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THE BALTIC SEA REGION INNOVATION MONITOR 2012



Baltic Sea Region
Programme 2007-2013



BSR STARS
Innovation in the Baltic Sea Region



KOLOFON THE BALTIC SEA REGION INNOVATION MONITOR 2012

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PREFACE

The Baltic Sea Region (BSR) Innovation Monitor 2012 has been compiled by FORA/DBA on behalf of the StarDust project, which is a part of the Flagship BSR Stars in the EU Strategy for the Baltic Sea Region.

The BSR Stars Programme aims to speed up innovation in the Baltic Sea Region using transnational cooperation to strengthen competitiveness and support sustainable growth. The main tool used in the program is linkages of research and innovative nodes, clusters and SME networks and the creation of strong partnerships.

The BSR Innovation Monitor 2012 provides policymakers in the ten countries with a common frame of reference regarding policymaking on innovation. The BSR Innovation Monitor 2012 provides a valuable tool in gaining an overview of innovation strengths and challenges and corresponding policy instruments.

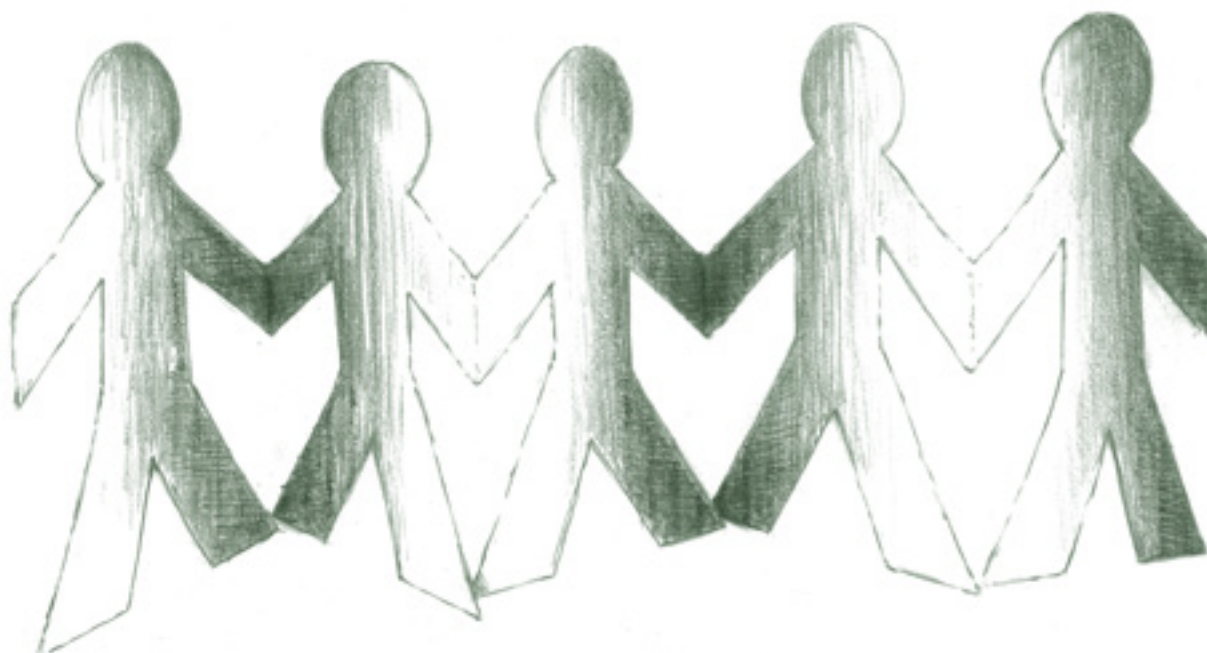
The BSR Innovation Monitor 2012 will hopefully inspire stakeholders across the BSR in joining forces to address common challenges enabling them to strengthen future innovation performance. The BSR Innovation Monitor 2012 will be used to facilitate the five subprojects in the StarDust project in developing their strategic action plans for future cooperation, where the information will be applied to developing their market position in a global context.

We hope that the BSR Innovation Monitor 2012 will be used as inspiration for the continued efforts in further developing the Baltic Sea Region as a prosperous and attractive region.

We are very grateful for the work carried out by FORA/DBA in providing a valuable contribution to the StarDust project.

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ACKNOWLEDGEMENT

The Baltic Sea Region (BSR) Innovation Monitor 2012 has been written by FORA/DBA for the Stardust Programme. 2012 marks the starting point of the BSR Innovation Monitor. The Baltic Sea countries will gain access to a common point of reference regarding policymaking on innovation. The BSR Innovation Monitor 2012 provides a tool for gaining an overview of innovation strengths and challenges and corresponding policy instruments.

The BSR Innovation Monitor 2012 highlights areas of innovation policy where the BSR countries could improve their framework conditions for innovation. The BSR Innovation Monitor may also be used to inspire future work related to developing the BSR as a macro region by joining forces to address common challenges enabling BSR countries to improve future innovation performance.

The commitment from all of the BSR countries in qualifying the results has been outstanding. Valuable contributions to the BSR Innovation Monitor 2012 have been provided by the following key policymakers and innovation experts:

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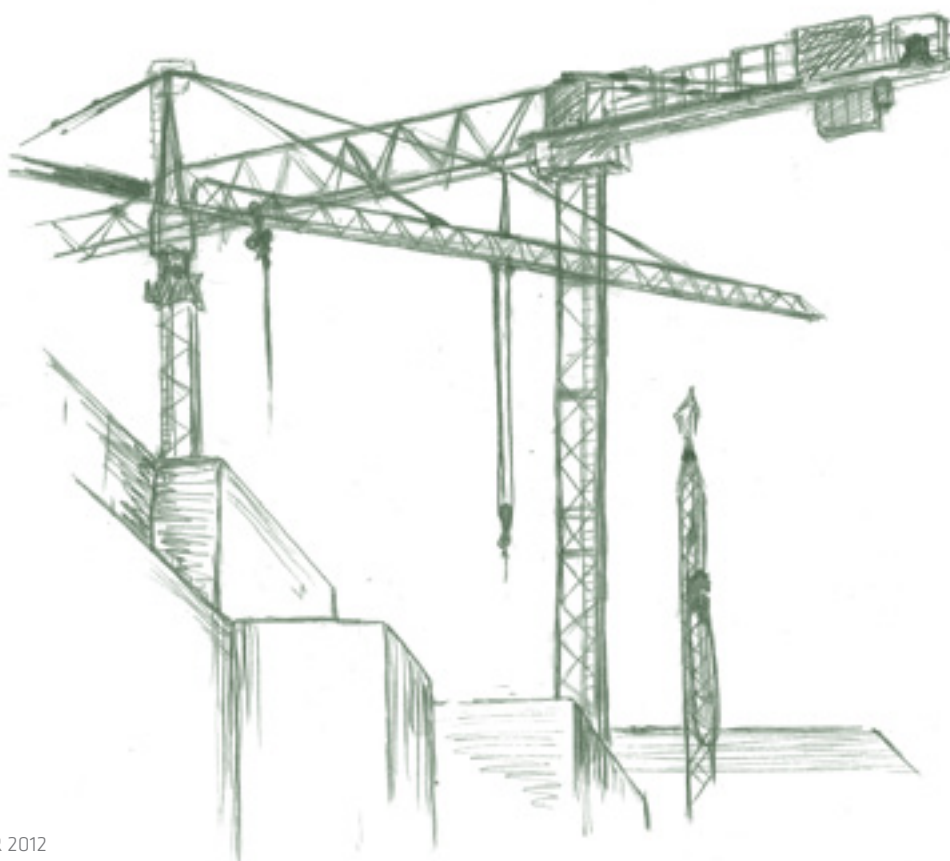
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EXECUTIVE SUMMARY

This report presents the current status as well as trends in innovation performance and framework conditions in the Baltic Sea Region (BSR) and compares these to other global regions. BSR is benchmarked as an entire region but also highlights differences within the BSR. Also, a strategic outlook will present recent trends in innovation and cluster policy across the BSR. Finally, a set of policy recommendations will be offered reflecting the innovation performance and framework conditions and recent trends.

WHAT IS THE BALTIC SEA REGION INNOVATION MONITOR 2012

The BSR Innovation Monitor 2012 is an innovation model that rates innovation capacities across 36 countries. The BSR Innovation Monitor 2012 provides a fact-based platform for monitoring (and improving) innovation in the BSR. The monitor is a composite index based on data from various renowned statistical sources and indices, and has been supplemented by a presentation of innovation-related policy, which has been provided with the assistance of policymakers from the BSR countries.

The monitor consists of a broad range of indicators divided into four groups/drivers of innovation (human resources, knowledge creation, ICT and entrepreneurship), each providing bits of information regarding innovation in individual countries. For each of the four drivers the BSR Innovation Monitor 2012 distinguishes between performances and framework conditions.

STATUS AND RECENT DEVELOPMENTS IN INNOVATION PERFORMANCE AND FRAMEWORK CONDITIONS

Overall innovation performance and framework conditions – BSR countries

Overall, the Nordic countries perform well in terms of both innovation performance and framework conditions. In terms of performance Sweden (top performer), Finland (2nd), Denmark (3rd) and Norway (6th) are among the most innovative countries in 2011, whereas Iceland, Germany, Lithuania, Estonia, Latvia and Poland are lagging behind the Nordic countries (except Iceland) by some margin.

In terms of development in performance the most significant progress from 2006 to 2011 has been made by Lithuania, Sweden, Latvia and Norway. Among the 10 most improving countries we also find Finland and Poland. Iceland has seen a minor decline in performance, while Germany, Denmark and Estonia have witnessed an even bigger decline in innovation performance.

When looking at framework conditions we see similar trends. The Nordic countries are all ranked in the top-10 (Denmark 3rd, Finland 5th, Sweden 7th, Norway 8th and Iceland 10th), while Germany, Estonia, Lithuania, Latvia and Poland trail the Nordic countries by some margin.

In terms of development in framework conditions Luxembourg and Portugal have made the most significant progress from 2006 to 2011, followed by Poland, among the 36 countries. Latvia has also improved its framework condition significantly. Lithuania, Sweden and Germany have also shown solid progress. Further down the list albeit still progressing we find Denmark, Estonia, Norway and Finland. Next to bottom is Iceland, which has seen a decline in framework conditions.

Overall innovation performance and framework conditions – sub regions

The overall innovation performance of the BSR is strong with BSR North-West (Iceland, Norway, Sweden, Denmark, Finland and Germany) ranked as the most innovative region among all of the benchmarked regions outperforming the top-performing English-speaking countries (the US, the UK and Canada) by some margin. The EU15 and BSR South-

East (Estonia, Latvia, Lithuania and Poland) are rated below the top-two regions, with SACHS (Slovak Republic, Austria, Czech Republic, Hungary and Slovenia) trailing the leading regions even further. Since 2006 the BSR is the only region which has seen an increasing innovation performance which in turn is due to improvement in performances in both BSR South-East (SE) and BSR North-West (NW).

BSR NW is ranked first in innovation performance due to top-performances in ICT, knowledge creation and human resources, while the area of entrepreneurship remains a challenge. The picture is exactly the opposite in BSR SE, with the region ranked at the very top in entrepreneurship, while the BSR SE remains the lowest ranked region in terms of innovation performance in the remaining three innovation areas.

Although BSR NW is the most innovative region, the US, the UK and Canada has the best overall framework conditions for innovation marginally outperforming BSR NW. The EU15 is behind by some margin, while SACHS and BSR SE find themselves even further back having by far the most challenging framework conditions for innovation.

BSR NW trails the US, the UK and Canada in three of the four drivers of innovation (knowledge creation, human resources and entrepreneurship), but holds the best framework conditions for ICT. Human resources and ICT are the least challenging areas for BSR SE outperforming SACHS in both areas while posting poorest framework conditions for entrepreneurship and knowledge creation. On a positive note, BSR SE is the most improved region and is catching up with SACHS. BSR NW on the other hand has improved the least among the regions, but that is from a rather high level.

One overall conclusion is that although framework conditions have improved in BSR SE, there seems to be a potential for general improvements in performance across all innovation drivers except for entrepreneurship. BSR could also reap some benefits from improving the ability to create growth among entrepreneurs in BSR NW by addressing the framework conditions for entrepreneurship and improving them accordingly. This leads to the overall conclusion that peer learning across the BSR countries in all areas may have the potential to improve the innovation performance solidifying BSR's position as the top-ranked innovative region for years to come.

STRATEGIC OUTLOOK – INNOVATION POLICY IN THE BSR

Innovation strategies across the BSR share many common themes. BSR countries have a common orientation towards significant challenges and societal needs as drivers of innovation opportunities, while maintaining a global perspective in innovation. BSR countries also highlight the common need for strategic prioritization (or smart specialization) leveraging regional innovation hubs/eco-systems as innovation platforms, while developing coordinated efforts (across borders).

Many innovation strategies also highlight the prioritization in applying new policy approaches including the use of public demand (e.g. regulation, public procurement and innovation in public sector) as a driver of innovation, and developing collaborative business models and orchestration skills (for use in innovation eco-systems and transnational innovation networks).

The launch of new programme calls and ongoing development of new programmes is a testament to the continued importance of cluster programmes. Cluster initiatives are used for mobilizing various stakeholders (SMEs in particular), renewal/upgrading activities (including skills development) on a regional level, and establishing new linkages with other stakeholders or related innovation hubs.

POLICY RECOMMENDATIONS

Based on the results of the analysis and peer review interviews, a number of common themes/challenges have been identified which in turn has led to the formulation of proposals to be considered by the BSR Stars High-level Group. The recommendations are intended to be applicable to the entire BSR and if implemented should benefit BSR by improving the framework conditions for innovation (which in turn will lead to improved innovation performances).

On a strategic level it is proposed to **develop a BSR (macro-regional) Innovation Strategy for Smart Specialization**. In the upcoming EU programming period, the submission of regional (or national) innovation strategies for smart specialization is an ex-ante condition for the use of structural funds. In these strategies, regions/countries are asked to prioritize areas of specialized competence where Research, Development & Innovation (RDI) funding will be focused. These strategies will guide regional and national funding and should also be used to guide EU funds (e.g. Horizon 2020, InterRegional funds, etc.). Given the importance of these strategies for guiding the use of national and supranational RDI financing the development of a BSR macro-regional innovation strategy for smart specialization would add considerable value to the BSR.

On an operational level peer reviews have unveiled that much can be learned from countries within BSR. Therefore it is proposed to **further pursue peer-learning activities**. Several countries have initiated programmes that are focused on similar policy objectives yet use different operational approaches. A coordinated effort to learn from best practise and avoid possible traps in the implementation of different programmes could foster a more efficient implementation of initiatives. The BSR Stars High-level Group would be a suitable platform for sharing this type of information. However, it is recommended that the BSR Stars High-level group following the initial knowledge sharing establish different working groups involving experts and policy makers from the relevant fields across the BSR to discuss specific themes and seek joint initiatives.

Based on the results of the BSR Innovation Monitor 2012 and the peer reviews, the following four themes are recommended for further exploration in the BSR Stars High-level Group.



ATTRACTING FOREIGN TALENT

As shown in the Innovation Monitor, the shortage of skills and talent is an issue experienced and voiced across many countries c.f. chapter 4.3.3 and appendix G. A joint effort by BSR to attract globally sourced knowledge could prove to be effective in overcoming barriers in this area. BSR can offer a wide range of challenging career opportunities, high liveability, and cultural diversity which would be attractive to most foreigners.

The BSR countries would ensure that the implementation and administration of these rules is carried out in a coherent manner across the region and could work together to eliminate barriers to internal mobility of foreign high-skilled workers. Furthermore, the BSR countries could work together to attract Blue Card (highlighted in chapter 6) holders resident in other EU countries. Further to this, the BSR countries could cooperate to explore the possibilities of making the region more attractive to foreign students.



BOOSTING VENTURE CAPITAL

Lack of venture capital is a challenge in most BSR countries. It is therefore recommended to learn from experiences of the Baltic Innovation Fund (highlighted in chapter 6) and boost venture capital investments across the BSR. Pooling venture capital in the BSR would increase the opportunities for spreading investment risks as investments will be made in a bigger market thereby providing better investment opportunities. That will ultimately lead to a higher yield, which all other things being equal would attract more venture capital to the BSR.



IMPROVING PUBLIC-PRIVATE KNOWLEDGE TRANSFER

The task of dissemination of knowledge from public research into the private sector for commercial exploitation and economic growth remains a top priority of all BSR countries. Peer learning on the “business models” used (i.e. what type of financing is provided for different actors and activities, which institutional setup is utilised for framing cooperation etc.) may provide inspiration for adjusting national innovation and cluster programme approaches. Therefore, priority could be given to facilitating peer learning among policy makers with regards to the various tools employed across the BSR.

Stronger cross-border cooperation within the BSR involves the matching of customers and environments that share similar challenges with different clusters, companies and research organisations. This could be done using a number of theme networks aimed at the collaborative development of solutions that matches the identified challenges. Matchmaking could take place via (physical) events at various locations across the BSR, but could also be facilitated through online matchmaking services based on themes along the lines of the Demola project (highlighted in chapter 6).



DEVELOPMENT OF PUBLIC LEAD MARKETS

To spur innovation individual governments have a variety of opportunities at hand. One of the opportunities is to develop publicly-led markets, e.g. by using public procurement to foster innovation. Publicly-led markets will help businesses grow by meeting public demands in an innovative way, while at the same time the public sector may help businesses overcome public market barriers as for instance the Business Innovation Fund (highlighted in chapter 6).

While the public-private knowledge transfer should have a global perspective (see recommendation above), on a practical level it is recommended to develop national test beds for the testing of innovative products and services developed across in the BSR (related to global challenges). However, these test beds should be made available to all BSR countries. Making the different national test beds accessible for companies in other BSR countries and combining them with market maturation initiatives will ideally pose two major advantages: 1)

it will potentially provide customers with the most innovative solution and 2) it will expand the market not only for developing the solution, but also for overcoming barriers to public markets for businesses across the BSR, which in turn may lead to stronger global sales.

Furthermore, at the monitoring level it is recommended to **use and further develop the BSR Innovation Monitor as a tool for the repeated benchmarking of innovation performance and framework conditions across the BSR**. The BSR Innovation Monitor provides complimentary information for the EU Innovation Scoreboard – and complements data with qualitative information on strategies and policy approaches. It could be further developed to reflect the most recent as well as future trends in innovation.

Finally, it is recommended to **explore the possibilities of monitoring the benefits and economic impacts of clusters**. Peer reviews have revealed the need for further evidence (for policy makers and for companies) that the “cluster instrument” works.



CHAPTER 1

INTRODUCTION

INTRODUCTION

In the past years, the pressure on the European economies has been mounting. Pressure to cut fiscal budgets while aiming at maintaining the welfare provided to its citizens. Pressure to cut back on the consumption of energy and scarce raw materials while increasing competitiveness, job creation and growth. In short, Europe needs to innovate. The need for innovation has been recognized at the political level for years as reflected in recent initiatives such as the EU 2020 Strategy and its flagship initiative Innovation Union, and the commitment to increasing innovation has been reaffirmed also through the EU Strategy for the Baltic Sea Region (EUSBSR) - the first macro-regional strategy of the EU.

EU STRATEGY FOR THE BALTIC SEA REGION

The EUSBSR aims at developing the region into a globally leading region. It acknowledges that even though countries in the region are small, increased growth and prosperity can be attained if the countries work closely together. Many of the challenges faced by countries today and in the future are shared, and in a variety of areas cooperation on innovation issues can create a larger critical mass of research and innovation resources allowing for the development of common solutions to these common challenges.

The markets of the BSR countries can become one larger home market for companies across the region, giving companies – and not least the SMEs a stepping stone towards expansion of exports towards global markets.

THE BSR STARS PROGRAMME

A flagship initiative within the EU Strategy for the Baltic Sea Region is the BSR Stars programme. The BSR Stars programme aims at strengthening competitiveness and economic growth in the Baltic Sea Region. The aim is to foster transnational linkages between specialized research and innovation nodes, leading to strategic innovation alliances to tackle common “grand challenges”, such as health, energy, sustainable transports and digital business and services.

The long term vision of the programme is to establish the Baltic Sea Region as a functional region with an internationally competitive position in a number of strategically prioritized areas. This will be done by linking strong research environments, clusters and SME-networks from the different countries into new strategic alliances with a global market.

The BSR Stars is a transnational innovation programme involving ten countries (Denmark, Sweden, Norway, Finland, Germany, Lithuania, Estonia, Latvia, Poland and Iceland). The programme took its starting point in national efforts to supporting strong clusters and innovation milieus as a way to boost competitiveness. The BSR Stars programme is a long-term commitment (2009-2019) and will be constantly developed and renewed by its owners, i.e. Ministries and Innovation Agencies in the ten countries.

STARDUST

One initiative within the BSR Stars programme is the StarDust project. The overall objective of the StarDust project is it to find new answers for societal challenges that the people around the Baltic Sea are facing. Therefore, the StarDust project brings academic, business and public world together, as their cooperation highlights that common problems must be addressed jointly. Transnational cooperation gives the creative approach that is needed to meet the grand challenges. StarDust aims at creating a number of globally leading research and innovation hubs within the areas chosen. StarDust also has the goal of developing methods for transnational cooperation that can be used in the BSR Stars.

StarDust aims at creating a number of globally leading research and innovation hubs. This will be achieved by building on existing commercial strengths and specialized competencies around the BSR and linking the research and innovation nodes through transnational projects as well as by developing stronger critical mass, attractiveness and

international competitive positions. The five transnational projects are the core of StarDust. They operate in the fields of clean technology & future energy, wellbeing & health, future transport, and digital business & services. New commercial-based concepts and routines relating transnational, national, regional and local levels will be identified and implemented. The projects involve all fields of innovations (scientific, technical as well as non-technical) with the aim of developing business-focused competitive global positions in selected fields. In this way, the projects increase the growth of the region by fostering business ideas and setting up competitive partnerships beyond the national borders.

THE BSR INNOVATION MONITOR

A key supporting component of the StarDust-programme is the Baltic Sea Region Innovation Monitor (BSR Innovation Monitor). The BSR Innovation Monitor measures the innovation performance and framework conditions of each country in the BSR. Further, it gives an in-depth analysis of the innovation performance and framework conditions of the region compared to leading countries and regions.

This allows for a fact-based strategic decision-making within BSR Stars and StarDust; learning from global leaders on innovation, and; enable development of policy formulation towards shaping the best possible conditions for innovation.

READING GUIDE

The macroeconomic and structural environment is a crucial building block in a country's innovation performance and wealth creation. Effective markets, price stability and stable financial systems are conducive to innovation along with micro-policies supporting company innovation. In chapter 2, the macroeconomic and structural environment in the BSR countries will be introduced, to set the overall context in which framework conditions for innovation are in place that in turn influences company performance on innovation.

The benchmark model used in the BSR Innovation Monitor 2012, was introduced in 2004 and has been undergoing continued development during years past. The idea behind the BSR Innovation Monitor is to compare innovation performance with innovation framework conditions across countries, to assess whether certain traits in framework conditions are more conducive to innovation performance than others. In chapter 3, the model used in the BSR Innovation Monitor is introduced and the results on the overall framework conditions and innovation performance of the BSR countries are presented.

A key purpose with the BSR Innovation Monitor, is to provide facts and knowledge to shed light on the micro-policies influencing innovation performance, in order to enable the BSR to learn not only from peers within the region, but also from leading regions in the world. Chapter 4 provides an in-depth analysis on each driver of innovation analyzed in the BSR Innovation Monitor 2012, and highlights areas of advantage and disadvantage for the BSR as a region. This includes presentation of inspiring cases from within the region.

