivity of manufacturing companies measured in gross value added increases significantly with the business size. Compared to the most efficient manufacturing countries, a large proportion of the Icelandic manufacturing workforce operates in small companies with low productivity.

EXHIBIT 45

Iceland has many subscale companies compared to the most efficient manufacturing countries



¹ Figures for Iceland are based on the latest available data from 2005. The distribution has been stable from 1998 to 2005
SOURCE: Eurostat, Statistics Iceland

60 Includes all manufacturing apart from metal manufacturing.

6.2.5 Fixing the challenging post-crisis business environment

In chapter 1 we highlighted a range of challenges to long-term growth in post-crisis Iceland. These included capital controls, high capital costs and transitory ownership structures that we do not address in detail in this report. Beyond this, policy instability and unpredictability are seen as barriers to new investment.

Businesses assess the risk of external factors when taking longer-term strategy decisions. Policy stability and predictability are critical components of this process, and are thus important factors for the overall business environment. There is pronounced political partisanship in Iceland with very few bills on crucial issues passing through Parliament with a qualified majority.

Policy uncertainty exists in several fundamental areas, ranging from critical industry- and energy policy, to future monetary policy to overall tax policy. Predictability has also been lacking in several areas with less impact on the overall economy, but a major impact on individual companies, e.g. unexpected changes in takeover thresholds for listed companies or sudden modification of the application of capital controls. Although measures have been taken to limit certain specific risks, e.g. investment agreements for foreign investors⁶¹, there is still a fundamental lack of predictability for businesses that needs to be addressed.

In a public opinion survey conducted by Capacent⁶² only 10 percent of the population trusted Parliament and fewer than 20 percent considered the Central Bank of Iceland trustworthy. These metrics dropped significantly after the collapse of the banking system, and persistent low ratings suggest that the authorities have not been able to rebuild credibility.

Increasing political collaboration – in line with the collaboration exhibited in other Nordic countries – would thus greatly benefit Iceland. An example of this is the strong tradition in Denmark of political pacts on important matters that form a level of support beyond members of the governing parties⁶³. This is a valuable contribution to stability and predictability in those matters. One of the necessary stages in regaining momentum in the Icelandic economy – in particular the international sector – is building up the credibility of authorities and the public administration. Broader political collaboration and constructive dialogue between stakeholders would be an important step in that direction.

61 See Invest in Iceland (<http://www.invest.is/Doing-Business-in-Iceland/Incentives/>)

62 Capacent survey on Trust, March 2012.

63 www.aabenhedstinget.dk/politiskeforlig_side/

6.3 Agenda for growth in the international sector

In light of the international sector challenges outlined above, we suggest the following strategic agenda to support continuous emergence and growth of new Icelandic companies:

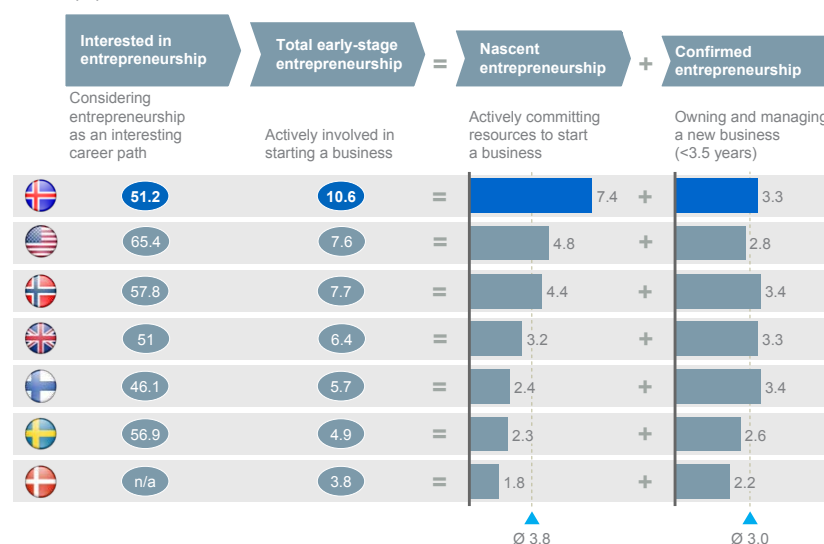
6.3.1 Build on Iceland's entrepreneurial mindset

Given the propensity of successful firms to move out from Iceland over time, Iceland needs to excel in developing new businesses. Iceland currently has good prerequisites for generating and growing start-ups. Overall investment in R&D in Iceland is on a par with that of its peers⁶⁴, and the entrepreneurial mindset is widespread in the country. With total early-stage entrepreneurial activity (TEA)⁶⁵ of 10.6 percent in 2010, Iceland ranks very high in an international comparison (Exhibit 46). Coupled with a strong belief in its own capabilities, this constitutes a solid basis for entrepreneurship. The small size of the population also helps shorten communication channels, encourages collaboration within the entrepreneurial community and creates access to seed investors⁶⁶.