A central activity of the benchmark has been a series of peer reviews carried out with the participation of policy experts from the BSR countries. These peer reviews have had dual purposes: one purpose has been to clarify data in areas of innovation performance and framework conditions of the BSR countries, especially in areas where data was missing or otherwise triggering questioning.

The second purpose has been to deepen our understanding of innovation policy and the use of clusters as an innovation tool in the BSR. This has enabled the mapping of the strategic outlook and political priorities in the BSR countries, and allows us to present the picture of converging policies on innovation and clusters within the region and with recent international policy trends. These findings are presented in chapter 5.

Finally, recommendations based on the results of the BSR Innovation Monitor 2012 will be offered in chapter 6.

CHAPTER 2

**THE MACROECONOMIC
AND STRUCTURAL
ENVIRONMENT
IN BSR COUNTRIES**

THE MACROECONOMIC AND STRUCTURAL ENVIRONMENT IN THE BSR COUNTRIES

The macroeconomic and structural environment is a crucial building block in a country's innovation performance and wealth creation. Sound and efficient policies are necessary conditions for effective markets, price stability and stable financial systems. These are factors which go hand-in-hand with micro-policies that supports company innovation and, altogether, form the backbone of a country's ability to generate sustainable growth and wealth.

Over the course of the last ten years the Baltic Sea Region has experienced both a generously booming global economy and a severe financial and economic global crisis. All of the countries in the BSR have to some extent been affected by the crisis. While there are still some uncertainties with regards to every single aspect of the future macroeconomic situation, it appears that the BSR countries (with Iceland being the sole exception) have weathered a critical economic setback in the aftermath of this crisis.

The BSR countries fall into two groups with fairly different economic environments.

Denmark, Germany, Finland, Norway and Sweden form one group which has generally conducted sound fiscal and monetary policies throughout the 2000s. For the most part these countries have met the EU convergence criteria regarding debt levels, public finances and inflation. The nominal long-term interest rates have seen a downward trend with only marginal fluctuations. Even though the financial and economic crisis has impacted public finances and debt none of the countries appears to have been severely set back in terms of their overall economic capacity.

Furthermore, structural aspects of the economic environment also seem to be effective and healthy in this group of countries. Competition, labour markets and tax rates generally receive good ratings and work in favour of companies. Iceland – being a special case due to the severe effects of the crisis – had a fairly effective economic environment (much like the other Nordic countries and Germany) that is, until the emergence of the crisis. Starting in 2007 public finances and public debt have deteriorated, while inflation and interest rates have skyrocketed and declined again. The exchange rate (against the Euro) has stabilized at a level twice as high as before the crisis. With respect to structural policies, Iceland is ranked in the bottom when it comes to competition, while the labour market and the level of corporate taxation are favourable.

Estonia, Latvia, Lithuania and Poland make up the second group of countries which has generally seen somewhat lower economic stability compared to other BSR countries over the course of the 2000s. Public deficits have been marginally higher, while public debt levels have been lower. However, inflation rates and interest rates have fluctuated considerably more in the Baltic countries and Poland. Except for Estonia, these countries also rank in the bottom when it comes to competition and labour markets, while corporate taxation is at a level with the other BSR countries.

For further information on the macroeconomic and structural environment in BSR countries please refer to appendix H.

CHAPTER 3
**THE BSR INNOVATION
MONITOR 2012**

THE BSR INNOVATION MONITOR 2012

The BSR Innovation Monitor 2012 is an innovation model which rates innovation across a total of 36 countries. The BSR Innovation Monitor 2012 provides a fact-based foundation for monitoring (and improving) the innovation in the BSR. The monitor consists of a broad range of indicators divided into four groups/drivers of innovation (human resources, knowledge creation, ICT and entrepreneurship), each providing bits of information regarding the innovation in each country.

For each of the four drivers the BSR Innovation Monitor 2012 makes a distinction between performances and framework conditions. Relevant indicators have been identified which benchmark countries along these two dimensions:

PERFORMANCE INDICATORS

- a number of complex yet coherent company activities that are generally believed to have a positive effect on productivity.

FRAMEWORK CONDITION INDICATORS:

- a quantification of policies and factors related to each of the four drivers of growth. Framework conditions are believed to have an effect on economic growth through company activities as specified by the performance indicators. Framework conditions may directly or indirectly be influenced by policy makers.

Using this distinction enables benchmarking of a country's innovation performance, the policy framework conditions in place and for the assessment of the correlation between performance and framework conditions. A high correlation between performance and framework conditions implies that changes in framework conditions will potentially impact a country's performance. Benchmarking is thus a key tool for current and future policy formulation.

There are a number of international indicator systems that measures country performances in the global competition (see appendix F for a comparison of selected innovation benchmarks). They serve a range of purposes and measure different factors.

The BSR Innovation Monitor 2012 differs from most other international indicator models in that its core purpose is to distinguish between performance indicators at a micro level on the one hand and framework conditions at a macro level on the other hand. Furthermore, the BSR Innovation Monitor 2012 covers a broader range of innovation activities compared to most other innovation models (see appendix A for an in-depth description of the analytical design of the BSR Innovation Monitor 2012).

Given the broad scope of the BSR Innovation Monitor 2012 many indicators have to be considered to capture all aspects of what the Innovation Monitor is attempting to measure. The BSR Innovation Monitor 2012 is indeed very comprehensive in terms of measuring innovation. It encompasses 137 indicators; 33 are used to measure country performances, while the remaining 104 indicators are used to describe framework conditions for innovation (see appendix C for a complete list of indicators).

The composite indicator for performance covers 16 performance areas based on the 33 indicators measuring the four drivers of innovation. The composite indicator for framework conditions covers 34 policy areas based on the 104 indicators covering the four drivers of innovation. The indicators are collected from reliable sources including the OECD (various publications and databases), World Economic Forum (WEF), IMD, Eurostat and The World Bank among others (see appendix D for a detailed list of sources).

The BSR Innovation Monitor 2012 compares country performance over a period of 5 years (from 2006 to 2011) allowing for tracking national innovation performance over time thereby providing a comprehensive model for rating the innovation in the BSR against other regions in the world.

The innovation performance and the framework condition of the BSR countries as measured by the BSR Innovation Monitor 2012 are described in further detail below. Following this, we will benchmark the BSR region against other regions.

3.1 INNOVATION PERFORMANCE

Sweden posted the top innovation performance in 2011, c.f. figure 3.1.1. Sweden outperforms its closest competitors by some margin. Since 2006, the margin has in fact increased against all other countries apart from Lithuania, c.f. figure 3.1.2. Overall, four of the five Nordic countries are ranked at the very top with Sweden, Finland and Denmark making up the top-three innovation performers with Norway ranked 6th among the 36 countries tracked in the Innovation Monitor. Iceland, Lithuania and Germany are ranked 12th, 13th and 14th, respectively, while Latvia, Estonia and Poland are ranked 20th, 23rd and 27th, respectively

FIGUR 3.1.1 OVERALL INNOVATION PERFORMANCE, 2011

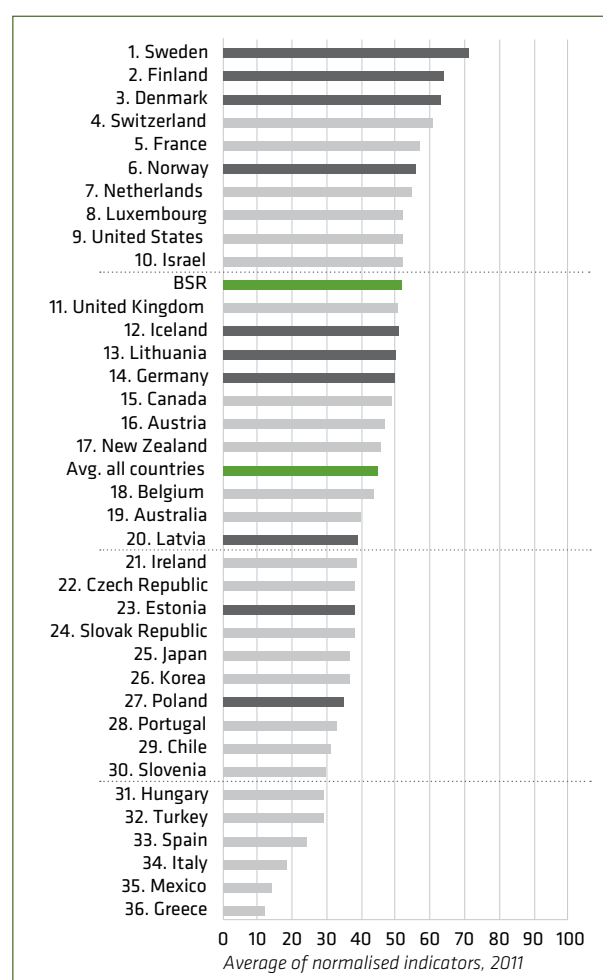
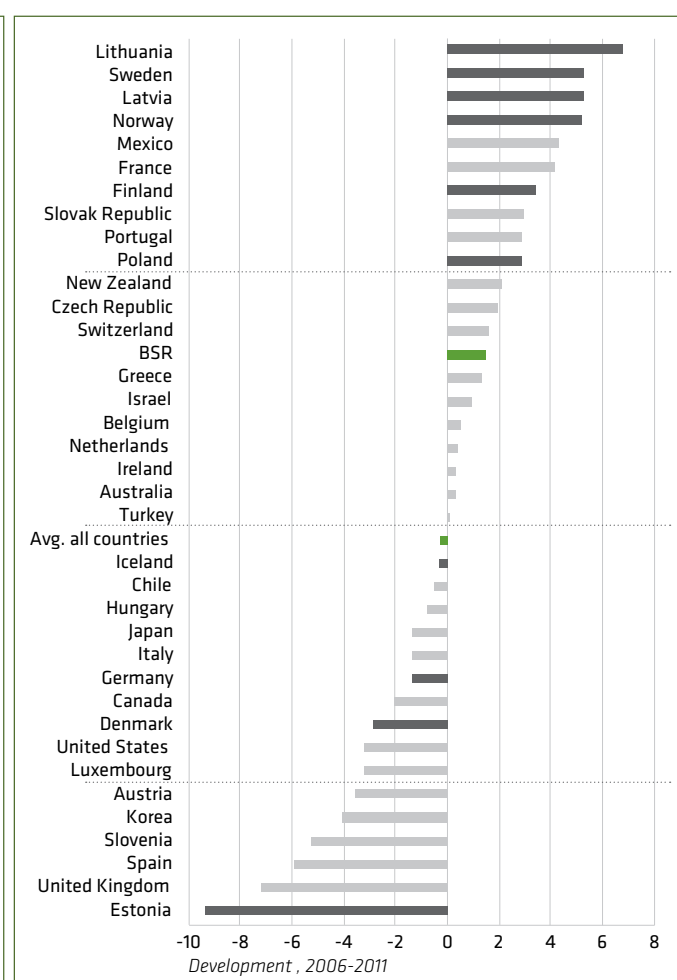


FIGURE 3.1.2 CHANGE IN OVERALL INNOVATION PERFORMANCE, 2006-2011



Source: FORA/Danish Business Authority, BSR Innovation Monitor 2012

Note: The dotted lines divided the 36 countries into top-10, top 20, top 30 and the bottom.

In terms of performance the most significant progress from 2006 to 2011 has been made by Lithuania, Sweden, Latvia and Norway cf. figure 3.1.2, which shows the development in the overall performance index in absolute values from 2006-2011. Among the top-ten most improved countries we also find Finland and Poland. Iceland has seen a minor decline in performance, while Germany, Denmark and Estonia have witnessed an even bigger decline in innovation performances.

3.2 FRAMEWORK CONDITIONS

Canada, Switzerland and Denmark were the top-ranked countries when measuring framework conditions across the BSR, cf. figure 3.2.1. Overall, all of the Nordic countries are ranked in the top-10 (Denmark 3rd, Finland 5th, Sweden 7th, Norway 8th and Iceland 10th). Germany and Estonia are ranked 20th and 21st, respectively. Framework conditions in Lithuania, Latvia and Poland are among the poorest analyzed ranking 27th, 30th and 31st, respectively.

FIGURE 3.2.1 OVERALL INNOVATION
FRAMEWORK CONDITIONS, 2011

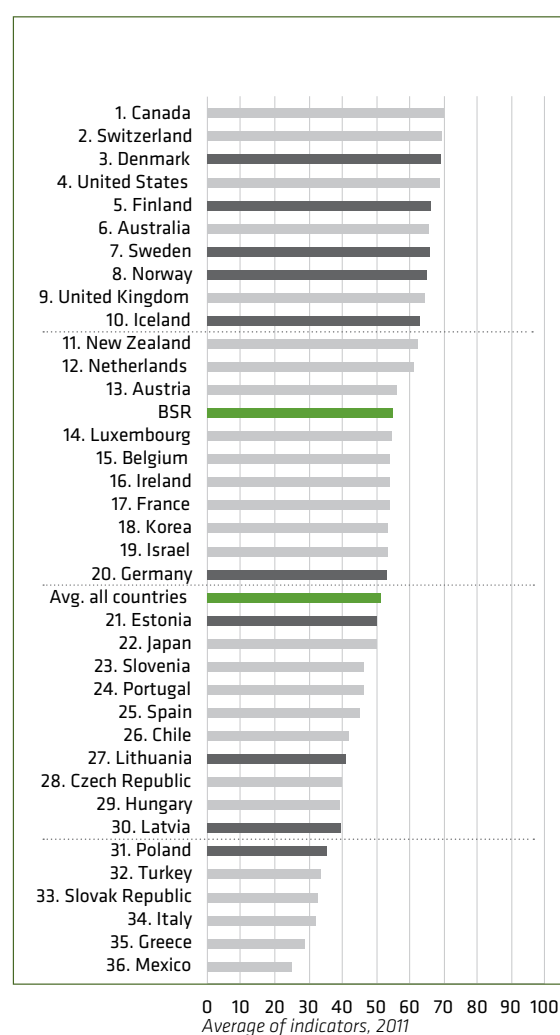
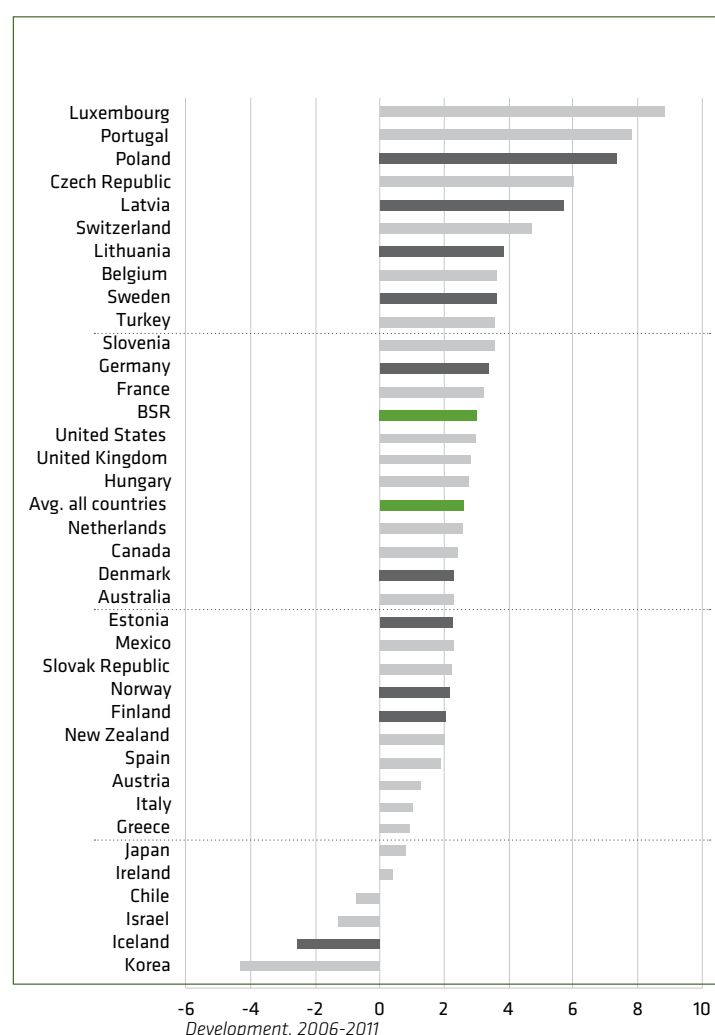


FIGURE 3.2.2 CHANGE IN OVERALL INNOVATION
FRAMEWORK CONDITIONS, 2006-2011



Source: FORA/Danish Business Authority, BSR Innovation Monitor 2012

Note: The dotted lines divided the 36 countries into top-10, top 20, top 30 and the bottom.

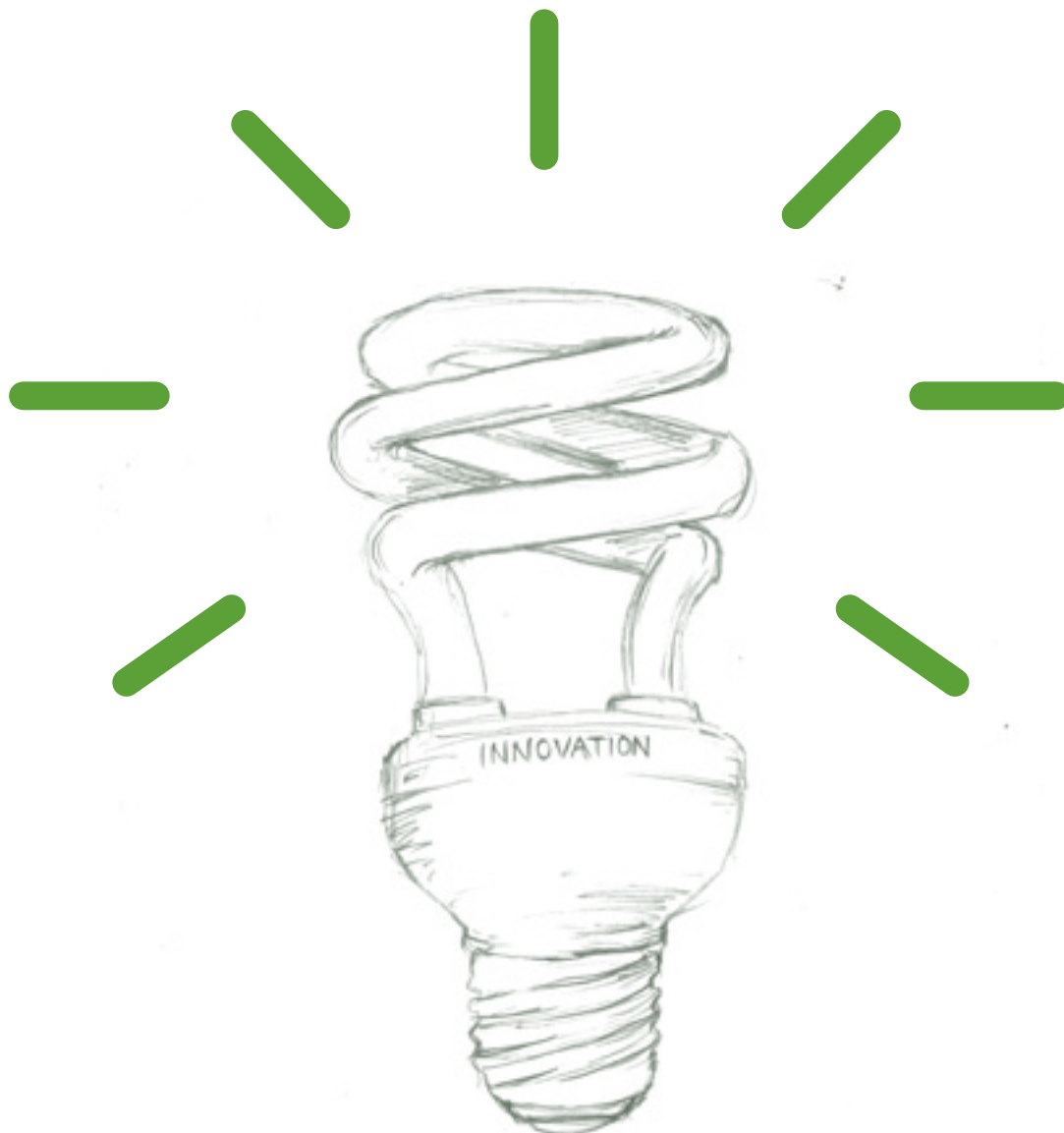
In terms of development in framework conditions Luxembourg and Portugal have made the most significant progress from 2006 to 2011, followed by Poland, among the 36 countries. Latvia has also improved its framework condition significantly. Lithuania, Sweden and Germany also show solid progress. Further down the list - albeit still progressing - we find Denmark, Estonia, Norway and Finland. Next to bottom is Iceland, which has seen a decline in framework conditions. Only three further countries have experienced a decline in framework conditions over the years.

3.3 SUMMARY

The BSR Innovation Monitor's explanatory power is quite solid as the countries with the best performance are to some extent also among the countries with the best framework conditions for innovation. This is shown by a high correlation between framework conditions and innovation performance. See appendix B for correlations and methods used in the BSR Innovation Monitor 2012.

Overall, the Nordic countries perform well in terms of both innovation performance and framework conditions. Sweden, Finland, Denmark and Norway were among the most innovative countries in 2011 while Iceland, Germany, Lithuania, Estonia, Latvia and Poland trail the Nordic countries (except Iceland) by some margin. In terms of framework conditions we find a similar trend with all of Nordic countries found in the top-10, while Germany, Estonia, Lithuania, Latvia and Poland are trailing the Nordic countries by some margin.

Information on innovation performances and framework conditions for each individual driver can be found in appendix E. Detailed information for the underlying reasons behind innovation performance and the framework conditions in each individual BSR country can be found in appendix G.



CHAPTER 4

COMPETITIVE ADVANTAGES/ DISADVANTAGES OF THE BSR

COMPETITIVE ADVANTAGES/DISADVANTAGES OF THE BSR

4.1 INTRODUCTION

Benchmarking the BSR's strengths and areas of improvement may provide the BSR with a common vision as to where national governments should pool together efforts to improve innovation framework conditions.

This chapter benchmarks the BSR against other regions. This is not only confined to benchmarking the BSR as a whole; we also benchmark differences across the BSR implying that the BSR North-West (NW) and BSR South-East (SE) are subject for further analysis. The total innovation performance and framework conditions are calculated for each region providing an indication as to which regions are best equipped for fostering growth in the future.

A selection of the countries included in the monitor has been grouped in line with cultural and geographical considerations, c.f. table 4.1.1

TABLE 4.1.1: REGIONS AND COUNTRIES

REGION	COUNTRIES
US, UK, Canada	United States, United Kingdom, Canada
EU15	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom
SACHS	Austria, Czech Republic, Hungary, Slovak Republic, Slovenia
BSR	Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, Norway, Poland, Sweden
BSR North-West (NW)	Denmark, Finland, Germany, Iceland, Norway, Sweden
BSR South-East (SE)	Estonia, Latvia, Lithuania, Poland

Source: FORA/Danish Business Authority, BSR Innovation Monitor 2012

In the section below the innovation performance and framework conditions of the BSR (including BSR NW/SE) is benchmarked against the above-mentioned regions.

BOX 4.1.1: SHORT READING GUIDE TO THE FOLLOWING BAR CHARTS AND SPIDER WEBS**BAR CHART:**

The bar chart shows the performance and framework condition for different regions in 2006 and 2011, with 2006 as the lower bar and 2011 as the upper bar. The development from 2006-2011 is shown in absolute values at the end of each bar. The bar chart displays composite index based on normalised indicators. As the data is normalised across two years (2006 and 2011), the figure shows how BSR performance has changed over the period. The horizontal axis shows the normalised score. According to the method used (c.f. appendix B) the best value in the years 2006 and 2011 will have the value 100 and the worst is equalled 0. The index shown in the bar chart is based on the average of the underlying indicators and will rarely yield the value 100 (only in the case where a region is top-performer in all the underlying indicators in a given area).

SPIDER WEB:

The spider web shows how different regions perform in 2011 on various performance and policy areas. As before the different areas are index values based on the normalised indicators. Each axis corresponds to a sub-index which shows the different performance and framework condition areas. The grouping of areas is expressed in colours. The spider web showing BSR sub-regions (BSR NW and BSR SE) also displays a scattered area, which marks the top performer on each area in the spider web.

Source: FORA/Danish Business Authority, BSR Innovation Monitor 2012



4.2 THE BSR'S OVERALL INNOVATION PERFORMANCE AND FRAMEWORK CONDITIONS

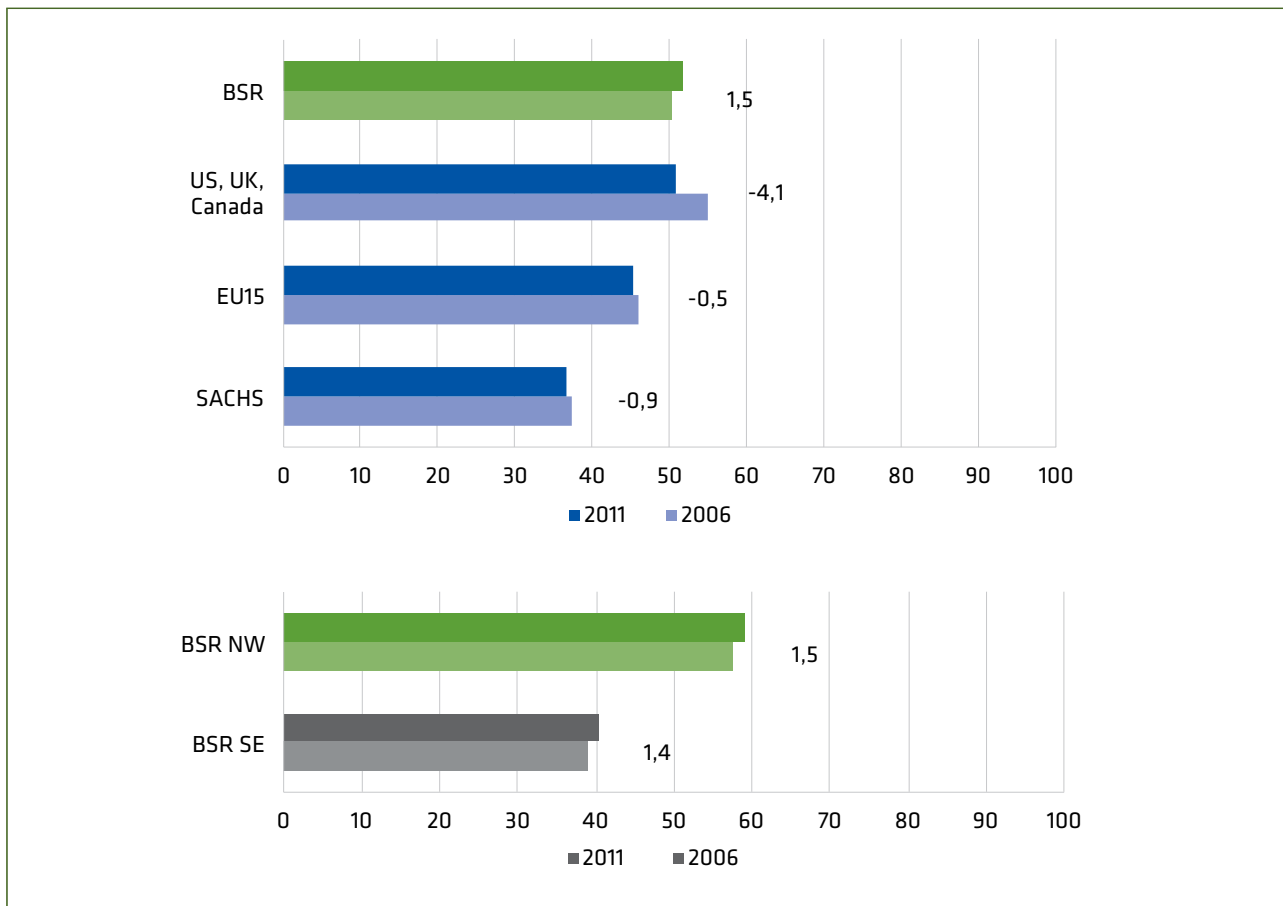
PERFORMANCE

The overall innovation performance of the BSR is very strong. In fact the BSR is the top-performing region marginally outperforming the US, the UK and Canada, cf. figure 4.2.1. This is the result of the BSR being the only region with increasing innovation performance since 2006 and at the same time with the US, the UK and Canada declining the most from 2006 to 2011.

The EU15 is some distance behind the two leading regions, with SACHS trailing the leading regions even further. Both regions have seen a decline in their overall innovation performance.

BSR NW and BSR SE have seen similar improvements in terms of overall innovation performance. BSR NW is the most innovative region among the benchmarked regions, while BSR SE outperforms SACHS yet still rates below the EU15, cf. figure 4.2.1.

FIGURE 4.2.1 INNOVATION OVERALL BENCHMARK
PERFORMANCE BY REGIONS AND BSR SUB-REGIONS, 2006-2011



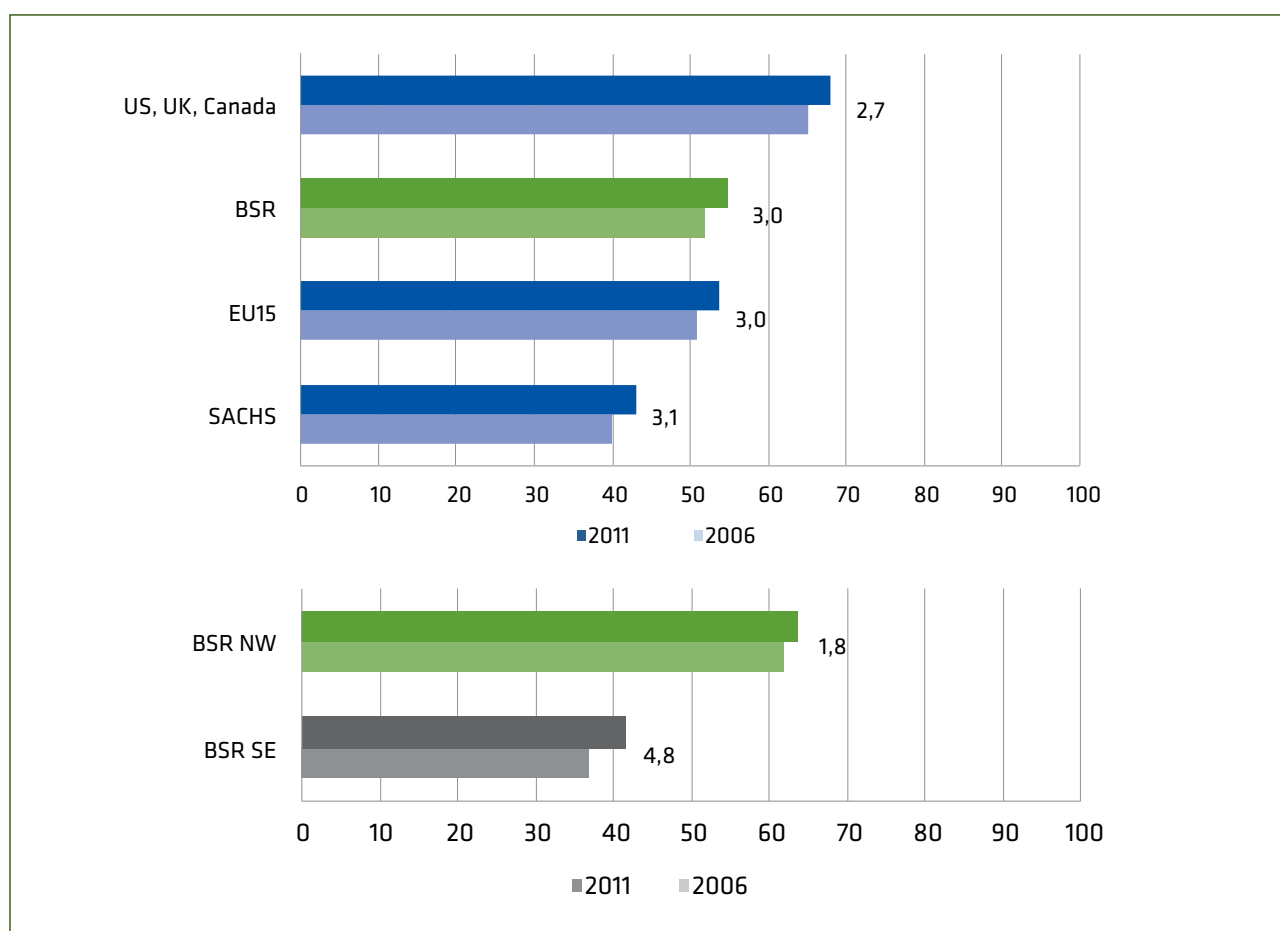
Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

FRAMEWORK CONDITIONS

Although the BSR has the best performance in innovation, the US, the UK and Canada have the best overall framework conditions for innovation. The BSR and the EU15 are lagging behind by some distance, with SACHS ranked even further behind, cf. figure 4.2.2. All of the regions have seen improvements in terms of overall framework conditions with the US, the UK and Canada improving slightly less than the other regions.

The main reason behind the BSR's improvement is found in BSR SE, which is the most improved region, cf. figure 4.2.2. However, BSR SE is progressing from very low levels and is only now catching up with SACHS. BSR NW on the other hand has improved the least among all regions but from rather high level. The gap vis-a-vis the US, the UK and Canada has, however, increased.

FIGURE 4.2.2 INNOVATION OVERALL BENCHMARK
FRAMEWORK CONDITIONS BY REGIONS AND BSR SUB-REGIONS, 2006-2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

4.3 INNOVATION PERFORMANCE AND FRAMEWORK CONDITIONS OF REGIONS – THE FOUR DRIVERS OF INNOVATION

By dividing the indices into separate drivers of innovation (ICT, knowledge creation, human resources and entrepreneurship) we gain a deeper understanding of where the innovation performance and framework conditions of the BSR, including North-West (NW) and South-East (SE) stands out and where there are areas of improvement. Below the selected regions are benchmarked for each of the four drivers of innovation.

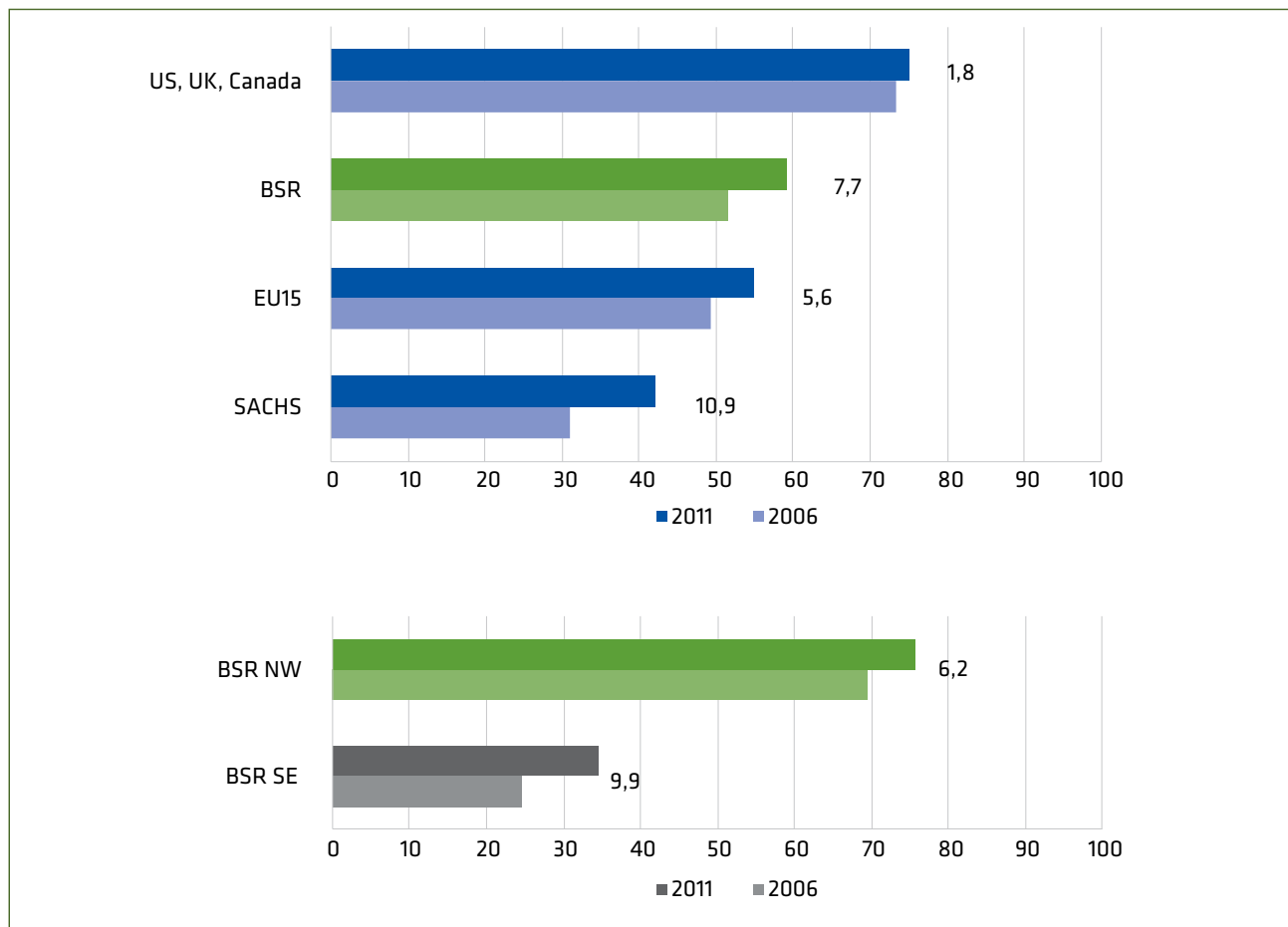
4.3.1 ICT

Performance

The US, the UK and Canada are the top-performing countries in terms of ICT performance, outperforming the BSR and the EU15 by some distance while leaving SACHS even further behind, cf. figure 4.3.1.1. All regions have seen improvements in performances, although the leading region has shown the least improvement while SACHS has improved the most. BSR has improved more than its closest competitor (the EU15).

When looking further into the BSR we find that improvements are mainly driven by BSR SE which has seen an improvement close to SACHS in magnitude, cf. figure 4.3.1.1. That being said BSR SE still lags far behind SACHS and continues to be the worst-performing region. BSR NW has improved slightly more compared to EU15 over the years, and has now caught up with the US, the UK and Canada.

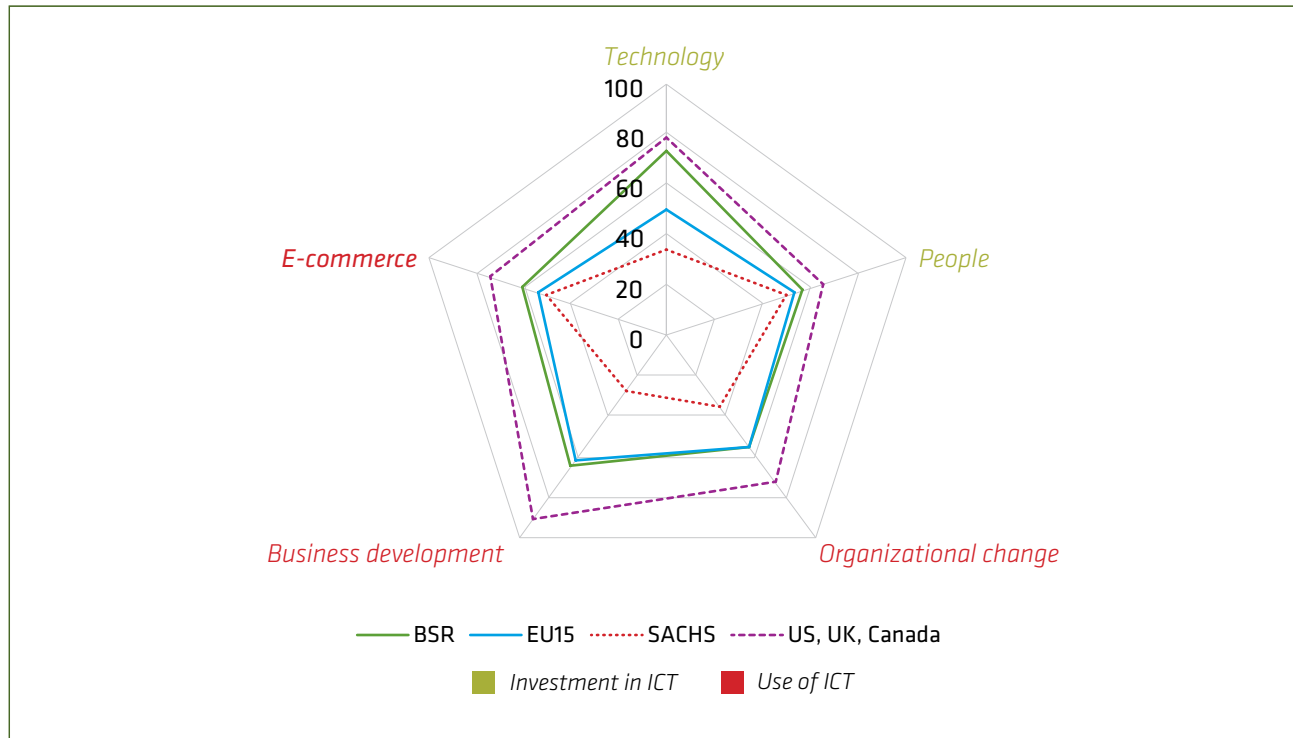
FIGURE 4.3.1.1 ICT BENCHMARK PERFORMANCE BY REGIONS AND BSR SUB-REGIONS, 2006-2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

Drilling further down we find that the BSR lags behind the US, the UK and Canada in terms of ICT use, cf. figure 4.3.1.2. While the US, the UK and Canada lead all areas, investments in ICT in BSR is more or less at a level with the top-performing countries. SACHS shows no real areas of strength compared to the other regions.

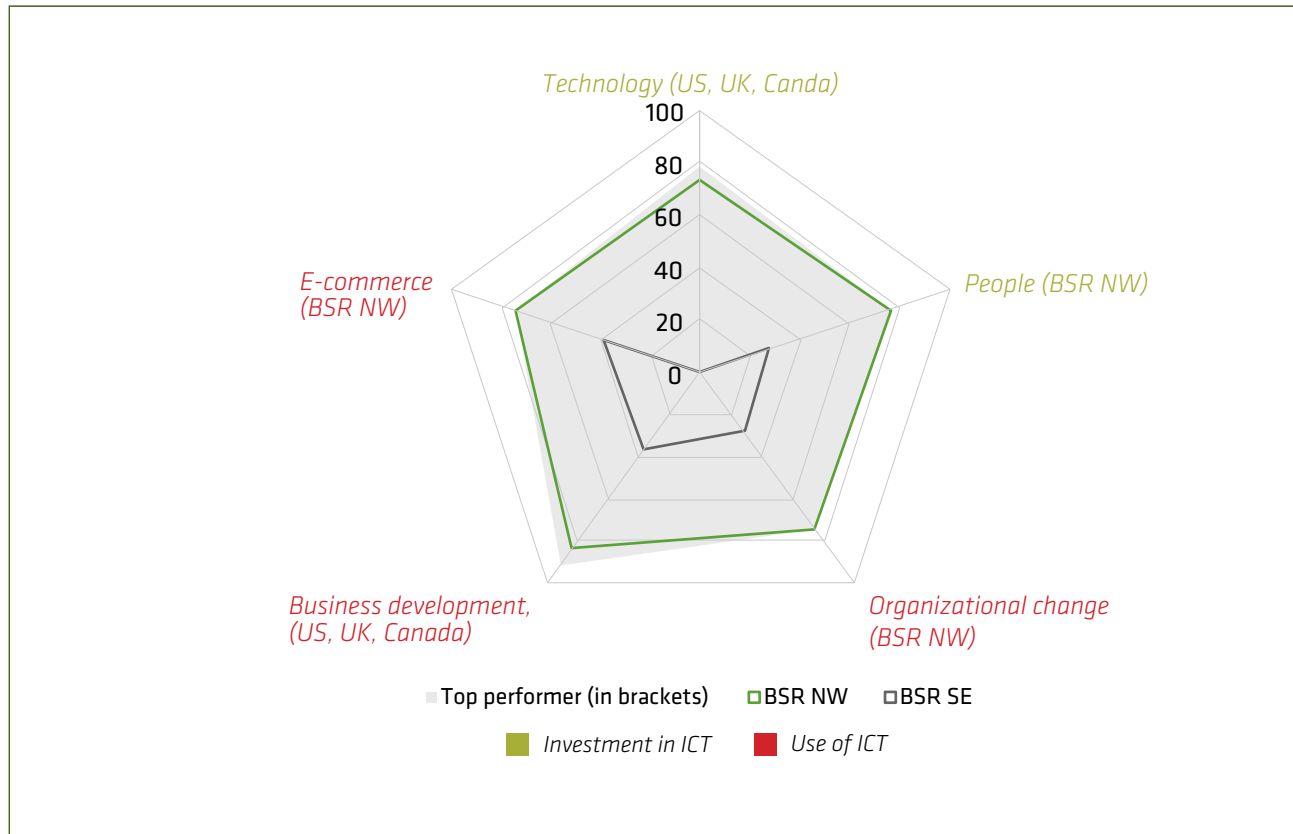
FIGURE 4.3.1.2 ICT BENCHMARK PERFORMANCE BY REGIONS, 2011



Source: FORA/Danish Business Authority, BSR Innovation Monitor 2012

When it comes to differences within the BSR we find significant differences in terms of ICT performance in BSR NW and BSR SE, with the former performing solidly - or leading - across all indices, while the latter still appears to have challenges across most of the measured areas, cf. figure 4.3.1.3.