EXHIBIT 46

Icelanders are highly entrepreneurial

% of adult population



Note: Numbers may not add up, owing to rounding

SOURCE: Global Entrepreneurship Monitor – Global Report 2010

64 OECD (2010). In 2008 gross domestic R&D expenditure as a percentage of GDP was 2.65% in Iceland, which was in line with the average of the Nordic peers, equal to 2.89%.

65 GEM Global Report (2010). Percentage of adult population involved (as owners or co-owners) in setting up or running a new business.

66 Based on interviews with members of Iceland's entrepreneurial society.

Entrepreneurship can originate in any part of the economy. Many of the most successful businesses in the international sector, e.g. Marel, Marorka and Iceland Drilling (Jarðboranir), originated in the resource-based economy, but more recently the diversity of international companies' portfolios has been increasing.

Cluster development can be further supported through increased collaboration and integration of research efforts on the part of universities, research institutions and businesses. Continued build-up of knowledge clusters within strong industries, e.g. the fishing industry and the energy sector⁶⁷, supported by increasing momentum in other industries will help to maintain a healthy flow of businesses with high growth potential in the international sector.

6.3.2 Ensure companies can access the talent needed

As Exhibit 47 shows, Iceland has experienced a great improvement in the general level of education over the past decade and is catching up with its Nordic peers.

Still, there is a strong need to address the shortage of skilled labor with secondary and tertiary education in science, engineering and technology-related sectors, e.g. by increasing resources devoted to vocational education and science & technology at tertiary level.

It is also possible to expand the pool of highly skilled workers through a favorable expatriate regime, e.g. tax incentives and access to international schools. These regimes currently exist in both Denmark and Norway, and have proven helpful in attracting highly skilled foreign labor, though successful implementation of this may be a more challenging initiative for Iceland owing to the country's small size and its geographical isolation.

Beyond this specific initiative, there are other elements of the Icelandic education system that may be addressed. In particular, Iceland lags behind other developed countries in three respects when it comes to overall level of education:

- a. Compared to a Nordic average, a larger share of Icelanders in the age group from 25-49 has primary schooling as their highest level of education (25%) – and there is strong indication this level will increase in the future, as new cohorts enter the age group.
- b. Owing to high drop-out rates in secondary schools, Iceland is among the low performers regarding the percentage of the population with at least upper secondary education. With a decreasing number of people attaining vocational degrees, this situation is expected to worsen.
- c. Icelanders take longer to finish higher education – a situation due both to the structure of the system⁶⁸ and the fact that students often work for extended periods of time between educational levels.

⁶⁷ See Porter (2010)

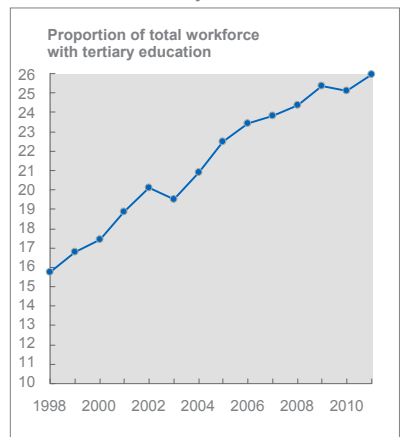
⁶⁸ For example, four-year programs in secondary schools instead of the more typical three-years.

EXHIBIT 47

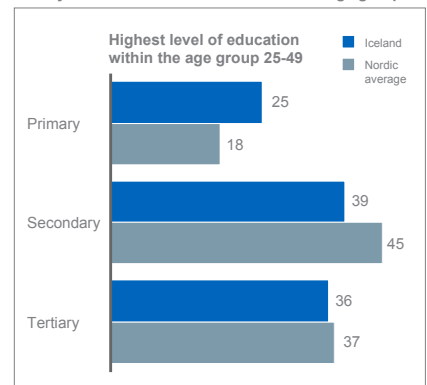
Iceland is catching up with the other Nordic countries on the level of tertiary education but is lagging behind on secondary education

% of total

There has been rapid growth in the proportion of the workforce with tertiary education...