FIGURE 4.3.1.3 ICT BENCHMARK PERFORMANCE BY BSR SUB-REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

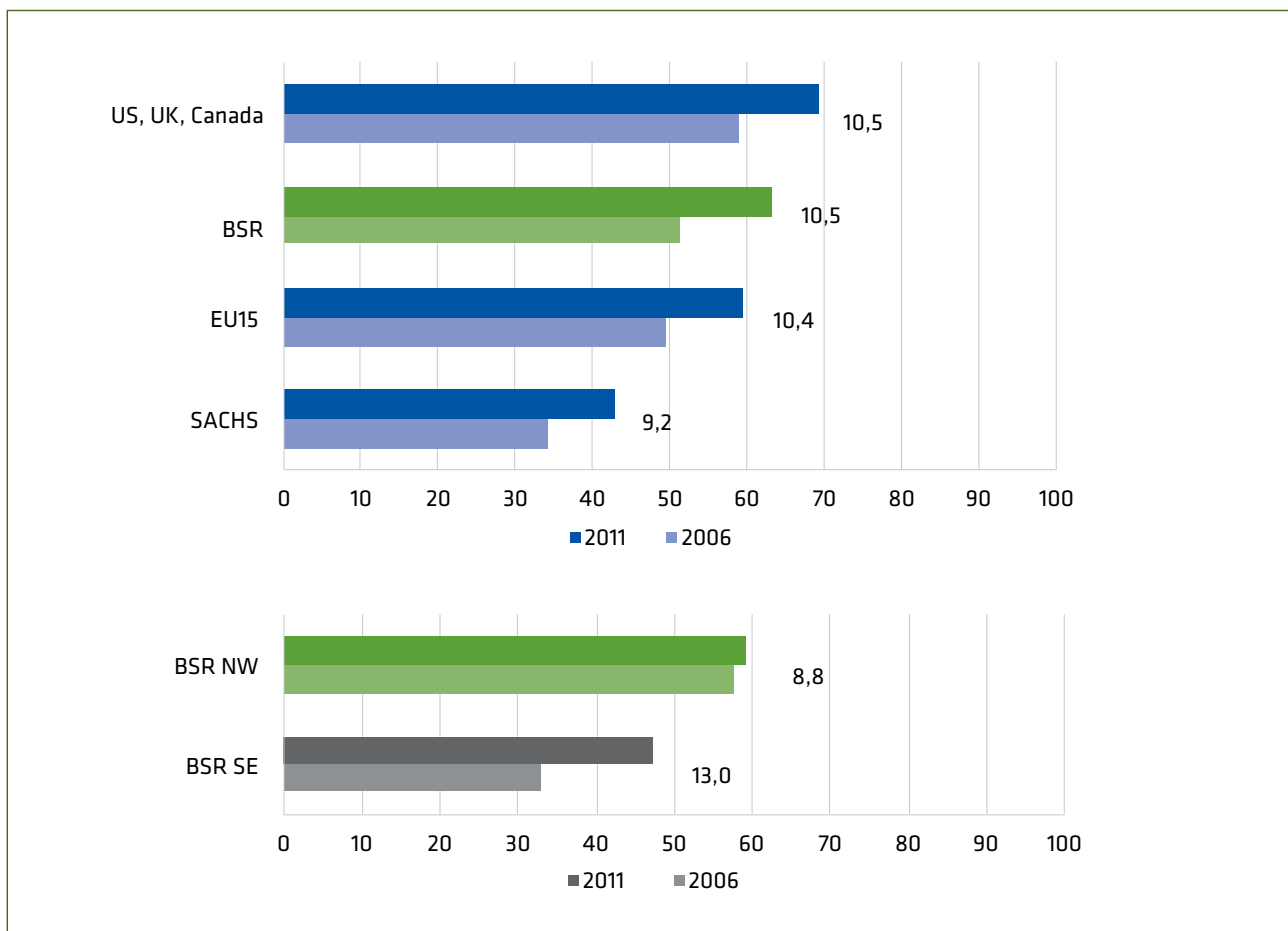
Note: Comparable data on investments in technology have not been found in BSR SE.

Framework conditions

All regions have seen solid improvements in terms of ICT framework conditions, cf. figure 4.3.1.4. The BSR trails the US, the UK and Canada by some distance, while EU15 is quite close behind the BSR. SACHS trails these regions even further.

The most significant increase in ICT framework conditions is found in BSR SE, which has caught up with - and leap-frogged - SACHS, cf. figure 4.3.1.4. There is still a gap vis-a-vis the other regions. BSR NW on the other hand has seen the weakest improvement in framework conditions over the years, but is still by some margin the region with the best framework conditions for ICT, cf. figure 4.3.1.4.

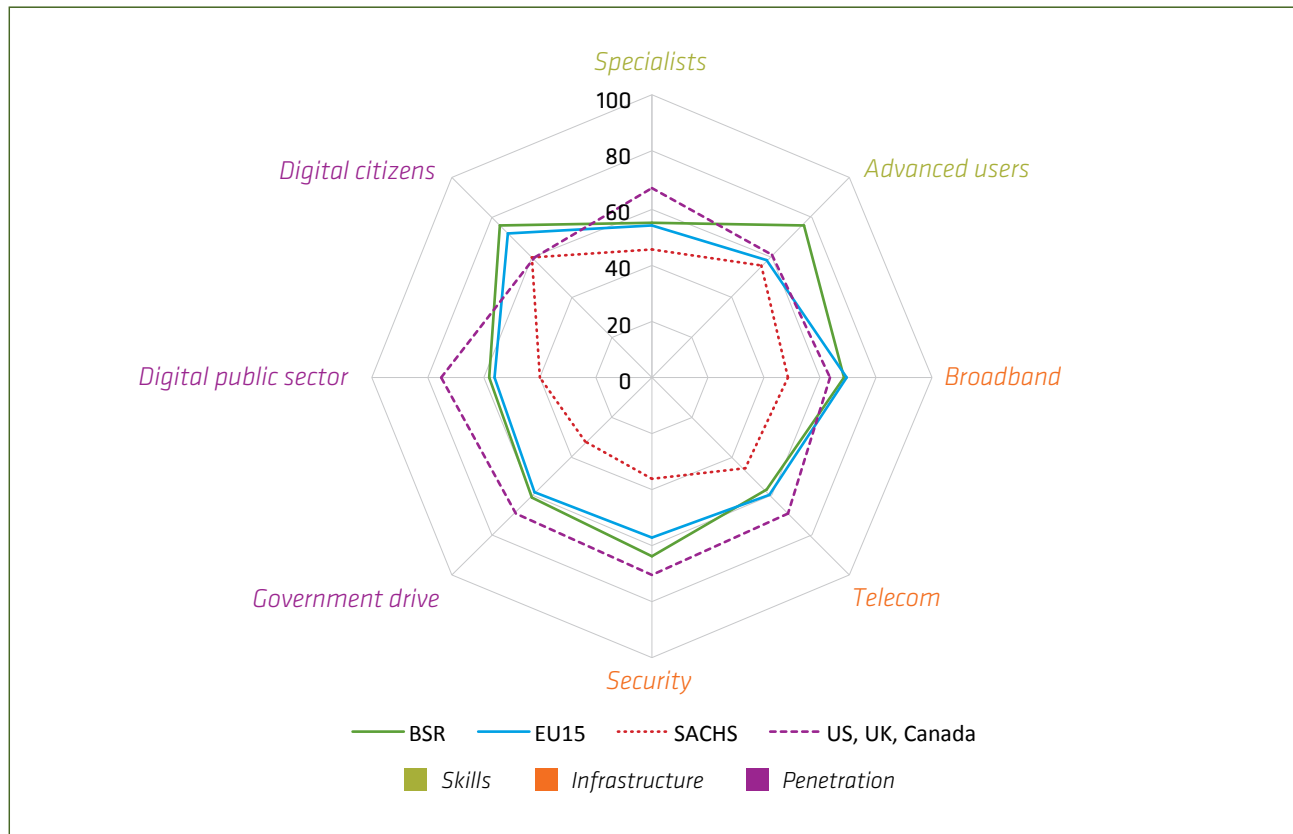
FIGURE 4.3.1.4 ICT BENCHMARK
FRAMEWORK CONDITIONS BY REGIONS AND BSR SUB-REGIONS, 2006-2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

At a more detailed level the BSR appears to have areas of strength in ICT framework conditions. BSR is performing very well in digital citizens and advanced users, cf. figure 4.3.1.5. The US, the UK and Canada have the best digital public sector. SACHS does not appear to have any real areas of strength, while infrastructure in EU15, BSR and the US, the UK and Canada are at identical levels.

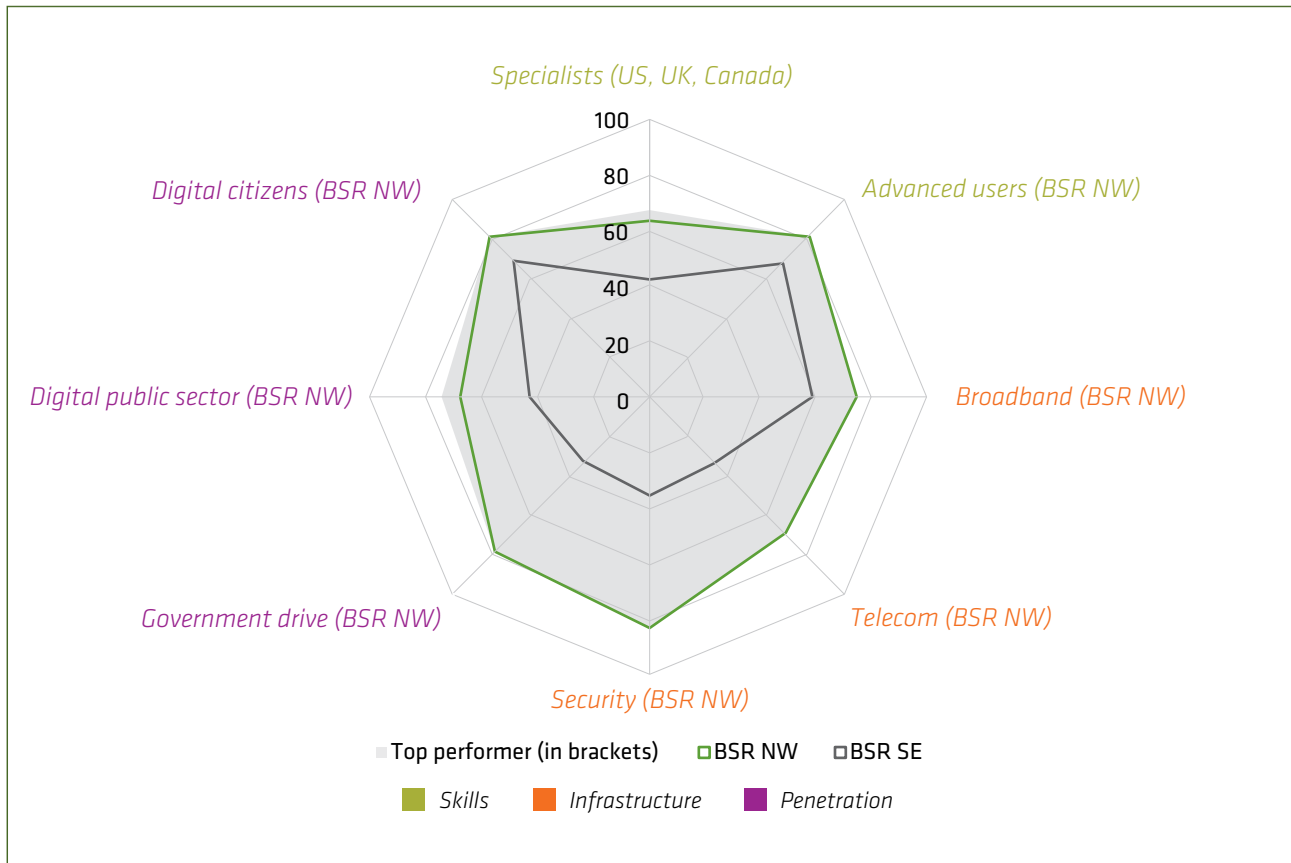
FIGURE 4.3.1.5 ICT BENCHMARK FRAMEWORK CONDITIONS BY REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

When looking at BSR NW and BSR SE we find areas with almost identical ICT framework conditions while others show significant differences. BSR NW in general has excellent framework conditions and is the top performer in 6 out of 8 policy areas while scoring well in the remaining two, cf. figure 4.3.1.6. BSR SE is also showing solid framework conditions in digital citizens and advanced users. A challenging area seems to be in infrastructure – though broadband – with telecom and security lagging far behind the top performer. Data also indicates that government drive in promoting ICT is less than solid in BSR SE.

FIGURE 4.3.1.6 ICT BENCHMARK FRAMEWORK CONDITIONS BY BSR SUB-REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

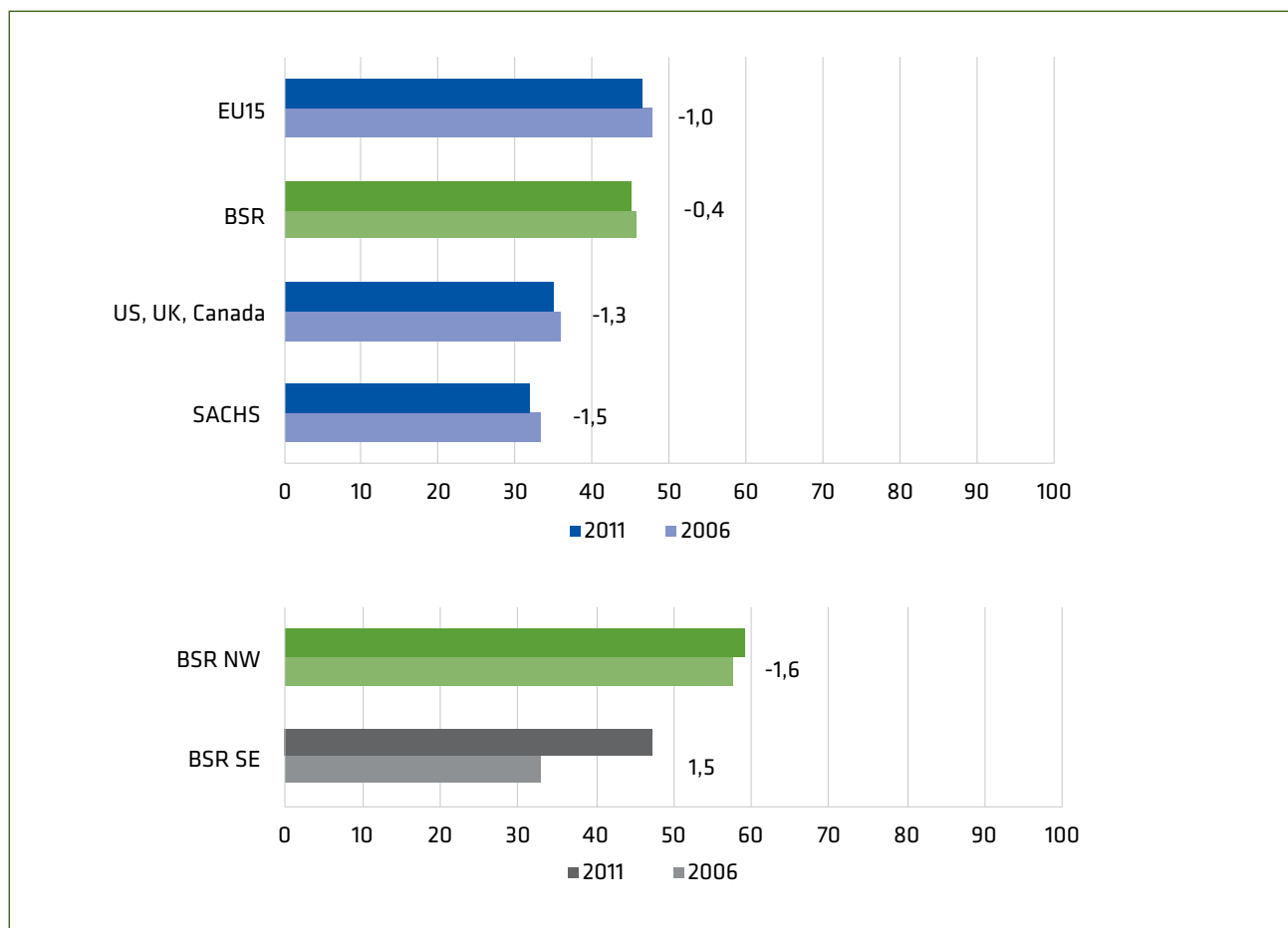
4.3.2 KNOWLEDGE CREATION

Performance

EU15 has the best performance for knowledge creation and is followed closely by the BSR, cf. figure 4.3.2.1. The US, the UK and Canada trail the two top-performing regions by some distance but still show quite impressive framework conditions (see below), while SACHS is ranked at the bottom. All of the regions have seen minor setbacks in performance, with BSR declining the least.

The latter is explained by BSR SE being the only region to show improvements albeit from a rather low level and still lagging SACHS by some distance, cf. figure 4.3.2.1. BSR NW has seen the biggest decline in performance. This is, however, from a high level implying that BSR NW is still by far the top-performing region in the area of knowledge creation.

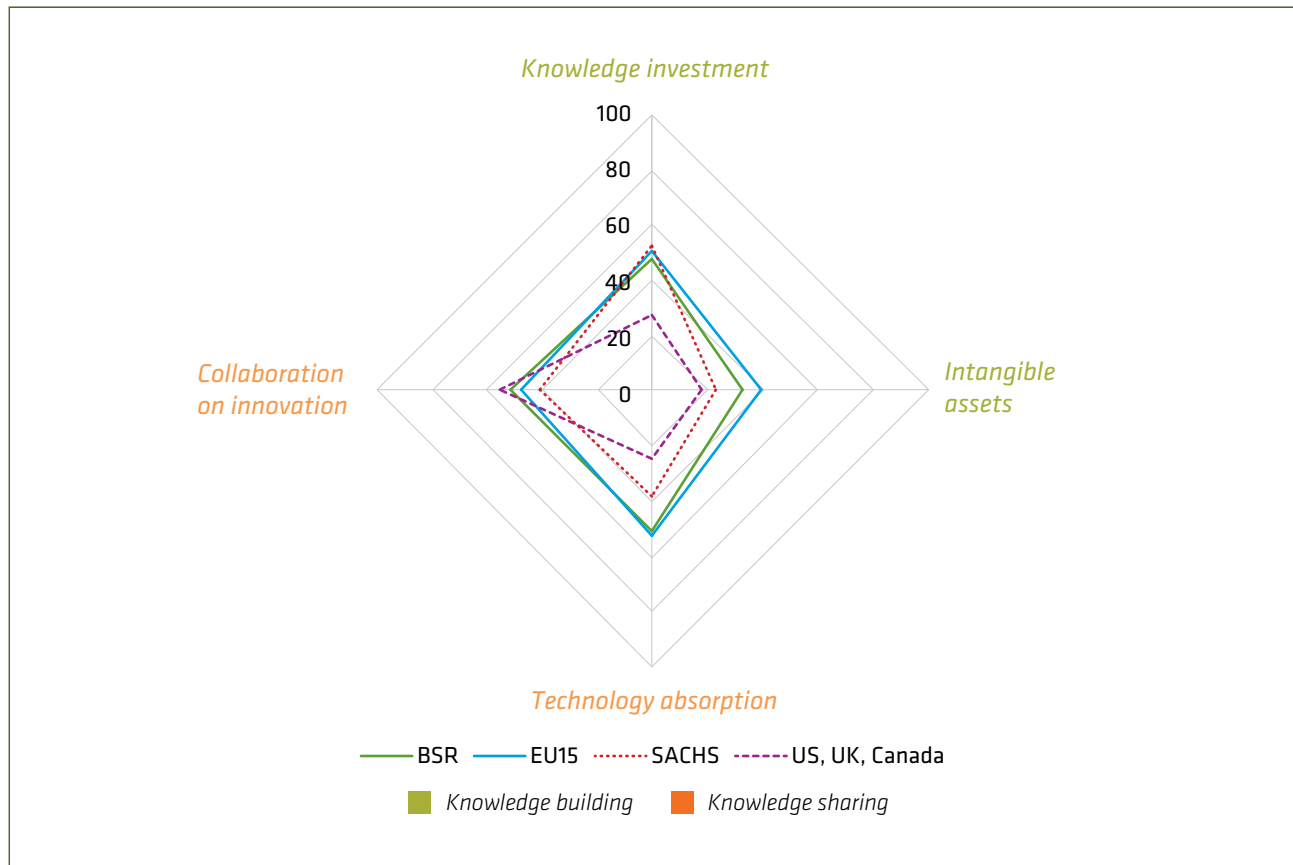
FIGURE 4.3.2.1 KNOWLEDGE CREATION BENCHMARK PERFORMANCE BY REGIONS AND BSR SUB-REGIONS, 2006-2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

The BSR's performance is strong across all indices. The BSR's performance vis-a-vis the US, the UK and Canada is particularly strong in companies' abilities to make sure to get intangible assets in hand and absorption of technology, cf. figure 4.3.2.2. SACHS is performing strongly in collaboration on innovation between companies but is challenged in the remaining areas.

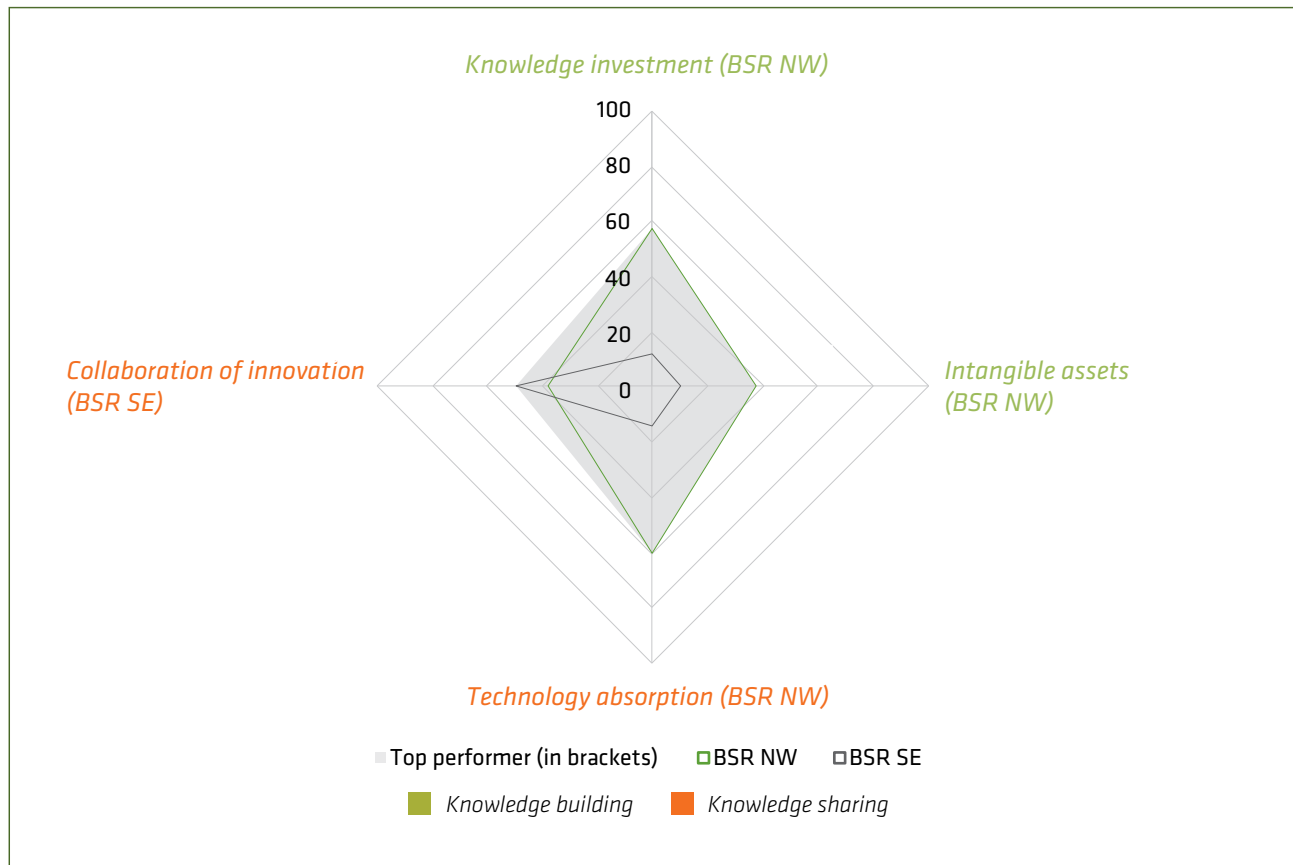
FIGURE 4.3.2.2 KNOWLEDGE CREATION BENCHMARK PERFORMANCE BY REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

Performances in BSR SE and BSR NW are mixed. BSR NW is the top-performing region in three areas; companies' investments in knowledge, intangible assets and the ability to technology absorption, cf. figure 4.3.2.3. In these areas BSR SE are faced with significant challenges, while on the other hand BSR SE is the top-performing region in companies' collaboration on innovation.

FIGURE 4.3.2.3 KNOWLEDGE CREATION BENCHMARK PERFORMANCE BY BSR SUB-REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

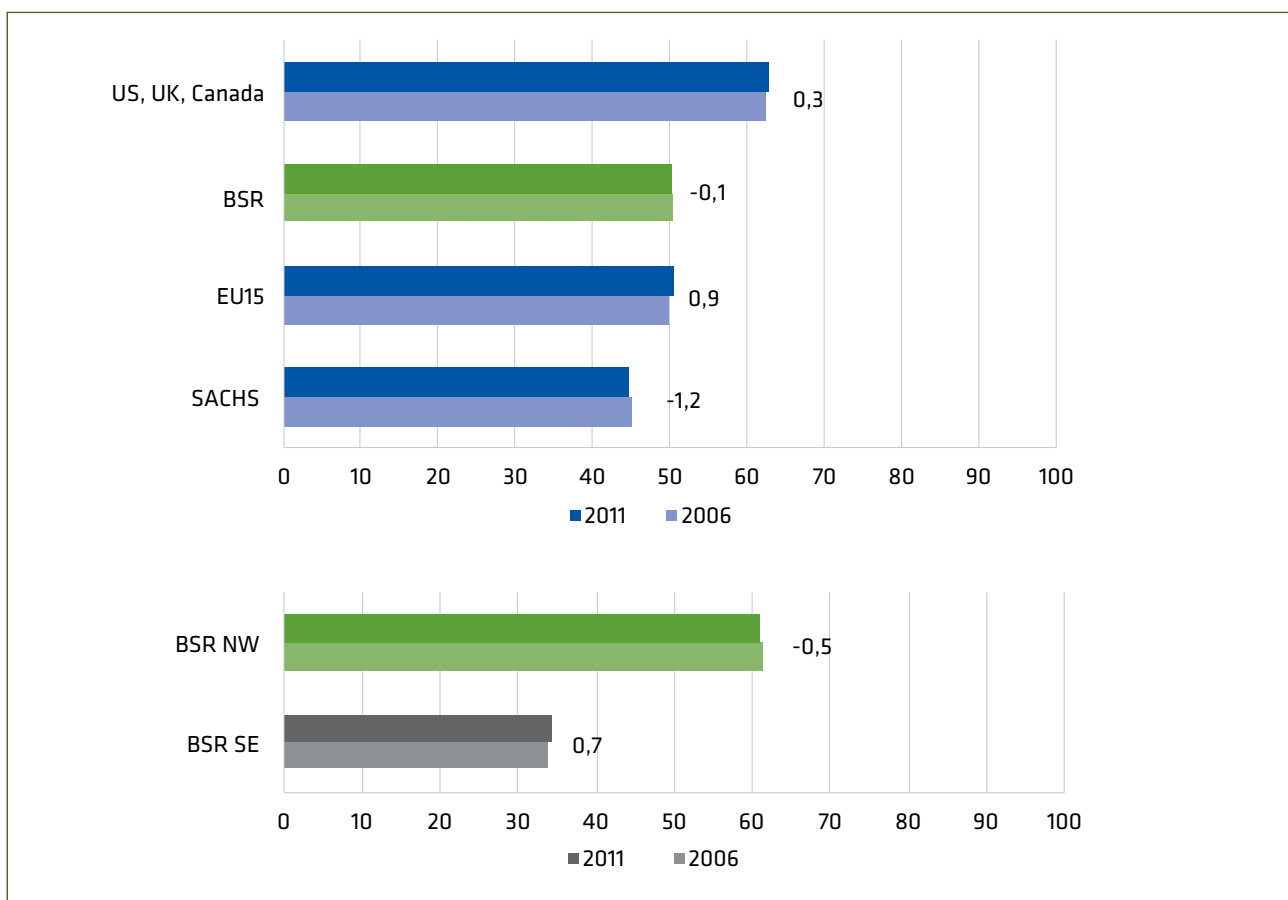
Framework conditions

The US, the UK and Canada outperform BSR and EU15 by some distance in terms of framework conditions for knowledge creation, with SACHS lagging further behind, cf. figure 4.3.2.4. However, the strong framework conditions have not yet been reflected in equally strong performances, cf. figure 4.3.2.2 above.

EU15 and BSR are on the same level. While EU15 has shown the strongest improvement in framework conditions, BSR have declined slightly. SACHS has the poorest performance among all regions covered and has also seen the biggest decline in framework conditions.

BSR SE has seen solid improvement albeit from a very low level and is still lagging far behind all other regions, cf. figure 4.3.2.4. In BSR NW the trend has been quite the opposite, i.e. a decline in performance from a very high level, albeit still lagging the US, the UK and Canada marginally.

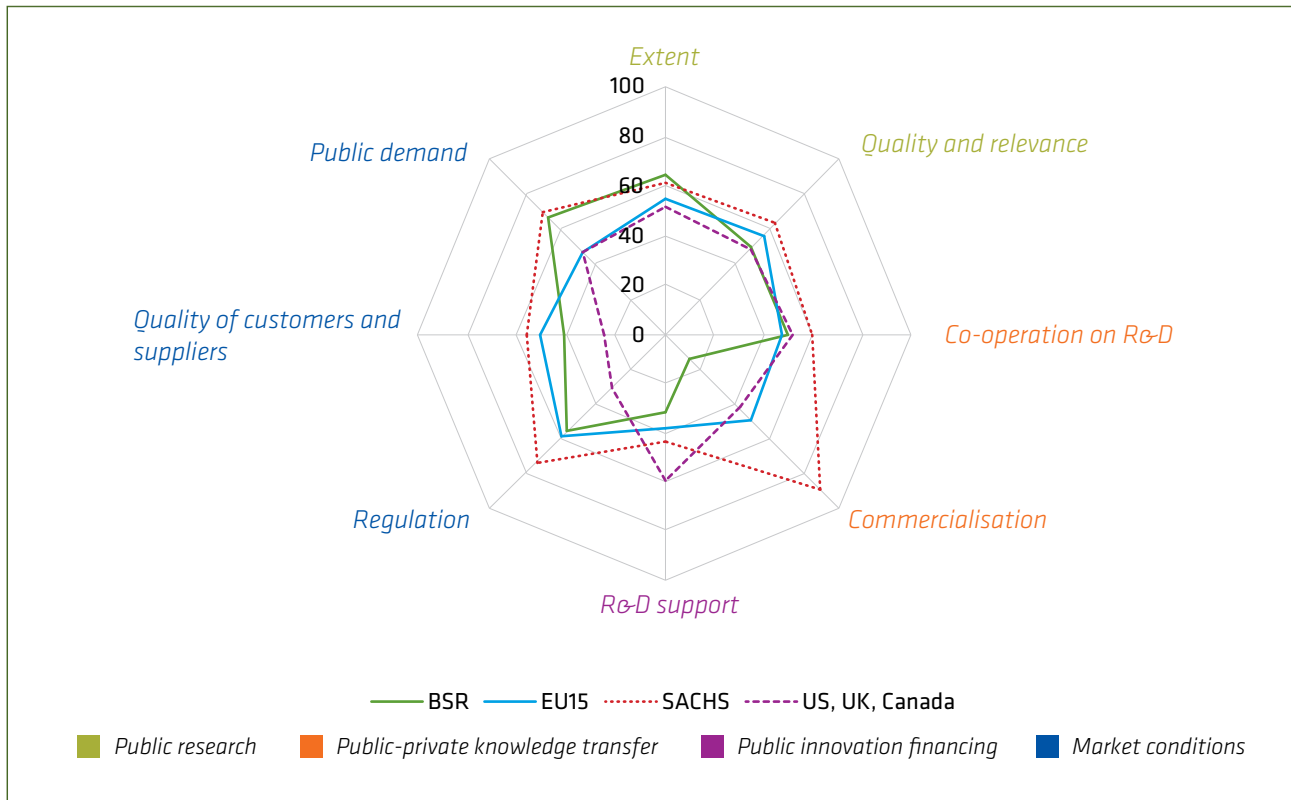
FIGURE 4.3.2.4 KNOWLEDGE CREATION BENCHMARK FRAMEWORK CONDITIONS
BY REGIONS AND BSR SUB-REGIONS, 2006-2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

The main reason behind the impressive framework conditions for knowledge creation in US, UK and Canada can be found in the underlying indices. Commercialisation of research at universities is an area of strength for the region, cf. figure 4.3.2.5. The region has solid framework conditions across all areas except for government financing business R&D expenditure, which is an area of strength for SACHS. BSR performs well in public demand and in extent of public research, but faces challenges in commercialisation, R&D support, the quality of customers and suppliers and, to some degree, in cooperation on R&D between research institutions and business.

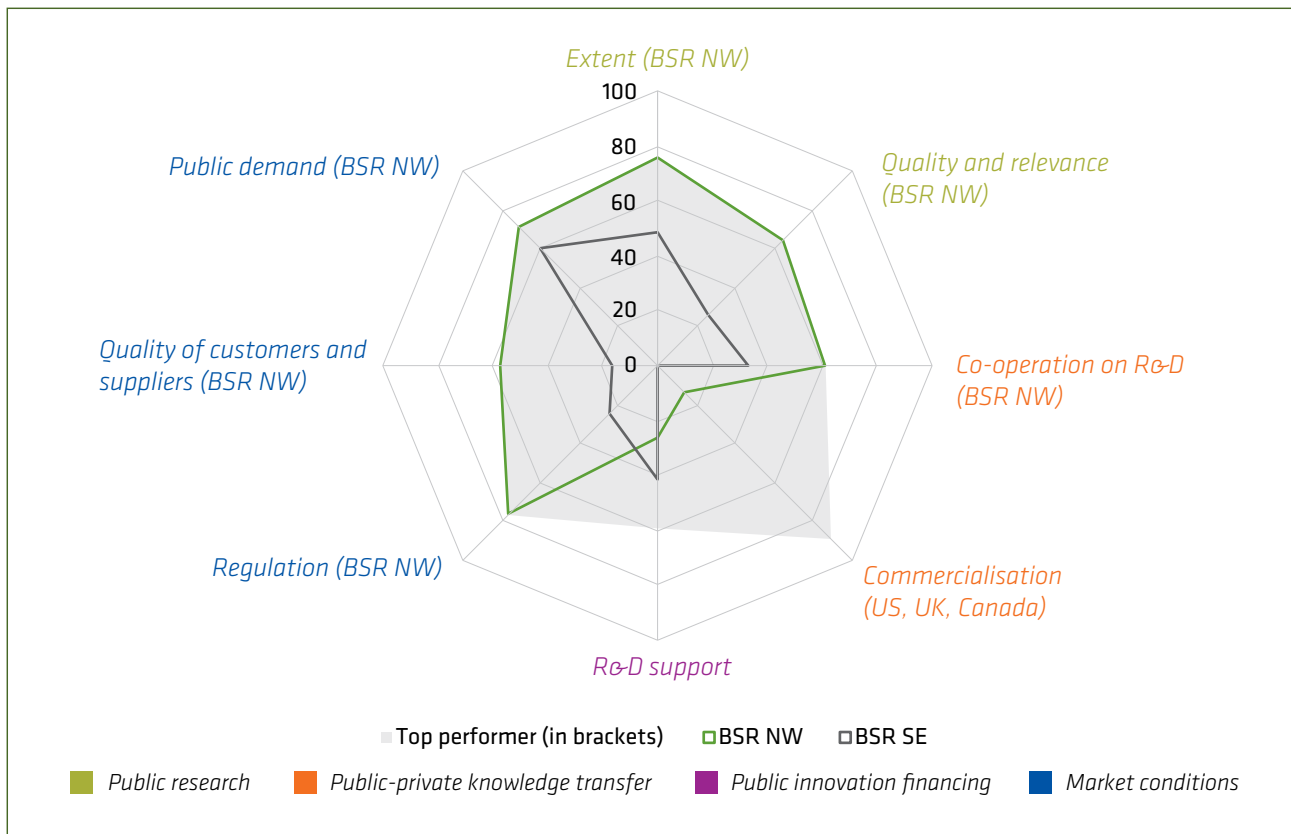
FIGURE 4.3.2.5 KNOWLEDGE CREATION BENCHMARK FRAMEWORK CONDITIONS BY REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

The challenges for BSR mentioned above look somewhat different when looking at the framework conditions for knowledge creation in BSR SE and BSR NW. Commercialisation and R&D support are still challenges for BSR NW, while BSR NW is the top performer in the remaining policy areas, cf. figure 4.3.2.6. On the other hand, BSR SE shows a solid record in public demand and to some extent in public research and R&D support, but faces challenges in all other policy areas (the quality and relevance of public research, cooperation between research institutions and business on R&D, regulation supporting innovation and the quality of customers and suppliers).

FIGURE 4.3.2.6 KNOWLEDGE CREATION BENCHMARK FRAMEWORK CONDITIONS BY BSR SUB-REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

Note: Comparable data on commercialisation have not been found in BSR SE.

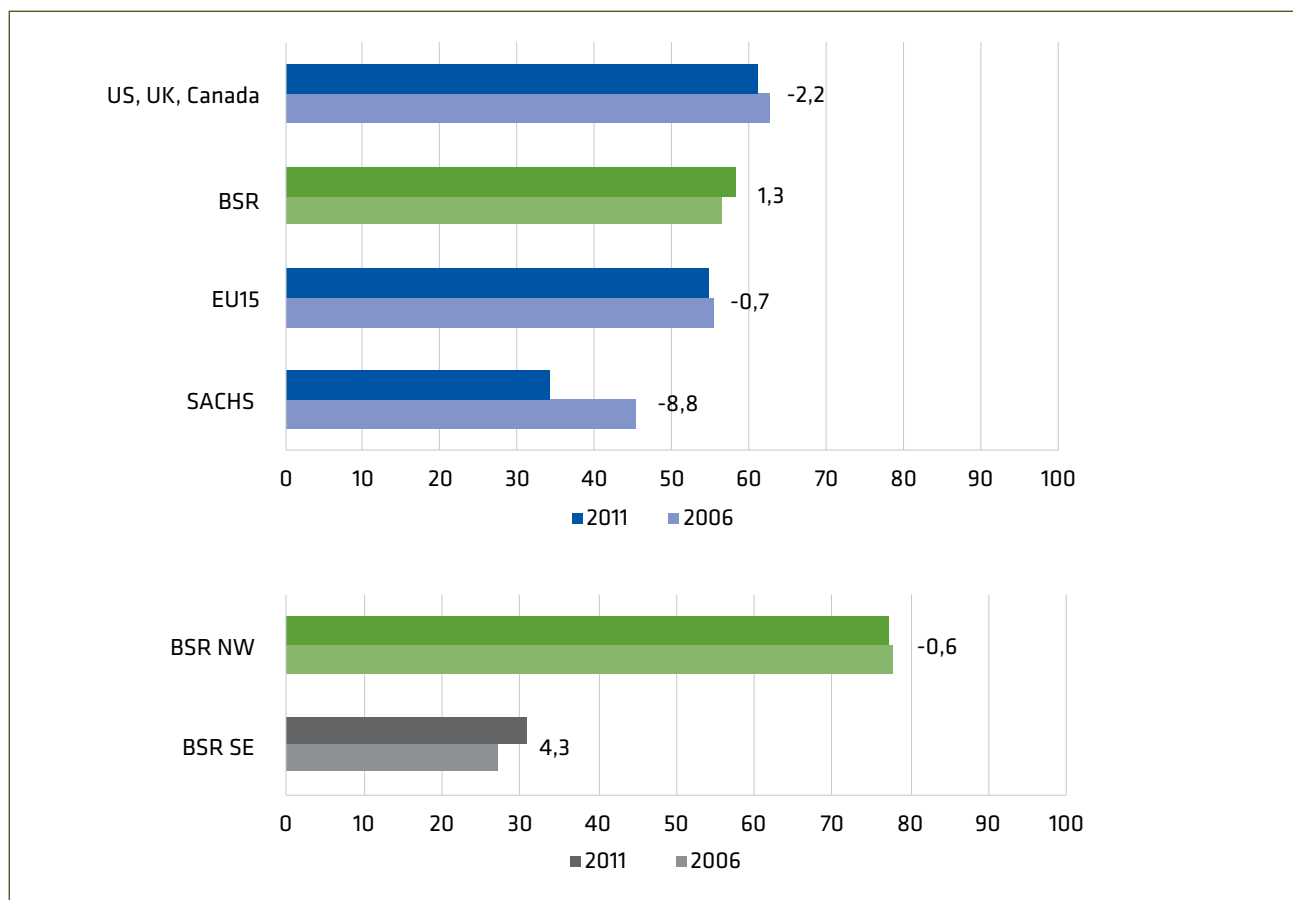
4.3.3 HUMAN RESOURCES

Performance

In terms of performance the US, the UK and Canada marginally outperform BSR and EU15, with SACHS further behind (and declining significantly), cf. figure 4.3.3.1. BSR is catching up with the US, the UK and Canada, while other regions have seen a decline in performance.

When looking at differences within BSR two main observations should be highlighted from figure 4.3.3.1. Performance in the BSR is boosted by a strong improvement in BSR SE albeit from a low level and still lagging some distance behind SACHS. The second observation is that despite a slight decline in performance BSR NW shows the strongest performance outperforming the US, the UK and Canada by a healthy distance.

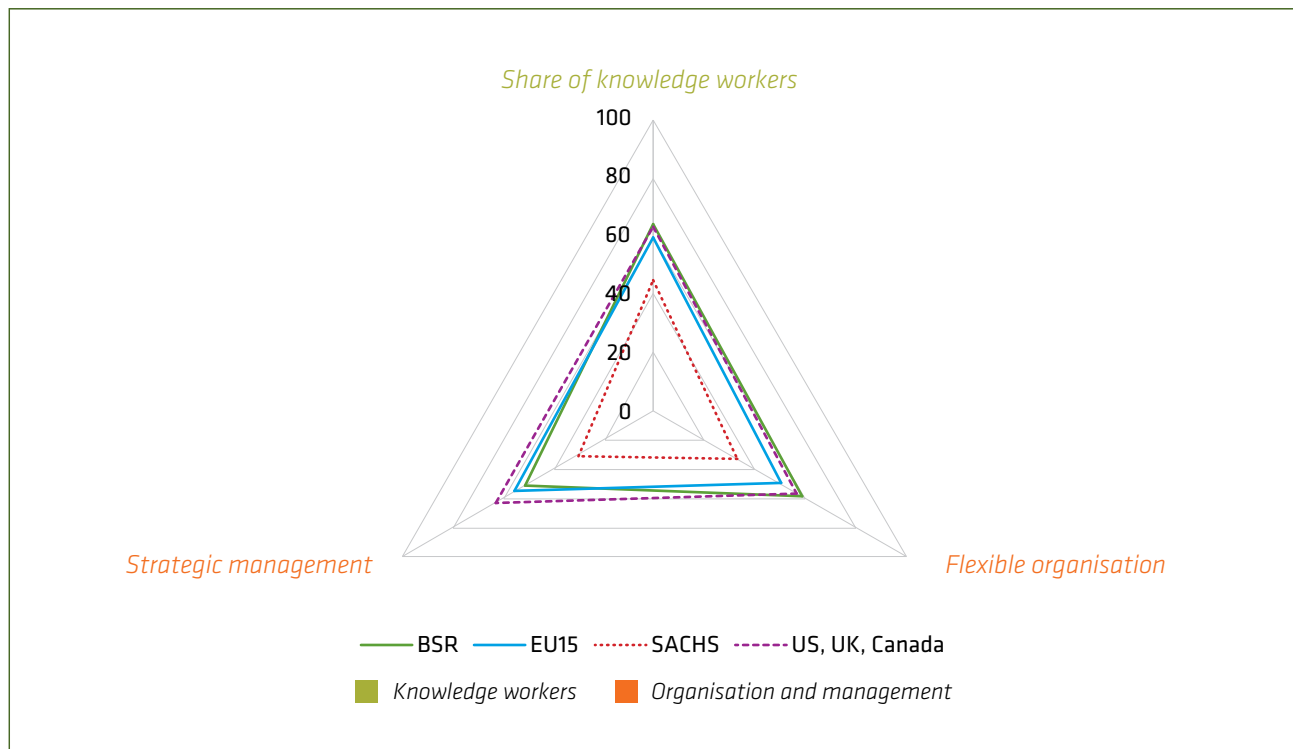
FIGURE 4.3.3.1 HUMAN RESOURCES BENCHMARK PERFORMANCE BY REGIONS AND BSR SUB-REGIONS, 2006-2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

The limited variation in performances is also reflected when looking at individual performance areas, cf. figure 4.3.3.2. SACHS is challenged in all areas.

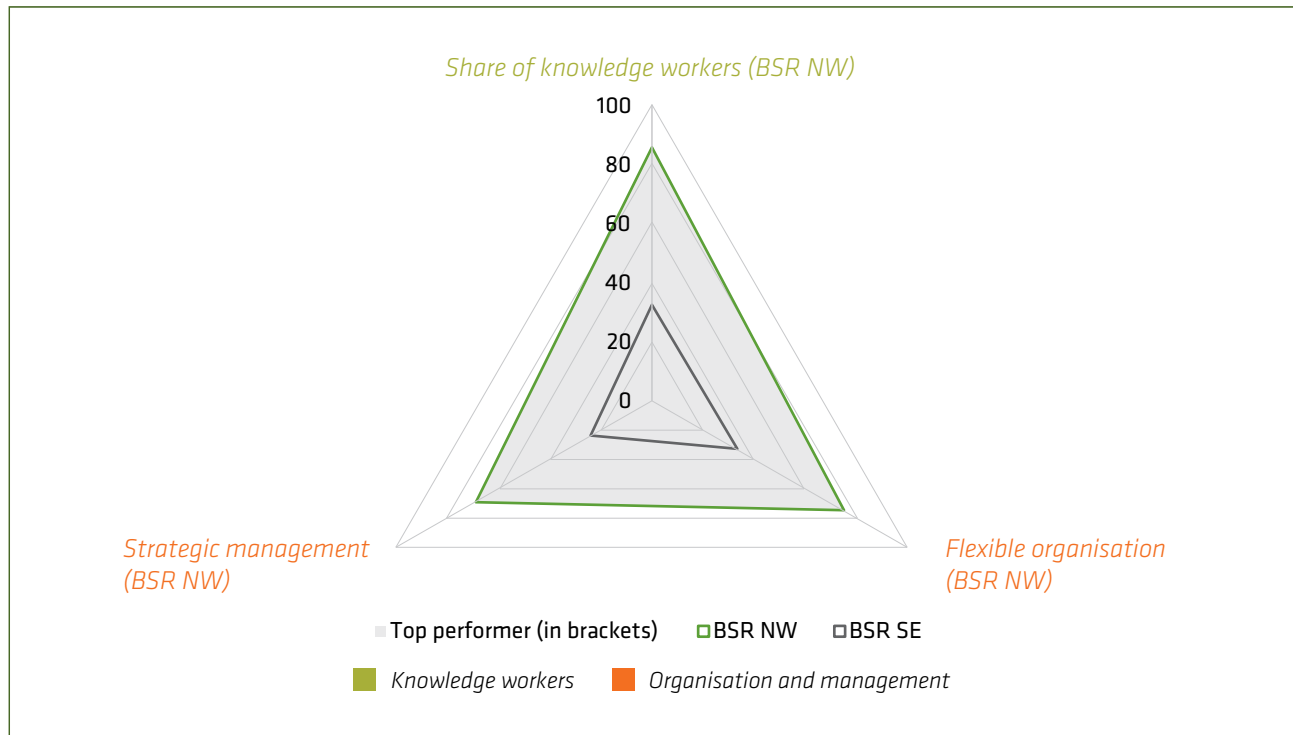
FIGURE 4.3.3.2 HUMAN RESOURCES BENCHMARK PERFORMANCE BY REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

The impressive performance in BSR NW and the less than impressive performance in BSR SE are also reflected across all performance areas, cf. figure 4.3.3.3.