...and Iceland has caught up with peers on the level of tertiary education within the most relevant age group...



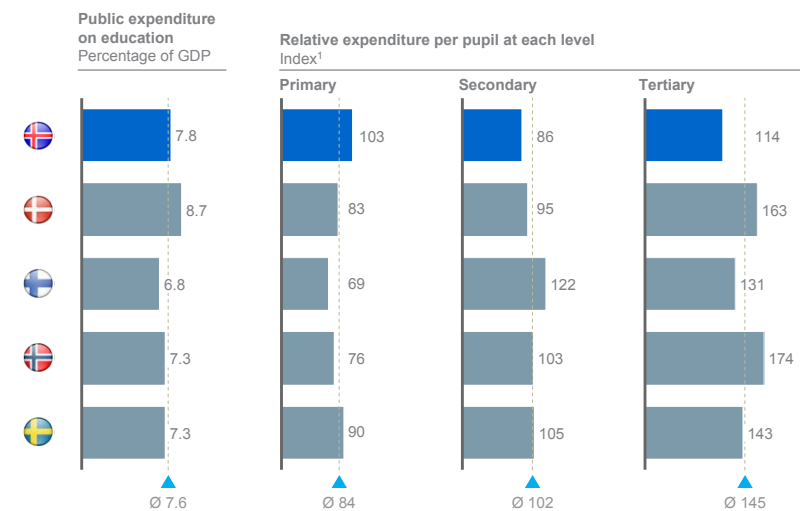
...but lags behind on the level of secondary education in the same age group

SOURCE: Statistics Iceland; McKinsey analysis

Opportunities also exist for more efficient utilization of the funds allocated to education. In 2008, only Denmark invested a greater proportion of GDP on education than Iceland. However, Iceland is the only country within the OECD that spends a higher amount per student at primary level than tertiary level. Average expenditure on primary and secondary students is thus well above the OECD average, whereas expenditure on the tertiary level is below the average. This picture is also consistent with a comparison with the Nordic peers, who spent much less proportionally on primary education (Exhibit 48).

EXHIBIT 48

Public expenditure on education is above the Nordic average, but with greater expenditure on primary than on higher education



¹ An index representing expenditure per student where 100 equals average expenditure per student across all levels within the country's education system
SOURCE: National Statistical Bureaus; Central Bank of Iceland; OECD; McKinsey Global Economic Growth Database; McKinsey Global Institute; McKinsey analysis

6.3.3 Increase the supply of intelligent capital for startups

Given the premise that Iceland should expect to be a developer of early stage companies, it also needs to allocate a disproportionate amount of investments to venture capital. Developing further access to growth capital and management support for early stage companies should therefore be a priority. One potential avenue for doing so is via the pension funds. Despite the large size of the Icelandic pension fund, their presence in venture capital markets has been limited. Attracting world-class managers from the global talent pool to establish and run such funds could be beneficial for both pension funds and early stage companies. Pension funds would be able to further diversify their investment portfolios whilst providing growing businesses with valuable management support through professional fund managers.

On top of this, improved access to international venture capital markets should be a priority.

6.3.4 Shake up the incumbents

The limited scale and subpar productivity levels of many Icelandic manufacturing firms indicates a need for a shakeup of the industry to let the best ones innovate and grow further, while others may have to accept that they are not in a position to compete with the best.

As with the domestic service sector, the key enabler for such a shakeup is increased competition. Icelandic companies will also need to build scale. For tradable goods there is not the same risk of competitive distortion from scaling up businesses, given that trade barriers do not protect businesses. A key element in overcoming this low productivity (and safeguarding consumer interests) is thus facilitating openness in the economy, enabling competition through imports of competing goods and the entry of productive and value-adding foreign competitors.

Increased openness and competition will promote creative destruction, whereby more productive companies gain market share from less productive companies. Allowing valuable resources to shift into more productive businesses is essential in driving up overall productivity, allowing the economy to fully reap the benefits of growth in the sector.

6.3.5 Learn from the broad policy agreements in the Nordics

To improve the policy predictability and stability that stimulates the growth of companies, Icelandic policymakers can learn from their Nordic counterparts. The cornerstones of economic policy are being ratified as long-term bipartisan agreements with a strong common understanding that these will be sustained from one election to the next.

It is indicative that the last period of consensus-driven policy in Iceland, the 1990s, laid the basis for the growth of many of Iceland's best companies.

As indicated by this report, there are many relevant cornerstones for Iceland. Examples include regulation of the fisheries and energy sectors, legislation on tariffs, competition

policy and overall tax policy. It should be the aspiration of Icelandic stakeholders to reach broad agreement on these questions.