FIGURE 4.3.3.3 HUMAN RESOURCES BENCHMARK PERFORMANCE BY BSR SUB-REGIONS, 2011



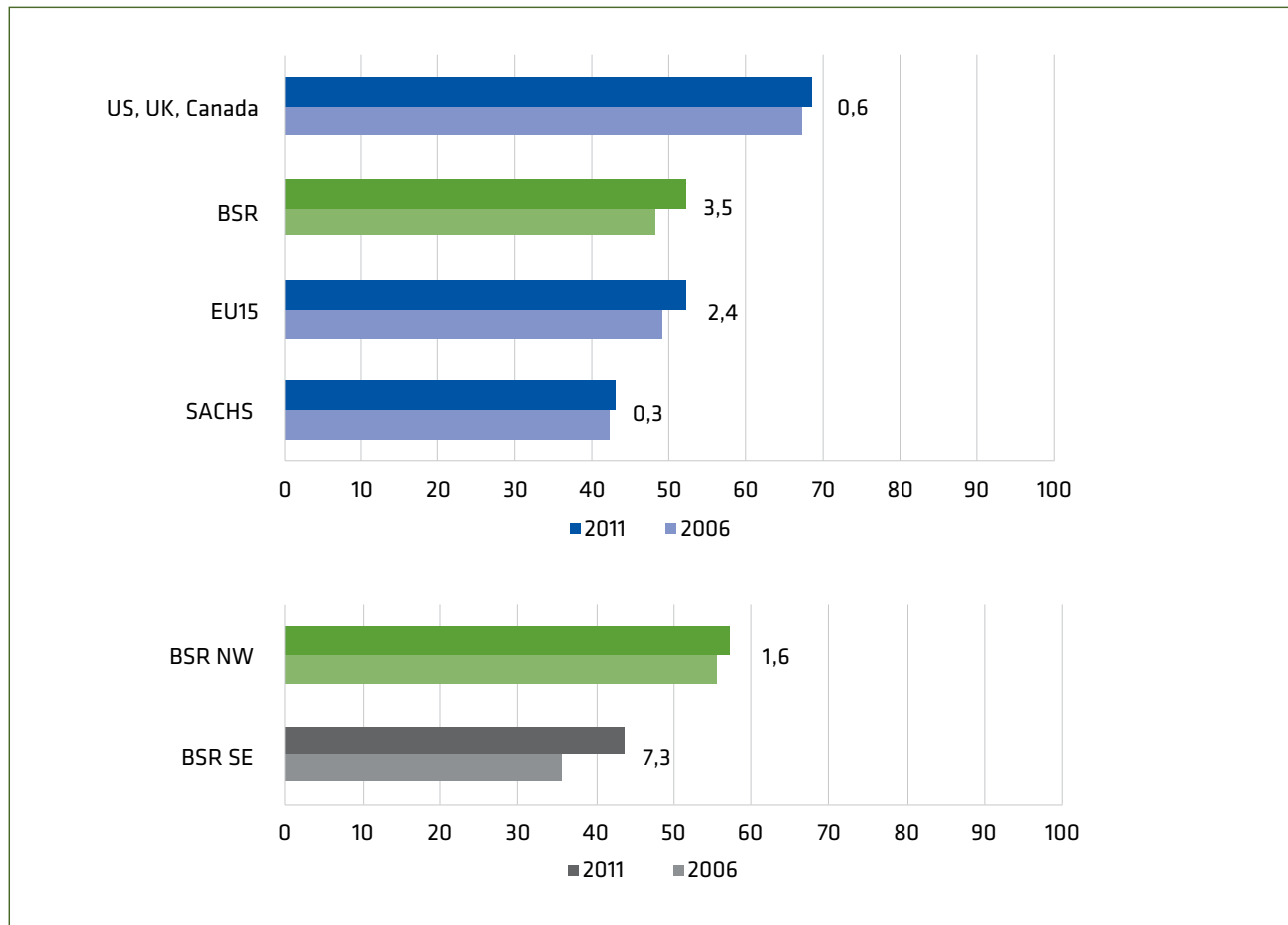
Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

Framework conditions

In terms of framework conditions for human resources the solid performance in the US, the UK and Canada (see above) is reflected in equally impressive framework conditions. The region outperforms BSR and EU15 by a considerable distance with SACHS even further behind, cf. figure 4.3.3.4. Despite BSR and EU15 improving the most there is still a sizable gap compared to the top-performing region.

The solid improvement in BSR is explained by improvements in both sub-regions. BSR NW has improved slightly but has narrowed the gap vis-a-vis the US, the UK and Canada, while BSR SE has improved the most among all regions and is now catching up with SACHS, cf. figure 4.3.3.4.

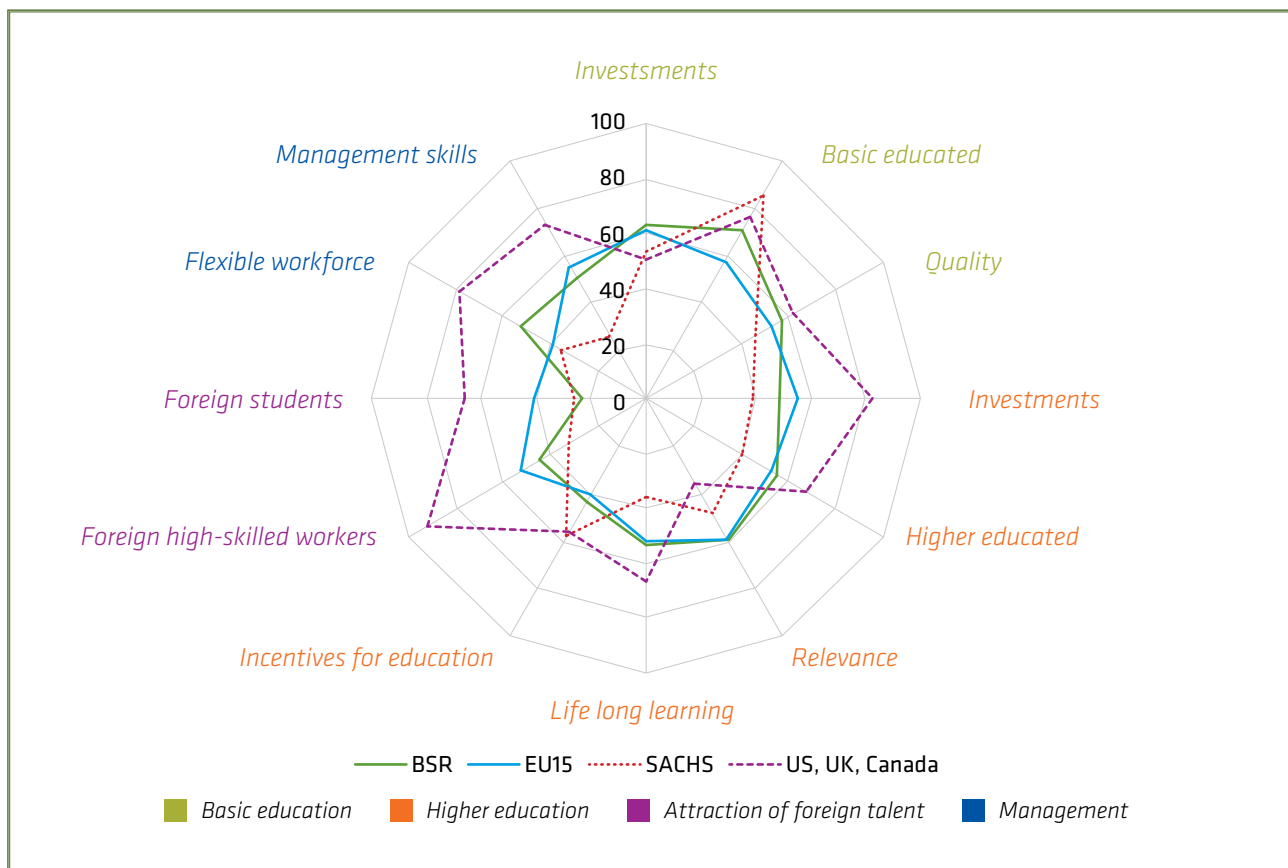
FIGURE 4.3.3.4 HUMAN RESOURCES BENCHMARK FRAMEWORK CONDITIONS BY REGIONS AND BSR SUB-REGIONS, 2006-2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

The US, the UK and Canada stand out in a number of framework condition areas. Management options and attracting foreign talent appear to be core framework conditions as are most policy areas related to higher education, cf. figure 4.3.3.5. BSR have a strength in the share of young people being (at least) basic educated, but is challenged in attracting foreign talent and in investments in higher education. EU15 and BSR perform well in relevance of higher education. SACHS has strong policy areas in incentives for taking a higher education (all other areas of higher education appear to be challenging) and the share of young people being basic educated. On the other hand SACHS experience room for improvement in policy areas related to management.

FIGURE 4.3.3.5 HUMAN RESOURCES BENCHMARK FRAMEWORK CONDITIONS BY REGIONS, 2011

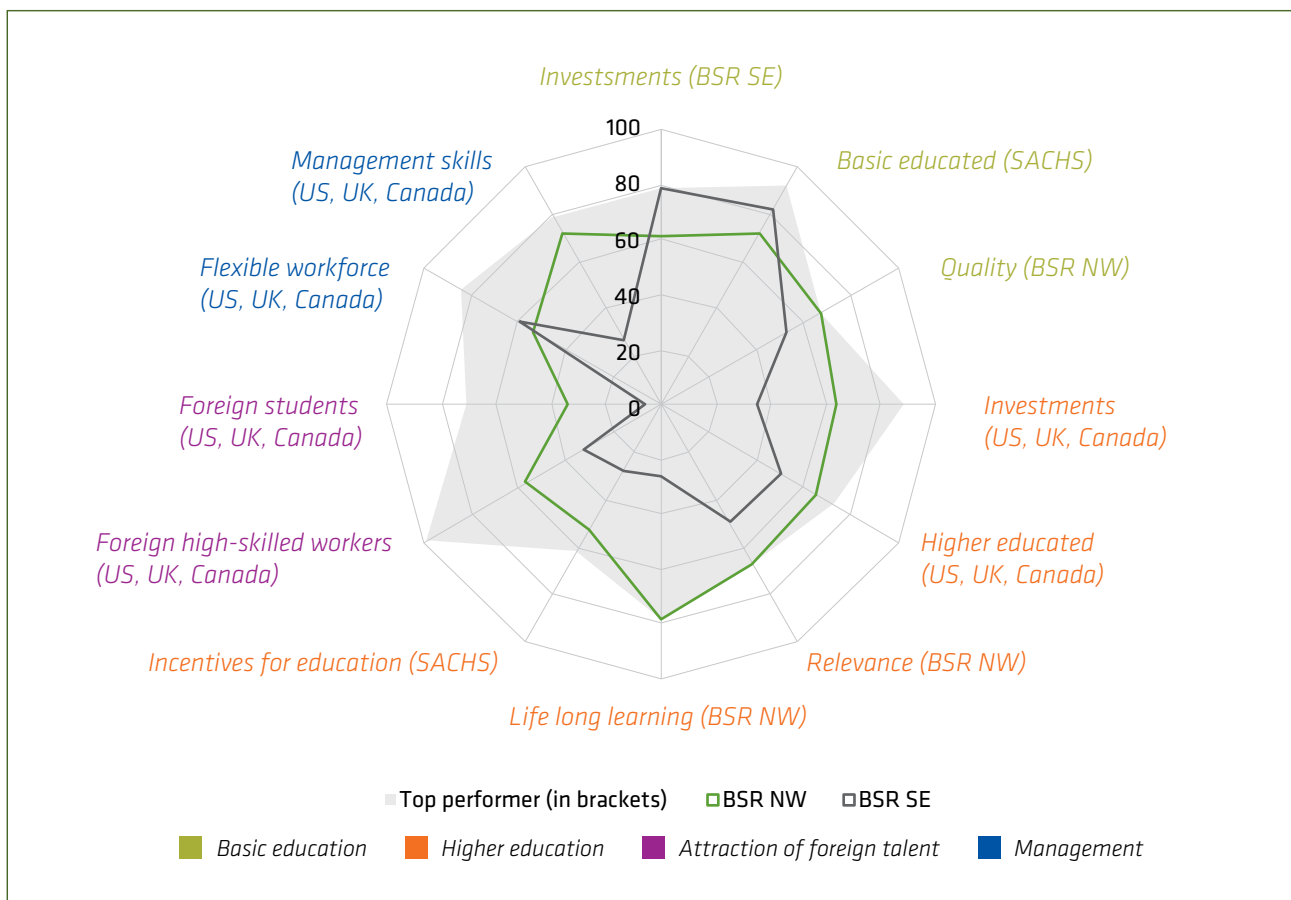


Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

When looking at framework conditions for human resources in BSR SE and BSR NW the picture is somewhat mixed. BSR SE has the most investments in basic education and also has a high share of young people with at least a basic education, cf. figure 4.3.3.6. The main challenges for BSR SE include attracting foreign talent (students and high-skilled workers), the availability of management skills, low incentives for higher education and low participation in life-long learning activities.

BSR NW has the best framework conditions in several policy areas, including quality of basic education, relevance of higher education and life-long learning activities and also performs well in management skills and the share of people in higher education. The possibility of attracting foreign talent is the most challenging area in BSR NW, while there is room for improvement in investments in basic and higher education.

FIGURE 4.3.3.6 HUMAN RESOURCES BENCHMARK FRAMEWORK CONDITIONS BY BSR SUB-REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

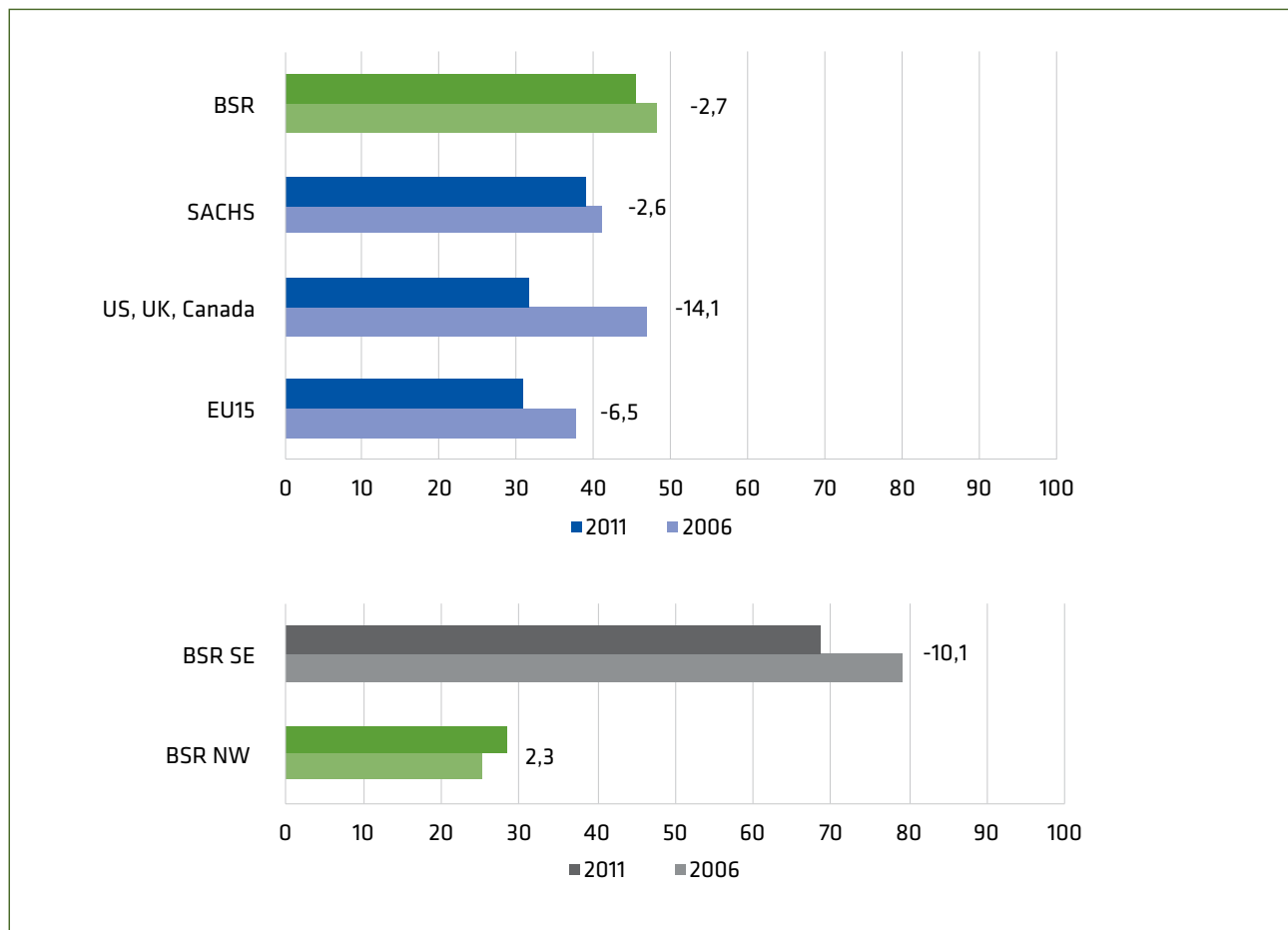
4.3.4 ENTREPRENEURSHIP

Performance

In terms of entrepreneurship performance BSR is the top-performing region, cf. figure 4.3.4.1. BSR is followed by SACHS with the US, the UK and Canada and EU15 lagging further behind. Every region has seen a decline in entrepreneurship performance, with the US, the UK and Canada declining the most and BSR and SACHS declining marginally.

Entrepreneurship is an area of strength for BSR SE. Although declining significantly over the years BSR SE is by far the best-performing region, cf. figure 4.3.4.1. BSR NW is the only region to improve its entrepreneurship performance. However, this has been attained from a low level, so while catching up with EU15 and the US, the UK and Canada BSR NW remains the region with the poorest entrepreneurship performance.

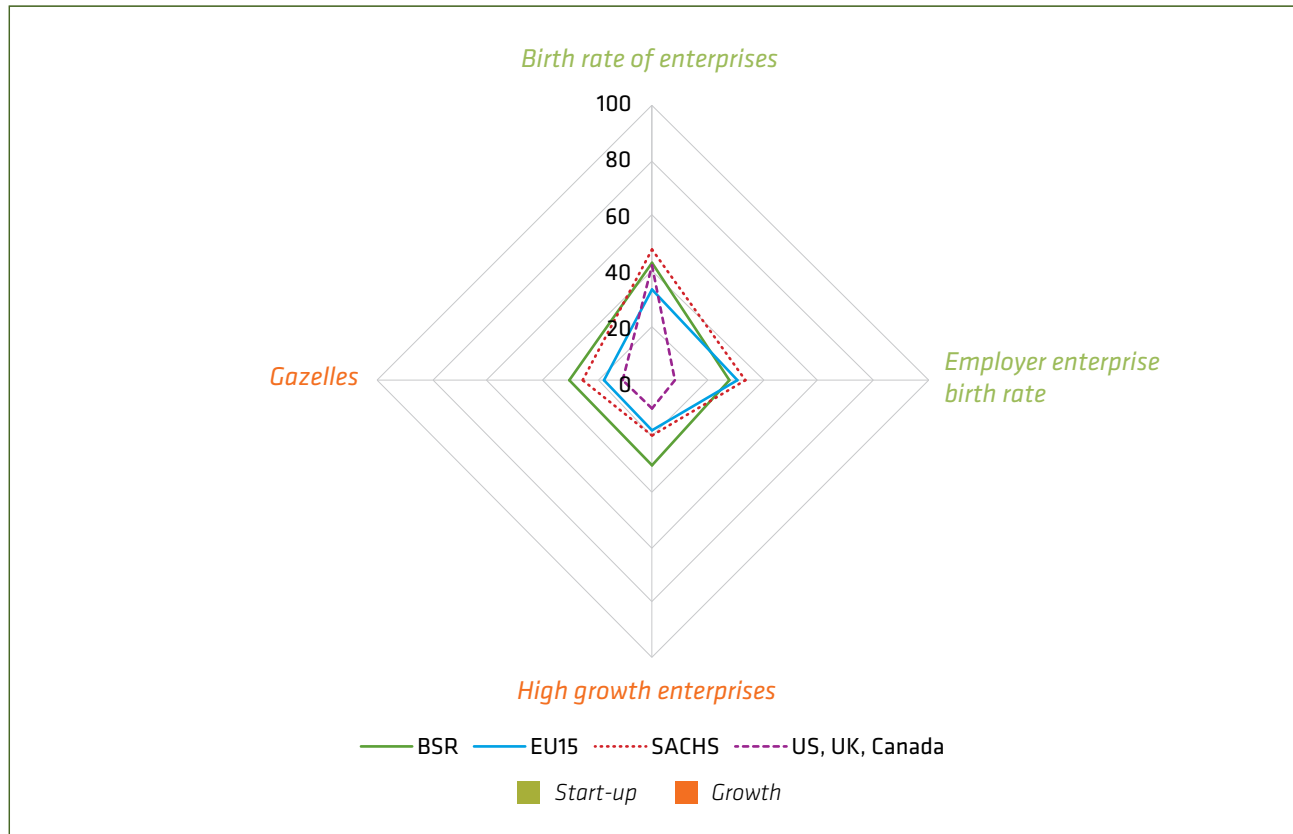
FIGURE 4.3.4.1 ENTREPRENEURSHIP BENCHMARK PERFORMANCE BY REGIONS AND BSR SUB-REGIONS, 2006-2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

When looking at individual performance areas BSR performs well in growth in companies, while SACHS scores well in start ups, cf. figure 4.3.4.2. The US, the UK and Canada show strength in high enterprise birth rate, but ranks rather poorly in the remaining areas.

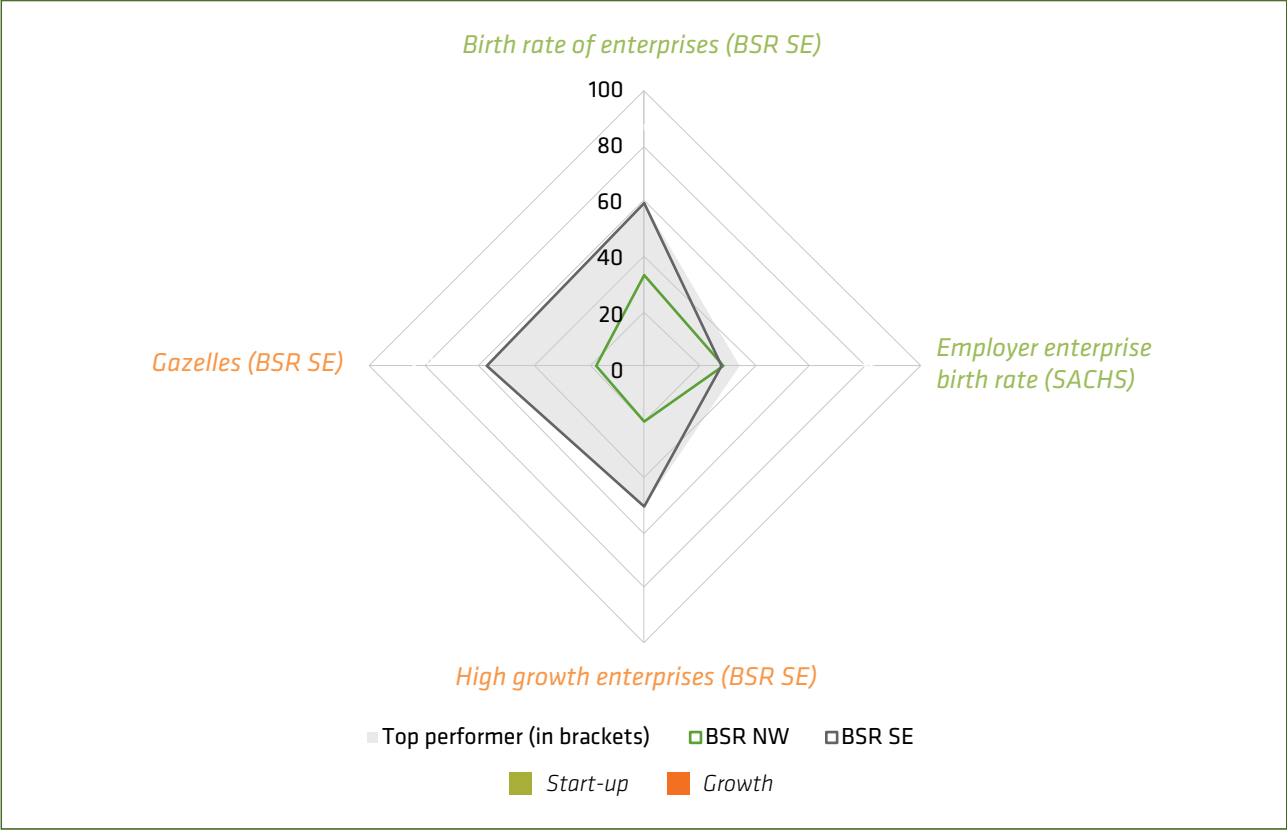
FIGURE 4.3.4.2: ENTREPRENEURSHIP BENCHMARK PERFORMANCE BY REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

The impressive performance in BSR SE is driven by top-rankings in all areas except employer enterprise birth rate although BSR SE's performance in that area is solid, cf. figure 4.3.4.3. At the other end of the spectrum BSR NW performs poorly in all areas except in employer enterprise birth rate, where BSR NW is on par with BSR SE.