6.4 Summing up

A significant step up in the share of the international sector in the Icelandic economy will take time. Nevertheless, ensuring that this happens should be a priority in creating a balanced growth path for Iceland that avoids the fluctuations in individual prices in world markets, be it currency, fish or aluminum, having a disproportionate impact on the economy.

Given the mobile nature of businesses in the international sector, it is important to address these issues firmly. Foreign direct investment has been limited historically and even lower in recent years. Several leading Icelandic companies with an international presence have relocated important parts of their operations to other countries, and there is a major risk of others following suit. Addressing the issues outlined above will help reverse this trend and allow the international sector to regain momentum.

7



The guiding lights of Iceland's growth agenda

7.1 A comprehensive plan is required

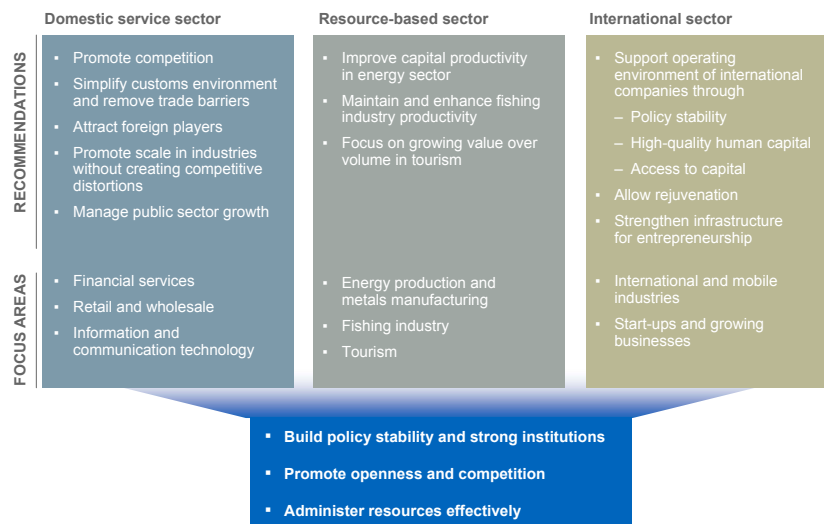
In earlier chapters we split the discussion into the three segments of the economy: the domestic service sector, the resource-based sector and the international sector. This was useful in order to underline the differences between the three segments in terms of the current situation, future potential and means of improvement. Exhibit 49 summarizes our main recommendations and focus areas within each sector.

Even though different tactics apply to each sector, we believe three overarching themes synthesize our suggested policy agenda in this report:

- Building policy stability and strong institutions
- Promoting openness and competition
- Administering resources efficiently

EXHIBIT 49

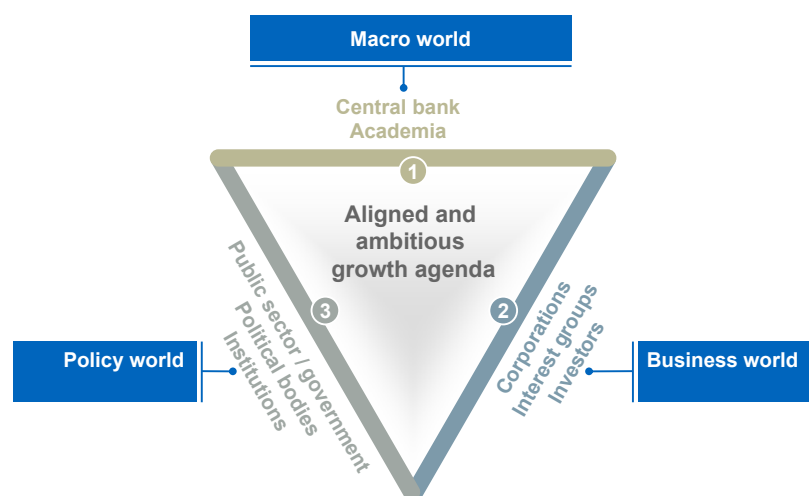
Overview of suggested recommendations



A realization of this policy agenda and the economic benefit it would bring requires alignment between all key stakeholders in the economy. This includes formal policy makers, institutions promoting macroeconomic stability and private business sector.

EXHIBIT 50

A credible growth plan for Iceland requires alignment and cooperation between key stakeholders



7.2 Several catalysts for growth

Growth and overall productivity in a market economy are never fully under the control of policymakers. However, policymakers have a very important role in shaping the set of interrelated activities that takes place in the economy. It is thus not a question of policymakers “fixing” the economy but of them implementing an agenda that facilitates positive changes.

We believe the three main agenda points we have outlined trigger growth catalysts that would not only address current challenges but also enable a chain of events that would lay solid long-term foundations for the Icelandic economy. These catalysts are business confidence, leeway for transition and international competitiveness. The three catalysts are interrelated, and together they can create the basis for a virtuous circle in the economy.

One of the major reasons for low investment in the private sector is uncertainty. However, investments are not the only factor affected by uncertainty, as an unpredictable external environment affects practically all major business decisions – financial, operational and strategic. Building **business confidence** is thus a key enabler in shifting the focus of businesses from a short-term to a long-term approach. Furthermore, we believe increased business confidence will form the basis for gradual removal of capital controls.

The agenda point **building policy stability and strong institutions** covers a wide range of recommendations in this report. They include facilitating broader political collaboration and forming political pacts on important matters, increasing transparency and predictability in policy implementation and devoting sufficient resources to key institutions to allow them to effectively deal with temporary challenges.

Many of the broader challenges pointed out in this report – most importantly the productivity gap in the domestic economy – have been well known to policymakers for some time. The main challenge is thus neither identifying the issues at hand nor explaining their implications, but creating a **leeway for transition**. As this report points out, there are several stumbling blocks that prevent preferable adjustment in the current business environment.

Promoting openness and competition is a key enabler for removal of these obstacles. Opening the domestic market to competition by attracting foreign players, removing trade barriers and simplifying the customs environment and reconnecting the financial system to the international markets will build a leeway for transition. Resumption of business confidence – with the consequent pick-up in economic activities – will further help remove barriers to the necessary transition to higher average productivity.

Finally, to thrive in an open and global marketplace, Icelandic businesses need to build broadly-based **international competitiveness**. As this report has pointed out, the most productive industries in the economy base their existence on natural resources. In order to extend that high level of productivity to other parts of the economy – particularly the international sector – it is very important to further develop other value generating resources, i.e. labor and capital stock.

In that context, the key role of policymakers is to **administer resources efficiently**. This report outlines how to maximize the value of already efficient natural resource based industries, e.g. by maintaining a productive structure in the fishing system and obtaining higher prices in the next phase of energy build-up. Furthermore, it is important to contribute to growth and productivity improvements within other parts of the economy. Generating highly skilled labor through a well structured educational system that responds to the needs of the players in the labor market would help to expand high value industries and support competitiveness across industries. Combined with a favorable investment environment with open and transparent capital markets, the necessary conditions would be in place for businesses with international operations to thrive. The virtuous circle would be completed with the increased business confidence brought about by the availability of the requisite resources in the labor and capital markets.

Going down this path would undoubtedly change the make up of the industrial and economic business landscape, but we believe this would create overall benefits well beyond the opportunity costs of going through such transition, allowing Iceland to secure its place among the world's top-performing economies.

7.3 *Reaching broad alignment*

Pursuing this kind of long-term strategy creates substantial political challenges, mainly because of the unclear relationship between actions and outcomes. Successfully implementing the policy agenda outlined in this report will consequently not be an easy task, and it involves creating alignment among a large number of stakeholders with different interests. However, the rewards for such efforts could be very substantial. Using these policy items would enable changes that would not only help address current challenges but would also lay strong foundations for sustainable growth.

To help address the challenges of implementing the strategy, we believe it would be advantageous to create a discussion forum – focused on long-term economic strategy – that includes representatives from private businesses, public administration, labor market organizations and every political party. The objective of such a forum would be to:

- Contribute to factual discussion of overall economic strategy and major challenges
- Build collaborative dialogue between main stakeholders
- Define common and non-controversial goals
- Identify and discuss growth opportunities and initiatives that require the collaboration of the public and private sectors