FIGURE 4.3.4.3 ENTREPRENEURSHIP BENCHMARK PERFORMANCE BY BSR SUB-REGIONS, 2011



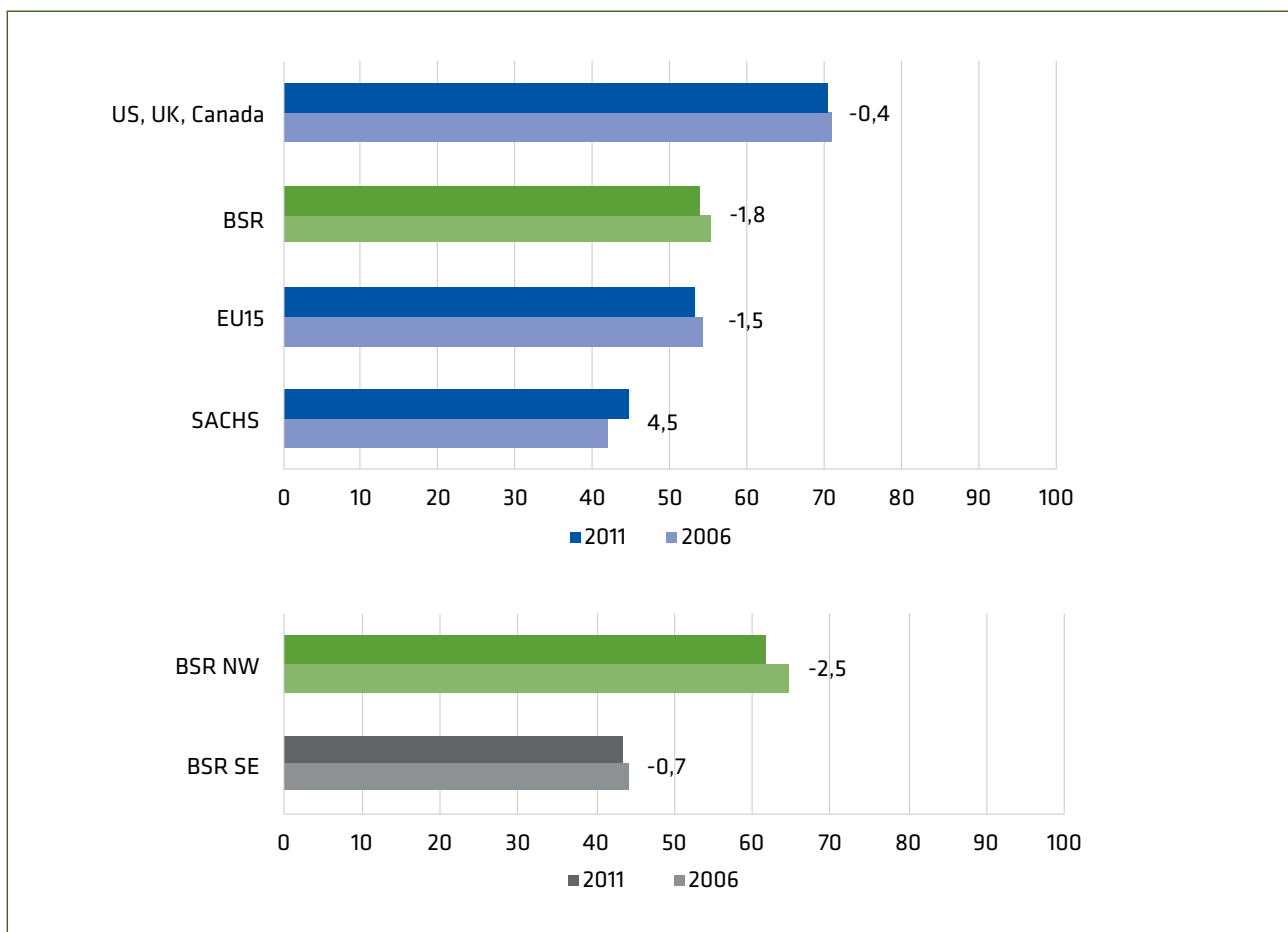
Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

Framework conditions

The US, the UK and Canada region has by far the best framework conditions for entrepreneurship outperforming BSR and EU15 by some distance, with SACHS even further behind, cf. figure 4.3.4.4. The framework conditions for entrepreneurship have declined across all of the analyzed regions with the exception of SACHS, which has improved significantly albeit from a rather low level. This explains why SACHS still trails EU15 and BSR by some margin.

We find significant variation when further breaking down numbers. BSR NW has seen the most significant decline in framework conditions over the years. Although the level remains high the gap vis-a-vis the US, the UK and Canada has increased, cf. figure 4.3.4.4. On the other hand, BSR SE has declined marginally and has therefore not been able to keep track with SACHS, which in turn implies that BSR SE is now the region with the poorest framework conditions for entrepreneurship.

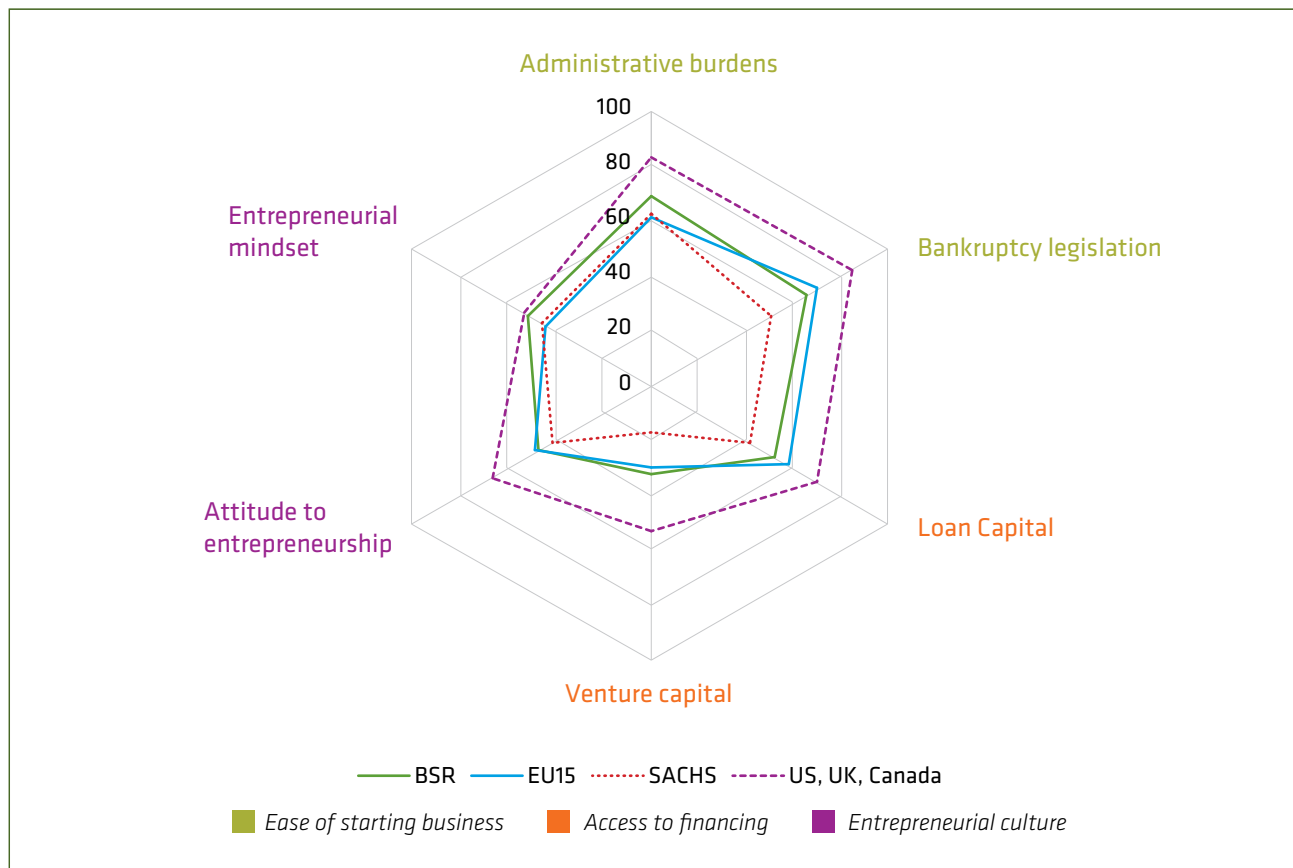
FIGURE 4.3.4.4: ENTREPRENEURSHIP BENCHMARK FRAMEWORK CONDITIONS BY REGIONS AND BSR SUB-REGIONS, 2006-2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

The top performance by the US, the UK and Canada region is accredited to universally strong performances across all policy areas, cf. figure 4.3.4.5. This is particularly the case in areas related to ease of starting a business and access to finance, but also the entrepreneurial culture is high in the region. BSR matches EU15 in most policy areas, while SACHS appears to face the biggest challenges in bankruptcy legislation and in areas related to access to financing.

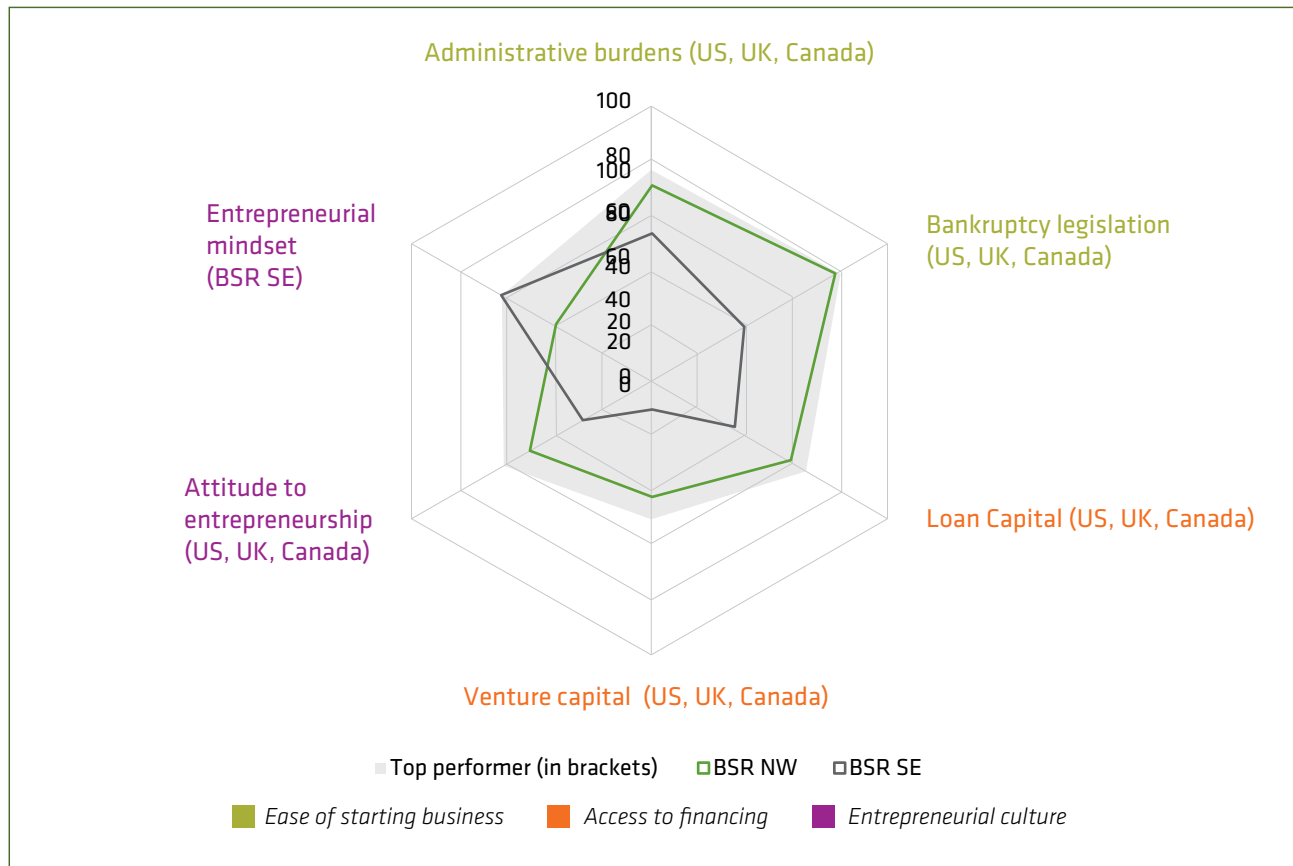
FIGURE 4.3.4.5 ENTREPRENEURSHIP BENCHMARK FRAMEWORK CONDITIONS BY REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor

There are some notable differences within the BSR. While BSR SE has the best entrepreneurial mindset (seeing opportunities to start a business) among all of the analyzed regions, there are challenges in the remaining policy areas, cf. figure 4.3.4.6. The picture is exactly the opposite for BSR NW, which has solid framework conditions in all areas except for entrepreneurial mindset.

FIGURE 4.3.4.6 ENTREPRENEURSHIP BENCHMARK FRAMEWORK CONDITIONS BY BSR SUB-REGIONS, 2011



Source: FORA / Danish Business Authority, BSR Innovation Monitor 2012

4.4 SUMMARY

The overall innovation performance of the BSR is very strong with BSR NW claiming the position as the most innovative region among all of the benchmarked regions and leading the top-performing English-speaking countries (the US, the UK and Canada) by some margin. The EU15 and BSR SE are lagging behind the two leading regions by some distance, while SACHS trails the top-performing regions even further. Since 2006 the BSR is the only region to increase its innovation performance due stronger performances in both BSR SE and BSR NW.

BSR NW is ranked first in innovation performance due to top-performances in ICT, knowledge creation and human resources, while the area of entrepreneurship remains a challenge. The picture is exactly the opposite in BSR SE, with the region ranked at the very top in entrepreneurship, while the BSR SE remains the lowest ranked region in terms of innovation performance in the remaining three innovation areas.

Although BSR NW is the most innovative region, the US, the UK and Canada has the best overall framework conditions for innovation marginally outperforming BSR NW. The EU15 is lagging by some margin, while SACHS and BSR SE find themselves even further back in having by far the most challenging framework conditions for innovation.

BSR NW trails the US, the UK and Canada in three of the four drivers of innovation (*knowledge creation, human resources and entrepreneurship*), but holds the best framework conditions for ICT. Human resources and ICT are the least challenging areas for BSR SE outperforming SACHS in both areas while posting poorest framework conditions for entrepreneurship and knowledge creation. On a positive note, BSR SE is the most improved region and is catching up with SACHS. BSR NW on the other hand has improved the least among the regions, but that is from a rather high level.

The overall conclusion is that although framework conditions have improved in BSR SE, there seems to be a potential for general improvements in performance across all innovation drivers except for entrepreneurship. BSR could also reap some benefits from improving the ability to create growth among entrepreneurs in BSR NW by addressing the framework conditions for entrepreneurship and improving them accordingly. This leads to the overall conclusion that peer learning across the BSR countries in all areas may have the potential to improve the innovation performance solidifying BSR's position as the top-ranked innovative region for years to come.

Some areas are worth highlighting for peer learning. These include the ability to attract foreign talent, critical mass in venture capital investments, improving public-private knowledge transfer and the development of lead markets (see chapter 6 for further information).



CHAPTER 5
**STRATEGIC OUTLOOK
ON INNOVATION POLICY
IN THE BSR
– WHAT LIES AHEAD?**

STRATEGIC OUTLOOK ON INNOVATION POLICY IN THE BSR – WHAT LIES AHEAD?

The first part of this report has focused on presenting the Innovation Monitor framework and highlighting overall strengths and areas of improvement related to innovation performance and framework conditions in the Baltic Sea Region. The data and analysis provide a summary image of the past as well as an overview of the changing dynamics. In addition to investigating past performances and framework conditions the BSR Innovation Monitor also attempts to provide a strategic outlook.

Peer review sessions have included discussions on each country's innovation strategy – covering prioritized policy initiatives in recent years, areas of increasing importance, approaches to fostering demand-side innovation, and perspectives on the role of the BSR macro region. Given the foundations of the BSR Stars programme and StarDust project, more in-depth discussions were carried out on the role played by cluster programmes in relation to individual country innovation agendas.

This chapter is divided into three sections. The first section presents an overview of innovation strategies in the BSR countries summarizing priorities and highlighting common themes. The second section draws upon recent strategy documents from the OECD and EU to provide an overview of four global trends in innovation policy, and relates these to strategic priorities within the BSR. The third section provides an overview of cluster programme approaches in the BSR, trends in the use of the “cluster tool”, and the importance of such activities for fostering innovation. This section also provides a summary of key challenges to address in the future (related to cluster programme design and implementation).

5.1 INNOVATION STRATEGIES IN THE BSR

As most countries in the EU, many countries in the Baltic Sea Region are formulating new innovation strategies to guide their policy activities in the upcoming programme period (2014-2020)¹. The European strategies (Europe 2020² and the Innovation Union³ flagship) provide the over-arching strategic framework, and the EU framework programme for research and innovation – Horizon 2020⁴ – outlines the operational goals within three areas: excellent science, competitive industries and better society.

This section provides an overview of innovation strategies in the BSR countries highlighting priorities and summarizing some common themes.

5.1.1 STRATEGIES AND PRIORITIZED ACTIVITIES

As mentioned above, many BSR countries are formulating new innovation strategies to guide their policy activities. Six countries (Denmark, Estonia, Iceland, Latvia, Poland and Sweden) have recently released or are in the process of finalizing new innovation strategies. Germany and Lithuania have launched new innovation strategies in 2010. Innovation strategies in Finland and Norway were launched in 2008; yet both countries are developing new policy initiatives to address current needs.

¹ Eight of the ten countries are EU Member States; Iceland is a candidate country; and Norway is an associated country through its membership in the European Economic Area.

² Europe 2020: http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/index_en.htm

³ Innovation Union: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0546:FIN:EN:PDF>

⁴ Horizon 2020: http://ec.europa.eu/research/horizon2020/index_en.cfm?pg=h2020

Driven by over-arching EU strategic frameworks focused on handling societal challenges, many BSR countries have – not surprisingly – highlighted the objective of mobilizing national areas of strength to solve societal challenges. Other recurring strategic objectives are developing more targeted innovation programmes – focused on fewer prioritized areas (i.e. smart specialization), and strengthening capacities for international innovation cooperation and linking into global value chains.

It also appears that BSR countries have similar priorities regarding operational approaches for addressing societal challenges. This includes the development of lead markets and innovation platforms/partnerships (joining forces between the public sector, knowledge institutions and firms), and the increased use of demand-side innovation policies (including regulation, standards and public procurement).

See appendix I for an overview of and links to innovation strategies.

5.2 COMMON THEMES

As briefly discussed above, innovation strategies in the BSR have many common themes cf. figure 5.2.1 below. BSR countries have a common orientation towards significant challenges and societal needs as drivers of innovation opportunities, while maintaining a global perspective in innovation activities. BSR countries also highlight the common need for strategic prioritization (or smart specialization) leveraging regional innovation hubs/eco-systems as innovation platforms, and developing coordinated efforts (even across borders).

FIGURE 5.2.1: COMMON THEMES IN BSR INNOVATION STRATEGIES



Source: FORA/Danish Business Authority, BSR Innovation Monitor 2012

Many innovation strategies highlight the prioritization of applying new policy approaches including the use of public demand (e.g. regulation, public procurement, innovation in public sector) as a driver of innovation, and developing collaborative business models and orchestration skills (for use in innovation eco-systems and transnational innovation networks).

There is a continued importance for strengthening research-industry collaboration, fostering creativity and design skills, and ensuring strong framework conditions for entrepreneurship and growth (e.g. financing and development of capabilities).

5.3 GLOBAL INNOVATION POLICY TRENDS AND THE BSR

Increasingly, economic and competitive pressure on a global scale has enhanced the need for re-thinking innovation strategies within the EU – with more emphasis being placed on broadening the range of policy instruments and taking new views. Drawing upon recent strategy documents from the OECD and EU, this section relates the strategic outlook in the BSR to new global directions in innovation policy.

5.3.1 NEW GLOBAL DIRECTIONS IN INNOVATION POLICIES

As a result of innovation policy benchmarks at the European level, a research study from December 2011 (PRO INNO EUROPE/INNO POLICY TRENDCHART - Innovation Policy trends in the EU and beyond⁵) reveals that in general only few visible changes in the innovation policy mix have occurred during the period 2009-2011. These changes can be described as:

Mission-oriented public funding of research, education and innovation

Public expenditure is under pressure in many countries as a direct consequence of growing public deficits. Accordingly, focus has been directed towards a higher degree of resource allocation to a mission-oriented policy approach that targets specific sectors with a significant potential for innovation growth, economic scale and employment in the future. One example is the Green Growth which is also one of the prioritized areas in the Europe 2020 Strategy⁶.

The introduction of Smart Specialization Strategies – the EU regional approach

In the European Commission's Communication regarding the contribution of the regional policy⁷ in the area of smart growth in the Europe 2020 strategy, the central role of European regions is recognized. Smart Specialization is a concept for the development of R&D and innovation policies across the European Union. Its aim is to promote the efficient and effective use of public investment/public procurement by using the right synergies among countries and regions – strengthening clusters' innovation capacity and regional research infrastructures.

The issue of specialization in R&D and innovation is particularly crucial for regions and countries which do not have a leading history in any of the major scientific or technological sectors. The objective is to encourage complementary use of investments that combines regional productive assets associated with relevant sectors in the economy. The whole strategy is based on the concept of a strong partnership between private and public entities with the collaboration of academic and research institutions.

A growing attention to demand-side policies

Demand-side policies aim to address e.g.: information asymmetries (producers are not aware of preferences, users are not aware of innovations); a lack of interaction between producers and users; high switching cost to new technologies, high entry costs (especially in areas with important network effects); and technological path dependencies. Demand side innovation tools which include for instance regulations and standards, labelling, public procurement of innovation, technology transfer should to a larger extent complement public funding schemes (e.g. grants, loans and tax credits) also referred to as 'supply-side innovation policy tools.