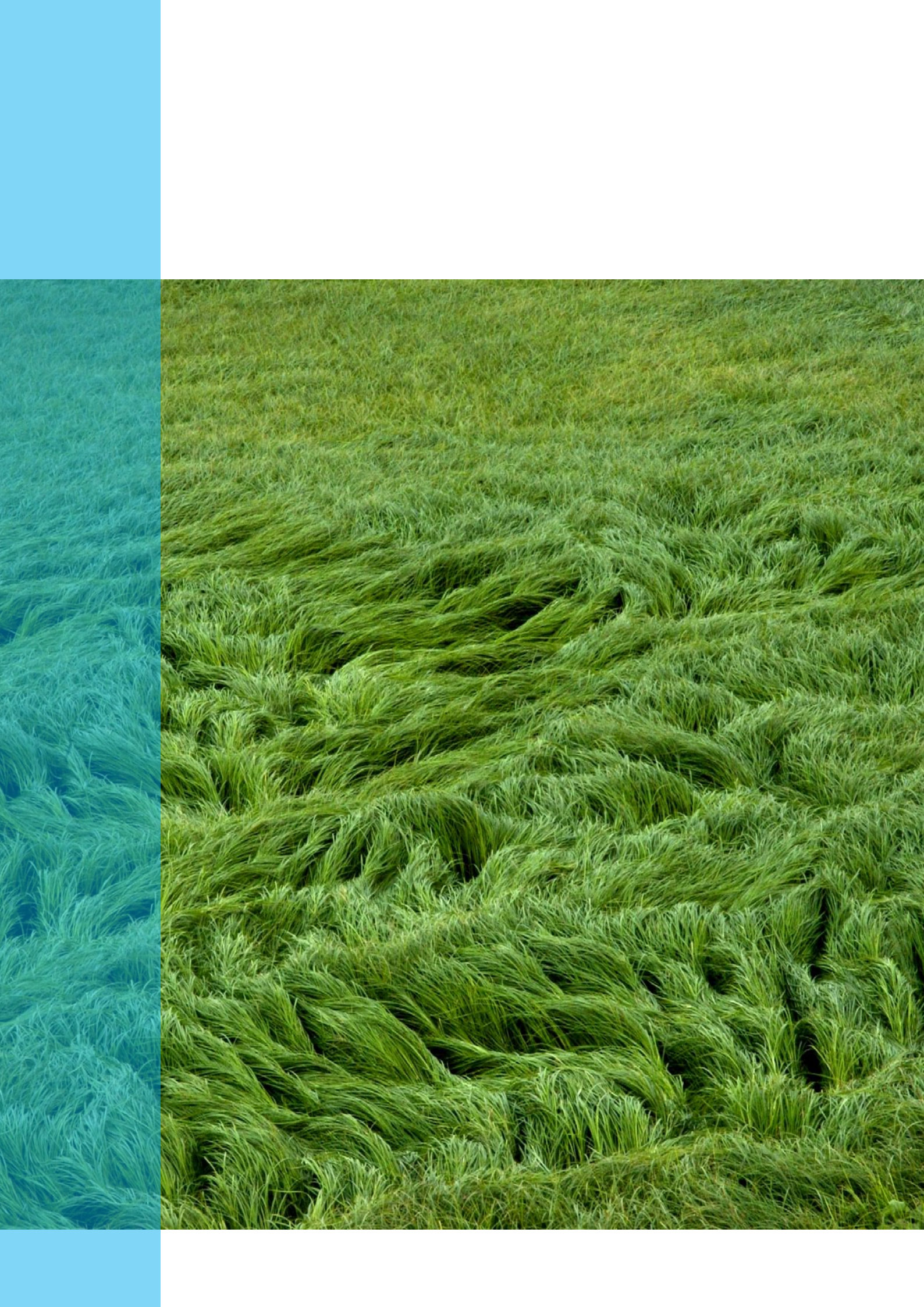
Even though such a forum would not have any formal authority, it would allow joint problem solving among major stakeholders, underline the importance of constructive collaboration and enhance discussion of long-term economic strategy. All these factors increase the likelihood of effectively addressing the challenges outlined in this report.

7.4 *Strong future prospects*

Overall, Iceland is in an enviable position. After the extraordinary challenges the economy experienced during and in the aftermath of the financial crisis, many positive signals have emerged. Resource-based industries have provided a valuable buffer, contributing to the resilience and adaptability of the economy. Domestic labor market conditions are still very favorable in an international context, even though they are below historical averages in Iceland. Furthermore, domestic demand has gathered pace, leading to increased economic activity. As a result, living standards are still close to parity with the other Nordic countries measured as PPP-adjusted GDP per capita.

Achieving a successful long-term economic strategy will further improve Iceland's position. Higher labor productivity effectively creates scope for increased consumption and more leisure time. Growing the economy would also strengthen fiscal status and alleviate high levels of corporate and household debt.

As this report has outlined, there is still significant scope for improvement. If Iceland wants to regain its position among the world's top performers it is important to capitalize on all the available opportunities, in order to enhance sustainable economic growth. Iceland is in the privileged position of having multiple growth levers that can greatly improve average production in the economy. The country therefore has good reason to be optimistic, provided policymakers utilize the opportunities available.



Appendix A:

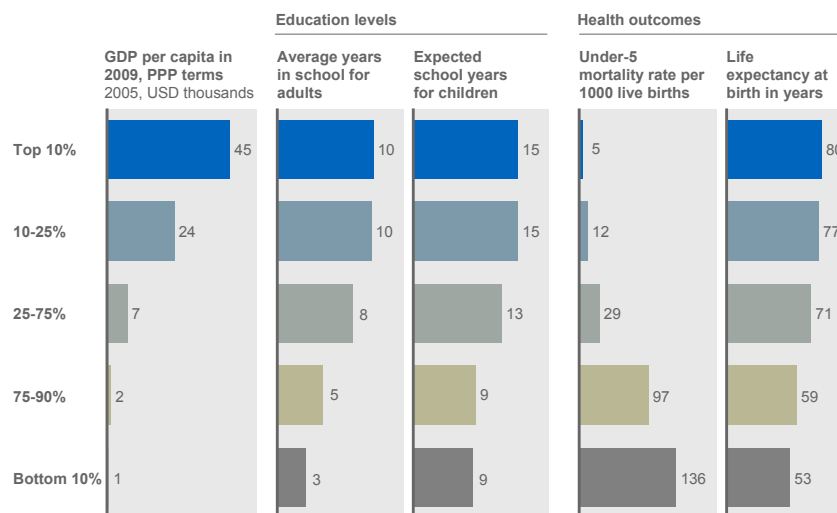
Why use GDP per capita?

In this report we focus on the production side of the economy. As a main definition we use GDP per capita, which is defined as the value of the final goods and services produced in the economy over one year divided by the population of the economy. Even though there are many different metrics, GDP per capita is the most widely used single metric for standard of living.

This is not surprising, as production is a key determinant of overall well-being and strongly correlates with several objective measures of quality of life. To illustrate this fact, Exhibit 51 shows the relationship between production, levels of education and health outcomes.

EXHIBIT 51

GDP positively correlated to other measures of welfare



SOURCE: SSB; McKinsey analysis

In the exhibit global economies have been split into groups, based on their level of production per capita. As can be seen from the bar chart, there is a strong relationship between production and level of education, in particular when moving away from the lowest production brackets. The relationship is even stronger for health outcomes, and it continues to have significant effects all the way to the top. Life expectancy is three years longer in the first group than in the second, and mortality rates for children under the age of five are twice as high.

Thus, although GDP per capita is not a complete measure of welfare, as it does not include other relevant measure of welfare such as income distribution, unpaid activities (e.g. household work), human rights, negative environmental cost of production etc., the level and growth of GDP per capita does capture essential elements of societies' standard of living.

Box 4.

Basic concepts

A brief introduction to the various measures used in this report.

- **Gross Domestic Product (GDP):** Measures the market value of all officially recognised goods and services produced in a country. Three equivalent ways of measuring GDP:
 - **Production approach:** Sum of value added in all industries, with taxes and subsidy adjustment.
 - **Income approach:** Sum of wages, profits and income from non-incorporated businesses, with tax, subsidy and depreciation adjustment.
 - **Expenditure approach:** Sum of private consumption, government consumption, investments, exports minus imports
- **GDP per capita:** GDP divided by a country's population
- **PPP-adjusted GDP per capita:** To facilitate international income comparisons, the market-based measure of GDP is adjusted to account for differences in purchasing power across countries that are not reflected in market exchange rates. Although this method is exposed to certain limitations, e.g. bias from difference in the relative importance of indirect taxation, it is the most widely used method for cross-country comparison.
- **Gross value added (GVA):** Value of goods and services produced minus the value of input goods used in production. The sum of gross value added across industries plus indirect taxes minus subsidies equals GDP.

Appendix B:

Labour and capital productivity of different industries

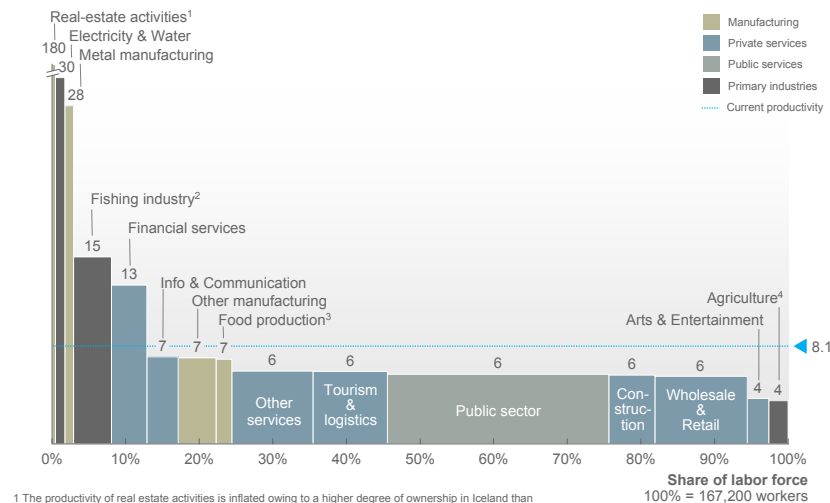
The report focuses on a comparison of labor productivity between Iceland and the other Nordic countries. To further understand industry specific performance and the nature of this performance it is useful to consider relative GVA in domestic industries. Exhibits 52 and 53 illustrate labor and capital productivity across industries.

The breakdown shows a picture that would be expected in most economies: most of the capital-intensive industries have a high level of labor productivity, while a large portion of the capital light industries – mainly service industries – are only moderately productive.

EXHIBIT 52

The Icelandic economy has a long tail of sectors with low labor productivity

Gross value added per worker, ISK millions per year, 2010



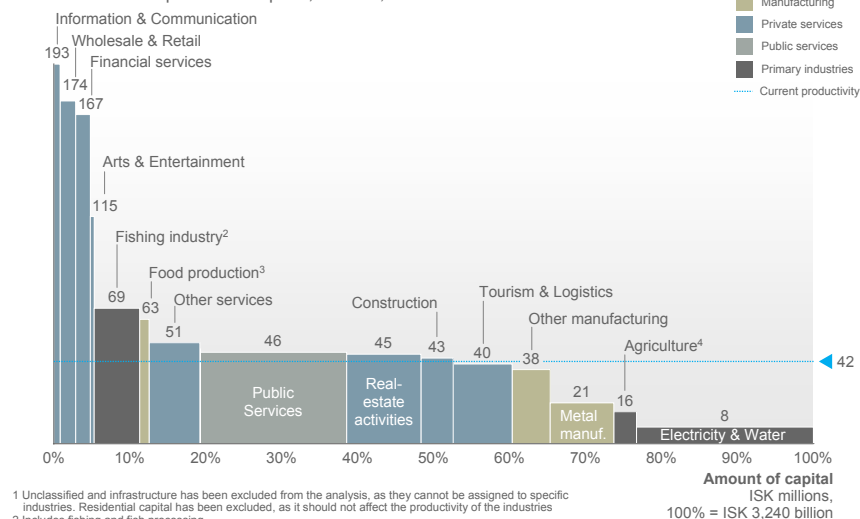
1 The productivity of real estate activities is inflated owing to a higher degree of ownership in Iceland than in Nordic peer countries and larger non-official rental markets
 2 Includes fishing and fish processing
 3 Excluding fish processing
 4 Agriculture gross value add includes subsidies; as result, gross value added per worker is inflated

SOURCE: Statistics Iceland, McKinsey analysis

EXHIBIT 53

Overall capital productivity depressed by a low performing electricity and energy-intensive industry value chain

Gross value added per unit of capital¹; Percent, 2010



1 Unclassified and infrastructure has been excluded from the analysis, as they cannot be assigned to specific industries. Residential capital has been excluded, as it should not affect the productivity of the industries
 2 Includes fishing and fish processing
 3 Excluding fish processing
 4 Agriculture gross value add includes subsidies; as result, gross value added per worker is inflated

SOURCE: Statistics Iceland, McKinsey analysis

The exhibits illustrate a few interesting facts:

The fishing industry is efficient in utilizing both labor and capital input, as both labor and capital productivity are high. Agriculture is on the flip side, with low productivity in both capital and labor.

- The highly integrated sectors – electricity & water and metal manufacturing – are characterized by high capital intensity with consequent high labor productivity. However, these industries also have the lowest GVA per unit of capital of all industries. The two industries make up around 25 percent of capital stock. Thus increasing the return on capital would have a major impact.
- ITC is among the most efficient industries, however, the industry relies heavily on infrastructure, only a small proportion of which it owns. This might lead to inflated comparable capital productivity.
- Capital productivity in the wholesale & retail sector is also distorted, since the industry relies on long-term lease contracts instead of buying real estate. As the industry drop in retail illustrates, there is significant overcapacity in terms of storage space.