The growing interest in demand-side policies has emerged in part because of greater awareness of the importance of feed-back linkages in the innovation process between supply and demand. Demand-oriented innovation policies are thus part of an evolution from a linear model of policy – usually focused on R&D – to a more broad-based approach that encompasses the entire innovation cycle. Indeed, many countries have noted that a main challenge for innovation often is not a lack of knowledge or technology, but rather linking these innovations to a market. This is particularly the case in markets with major public good characteristics, e.g. markets for environmental goods and services, certain health services, and other public and semi-public services.

⁵ "PRO INNO EUROPE/INNO POLICY TRENDCHART - Innovation Policy trends in the EU and beyond", 2011:

http://www.proinno-europe.eu/sites/default/files/page/12/03/FINAL_X07_Inno%20Trends_2011_0.pdf

⁶ European Commission, "Communication from the Commission Europe 2020 - A strategy for smart, sustainable and inclusive growth" : <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>

⁷ European Union, "Regional Policy for Smart Growth in Europe 2020", 2011:

http://ec.europa.eu/regional_policy/information/pdf/brochures/rfec/2011_smart_growth_en.pdf

Broadening the innovation scope and need for more overall coordination

In recent research and innovation policies in the EU, new industries are the subject of initiatives, in particular the creative industries and design. Public sector innovation has a great potential but so far the social innovation has not been the subject of innovation policy discussions.

The impact of broadening innovation policies to a wider industrial and social scope increases the need for well-coordinated efforts between involved stakeholders. Only few ministries were responsible and directly involved in innovation strategies in the past, but new ministries play an increasing role in defining and implementing innovation policies.

The challenge is to strike a balance between more autonomy for the effective management of sectoral innovation policies and more coordination to promote greater effectiveness in the overall national innovation system.

5.3.2 GLOBAL TRENDS IN RELATION TO INNOVATION STRATEGIES IN THE BSR

These four overall changes in the innovation policy mix are strongly present in the innovation strategies of BSR countries. As presented in the first section, BSR countries share an orientation towards viewing significant challenges and societal needs as the driver of innovation opportunities; highlighting the need for strategic prioritization and leveraging of strong regional innovation hubs/eco-systems as innovation platforms; and using public demand (e.g. regulation, public procurement and innovation in the public sector) as drivers of innovation.

The only innovation policy trend that is highlighted in the BSR, but which is not recognized as a “global trend” is the importance of maintaining a global perspective in innovation policy, i.e. understanding one’s own strengths relative to others, identifying market opportunities and maintaining the capacity to orchestrate international alliances and deliver solutions that address market needs. This global perspective in innovation policy across BSR countries may be a signal of a sense of readiness to move forward in unison.

5.4 CLUSTERS IN RELATION TO THE INNOVATION AGENDA

Clusters (or rather cluster initiatives) are used as instruments of innovation policy; as key elements regional innovation strategies for smart specialization, as hubs for linking into international networks and as part of broader eco-systems or strategic alliances that are prioritized on a national level. Numerous studies have reviewed and benchmarked policy approaches supporting clusters and regional innovation systems. OECD’s 2007 report on *Competitive Regional Clusters – National Policy Approaches*⁸ was one of the first international studies of its kind benchmarking 26 programmes across 14 countries (globally). The most recent study is the updated *Clusters are Individuals* report (Volume II, October 2012)⁹, which benchmarks 34 programmes across 24 countries (within Europe). In addition, the recent TACTICS report *Where the Cluster Winds are Blowing in Europe*¹⁰ provides an overview of cluster policy trends, based on 28 cases from 17 European countries.

The aim of this section is not to repeat the detailed analysis available in various studies, but rather to discuss the role that cluster programmes play in relation to the innovation agenda in the Baltic Sea Region. This section provides a brief overview of cluster programme approaches in the BSR and trends in the use of the “cluster tool”. The section provides a summary of key challenges to address in the future (related to cluster programme design and implementation) and highlights possibilities for joint action among BSR countries.

5.4.1 OVERVIEW OF CLUSTER PROGRAMMES

The Typology of Cluster-related Programmes (figure 5.4.1.1), which has been developed within the BSR InnoNet project (2006-2009), provides a structure for illustrating the different geographical scope, sectoral focus and policy objectives of cluster programmes. Cluster programmes feature in all 10 of the BSR countries, but are used for different policy objectives with different geographic and sectoral focus (see figure 5.4.1.1 below)¹¹.

Only one cluster programme has a pure sectoral (and regionally-based) approach. Most cluster programmes target the development of existing strongholds anchored in a specific region – while supporting R&D, innovation and renewal activities to different degrees. These 10 programmes are placed between type 2 (sectoral clusters) and type 3 (innovative inter-sectoral clusters) on the programme “spiral” cf. 5.4.1.1. A second major grouping of cluster programmes has the primary target of supporting R&D, innovation and renewal in existing, strong cluster initiatives. The systemic (or “triple helix”) approach is important for these programmes. These 8 programmes are placed between type 3 (innovative inter-sectoral clusters) and type 4 (innovative networks of clusters) on the programme “spiral”.

8 OECD, “Competitive Regional Clusters – National Policy Approaches”, 2007: <http://www.oecd.org/gov/competitiveregionalclustersnationalpolicyapproaches.htm>

9 Prepared by VDI/VDE-IT in the context of the NGP Cluster Excellence project, initiated by the Danish Agency for Science, Technology and Innovation (DASTI): <http://www.vdivde-it.de/about-us/publications/studies/clusters-are-individuals-2013-new-findings-from-the-european-cluster-management-and-cluster-program-benchmarking>

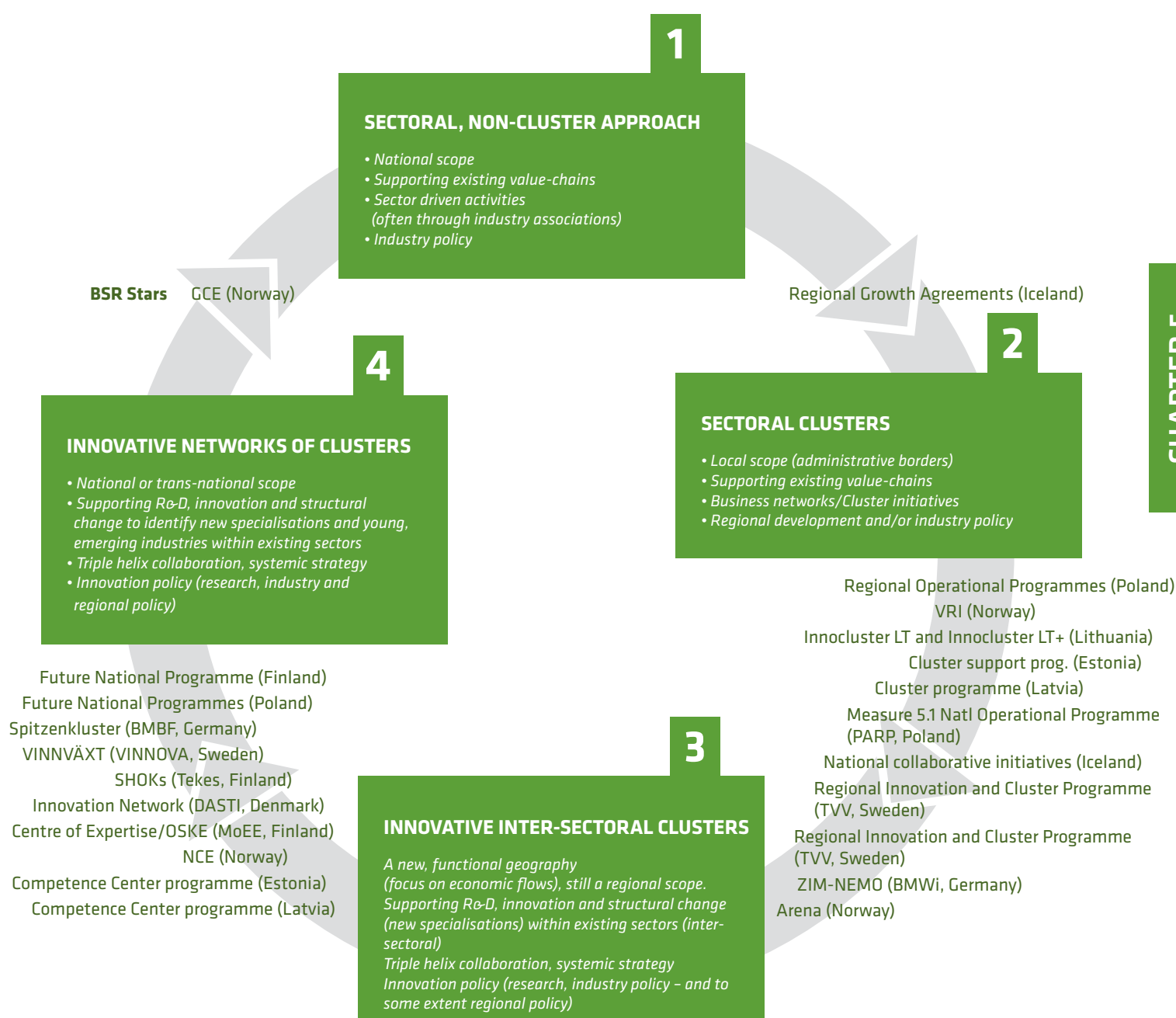
10 TACTICS, “Where the Cluster Winds are Blowing in Europe”, 2012: <http://www.eco-tactics.eu/page/tactics-final-reports>

11 The cluster programmes included in the typology (Figure 5.4.1.1) do not represent ALL cluster programmes in BSR countries.

It is worth noting that several countries have more than one cluster programme (Germany, Estonia, Finland, Iceland, Latvia, Norway, Poland and Sweden). In these cases, one programme is more focused on developing the linkages and regional anchoring in an existing stronghold, while others are focus on developing R&D, innovation and renewal activities in the participating cluster initiatives.

Another noteworthy observation is the number of forthcoming programmes that are currently under development (in Finland, Poland and Norway¹²). These forthcoming cluster programmes will focus on using strong regional innovation nodes/ecosystems as platforms for implementing innovation policy and channelling various RDI funds (in Poland), for developing inter-sectoral and international linkages (in Norway) and for partnering across sectors and policy areas in order to develop new solutions demanded by the global market (in Finland). In these “up-and-coming” programmes, sectoral or geographic boundaries appear to be less important, while capabilities for combining knowledge and partners in joint efforts to respond to market demands are more important.

FIGURE 5.4.1.1: TYPOLOGY OF CLUSTER-RELATED PROGRAMMES IN THE BSR



Source: Typology of cluster programmes from BSR InnoNet (2007) and interviews during peer review

¹² Iceland is also in the process of developing a new national cluster programme

5.4.2 IMPORTANCE OF CLUSTERS TO INNOVATION

Clusters (or rather cluster initiatives) have traditionally been viewed as a means for lower costs (through economies of scale), shared specialized labour and knowledge spill over. Cluster programmes have aimed at strengthening linkages between companies and knowledge institutions – fostering knowledge spill overs, and increasing innovation capacity and renewal. Generally, clusters are viewed as important for fostering innovation particularly on a regional level (closer to the “cluster action”). Yet BSR countries’ perspectives differ (see figure 5.4.2.1 below).

The Baltic countries (Lithuania, Estonia, and Latvia) are among the countries providing the highest rating of the importance of clusters in fostering innovation. Cluster initiatives are viewed as mechanisms for promoting the development of innovations through integration of research and the exchange of knowledge among specialists working in the cluster.

FIGURE 5.4.2.1 IMPORTANCE OF CLUSTERS TO INNOVATION
ON A SCALE FROM 1 TO 10, HOW IMPORTANT ARE CLUSTERS FOR YOUR COUNTRY IN FOSTERING INNOVATION?



Finland has the lowest rating of the importance of clusters in fostering innovation. This is due to the fact that policymakers in Finland are no longer discussing clusters but rather focus their attention towards innovation eco-systems. Policies aim at fostering a continuous renewal of capabilities in niche areas in order to capture high value-added parts of value chains, and developing new “orchestrating” skills to link various complementary hubs together. The view is that traditional “cluster policy” focuses on developing traditional industrial clusters, rather than on developing the skills needed to work in a globally networked era. Thus, on a national level clusters (in the traditional sense) do not match Finland’s innovation strategy and are viewed as only partially relevant to fostering innovation. However, on a regional level, clusters are still a relevant concept and have a higher importance in fostering innovation.

Iceland and Poland expressed similar views, i.e. that cluster policies have primarily been used to strengthen collaboration among stakeholders. In the future, however, these countries (and others in the BSR) would ideally use existing cluster initiatives as a tool for implementing innovation policy (e.g. leveraging cluster initiatives to mobilise SMEs’ participation in RDI programmes, channelling other RDI funding through cluster initiatives etc.).

lise SMEs’ participation in RDI programmes, channelling other RDI funding through cluster initiatives etc.).

The ambition to use strong regional innovation nodes/ecosystems as platforms for implementing innovation policy and channelling various RDI funds places more emphasis on requirements for coordinating efforts across policy areas and across policy levels. The BSR countries share similar perspectives on the role of the regional, national and supranational (BSR or EU) levels of government.

Generally speaking, the regional level is viewed as being responsible for initial mobilization, guiding priorities, some financing of “soft measures” (i.e. neutral platform/institution, process facilitation, networking activities) – as well as synching efforts to the national level.

The national level is viewed as being responsible for designing, financing and implementing programmes to facilitate collaboration and commercialization in areas of national importance; securing quality of initiatives; fostering new contacts and networks (nationally and internationally); channelling funding or other relevant investments to innovation hubs; and facilitating access to EU funding.

The supra-national level (e.g. Nordic, BSR or EU) is responsible for filtering needs and implementing different activities; offering additional mechanisms/ instruments to support cluster initiatives and internationalization (e.g. training, match-making, financing); and recognizing cluster initiatives in macro regional and EU programmes. A synthesis of

BSR countries' perspectives on the differentiation of roles across different levels of government in relation to cluster programme implementation is provided in table 5.4.2.1 below.

TABLE 5.4.2.1: DIFFERENTIATION OF ROLES IN RELATION TO CLUSTER PROGRAMMES

GOVERNMENT LEVEL	ROLES IN RELATION TO CLUSTER PROGRAMME IMPLEMENTATION
REGIONAL	• Guiding priorities and strategy, and proposing concrete activities • Synch municipal/regional strategies with national efforts • Supporting the development of new clusters and some involvement in network/partnership mobilization processes – driven by companies' interests • Providing financing of “soft measures” that are necessary for cluster initiatives (often through structural funds) • “home base” for cluster initiatives with strong commitment, leadership and engagement
NATIONAL	• Providing strategic guidance and formulating policy • Designing, financing and implementing programmes to strengthen collaboration and commercialization • Channelling financing to areas with national importance • Providing information and fostering new contacts/ linkages to strengthen the national innovation system • Raising the level of quality of projects and facilitating access to EU funding
BSR/EU	• Offering platforms/frameworks and additional mechanisms (including financial support, training, matchmaking) to strengthen international collaboration • Using cohesion policy and research policy instruments more effectively • Financing through macro regional and EU programmes (where encourage adjusted rules so that cluster organizations can apply)

Source: FORA/Danish Business Authority, BSR Innovation Monitor 2012

5.4.3 TRENDS IN THE USE OF THE CLUSTER TOOL

The launch of new programme calls (in e.g. Latvia, Lithuania and Sweden) and ongoing development of new programmes (in e.g. Finland, Iceland, Norway and Poland) signals that cluster programmes continue to be an important tool of innovation policy. Cluster initiatives are used for mobilizing various actor groups (SMEs in particular), renewal/upgrading activities (including skills' development) on a regional level and establishing new linkages with other actors or related innovation hubs. In discussions about the future use of “the cluster tool” and the key challenges related to this several key points were highlighted:

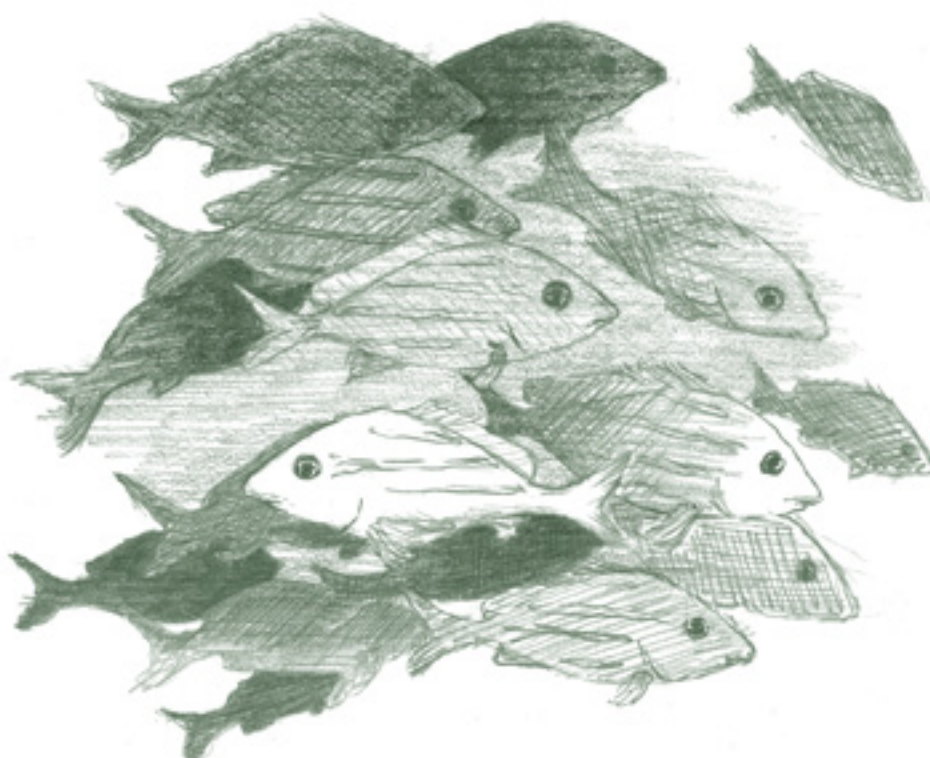
Given the importance of having a global perspective, future efforts will need to focus on developing competencies (within cluster initiatives) for understanding global trends and defining own competencies in relation to innovation environments elsewhere, and – if strategically appropriate – working actively with international knowledge sourcing and innovation collaboration activities. This will also require new operational and financing approaches for international collaboration activities (e.g. working pragmatically to support business-driven activities, not requiring all countries to participate etc.).

In order to be most effective, cluster policies should be better integrated with other research and innovation policies. Going forward it will be important to manage the interplay/synergies between different governmental levels, as well as between different policies/programmes – particularly in light of the ex-ante conditionality regarding regional innovation strategies for smart specialisation (RIS3).

Another challenge that continues to be highlighted is the need to provide evidence (for policy makers and for companies) that the “cluster instrument” works – illustrating more concretely the benefits and economic impacts. Related to this is the desire to increase companies' engagement in and commitment to cluster initiatives – including private sector participation in financing the cluster initiative.

A final challenge for the future is to find ways to continually renew cluster initiatives through new knowledge changing the mindset from working within traditional sectoral boundaries to developing thematic networks focused on developing solutions demanded by the market. It will continue to be important to build on existing strengths, but a stronger emphasis on the demand side is desired. Related to this, agencies will need to consider longer-term investment-oriented approaches with such “open innovation eco-systems”.

These trends and challenges echo those highlighted in the TACTICS “Where the Cluster Winds are Blowing in Europe” and the NGP “Clusters are Individuals” report (referenced above in chapter 5.4).



CHAPTER 6

POLICY RECOMMENDATIONS

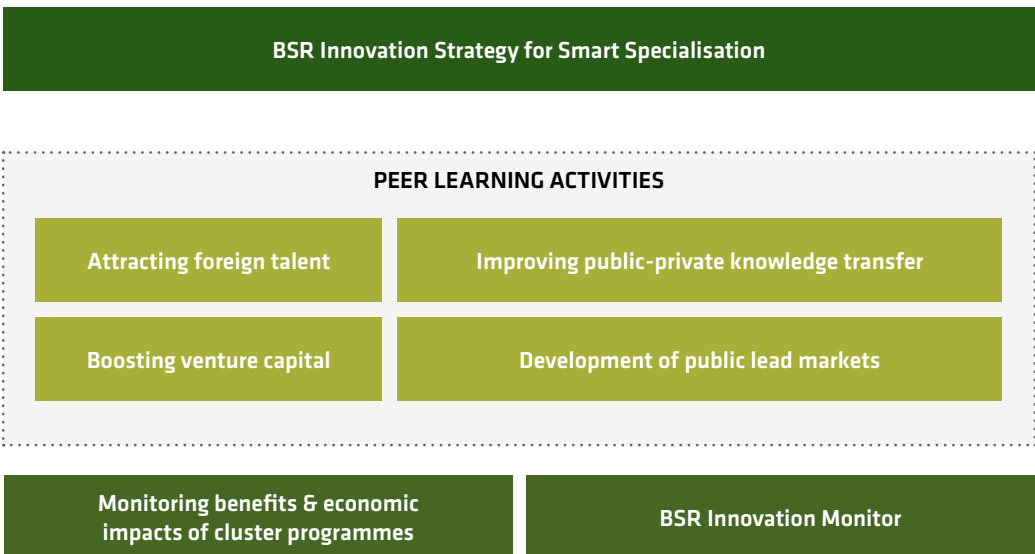
POLICY RECOMMENDATIONS

Based on the results of the analysis and peer review interviews, a number of common themes/challenges have been identified leading to proposals for consideration by the BSR Stars High-level Group. The recommendations are intended to be applicable to the entire BSR and if implemented should benefit BSR by improving the framework conditions for innovation (and thereby also improving innovation performance).

6.1 PROPOSALS FOR BSR INNOVATION POLICY DEVELOPMENT

The proposed recommendation for further improving the innovation in the BSR can be divided into three different levels - a strategic, an operational and a monitoring level, cf. figure 6.1.1.

FIGURE 6.1.1 POLICY RECOMMENDATIONS



Related to the **strategic level**, which is highly political, it is **proposed to develop a BSR (macro-regional) Innovation Strategy for Smart Specialization**. In the upcoming EU programming period, the submission of regional (or national) innovation strategies for smart specialization is an ex-ante conditionality for the use of structural funds. In these strategies regions/countries are meant to prioritize areas of specialized competence where RDI funding will be focused. These strategies will guide regional and national funding and should also be used to guide EU funds (e.g. Horizon 2020, InterRegional funds etc.). Given the importance of these strategies for guiding the use of national and supranational RDI financing, the development of a BSR macro-regional innovation strategy for smart specialization would be an ideal approach. A strategy document could be useful for guiding the EU BSR programme as well as other EU transnational programmes. Furthermore, knowledge sharing on how national ministries/agencies are working with regions to implement regional innovation strategies on smart specialization (RIS3) is recommended. The development of a BSR

Innovation Strategy for Smart Specialization can very well be a part of the EUSBSR action plan related to 'establish a common Baltic Sea Region innovation strategy'¹³.

On the operational level peer reviews has unveiled that there are a lot to be learned from countries within the BSR. Therefore, it is proposed to **pursue peer learning activities**. Several countries have programmes that focus on similar policy objectives yet use different operational approaches. A coordinated effort to learn about best practise and possible traps to avoid in the implementation of different programmes could foster a more efficient implementation of initiatives. The BSR Stars High-level Group could be a forum for sharing this kind of knowledge. However, it is recommended that the BSR Stars High-level group - following the initial knowledge sharing - establish different working groups with experts and policy makers from the relevant fields across the BSR to discuss specific themes and seek joint initiatives.

Based on the results of the BSR Innovation Monitor 2012 and the peer reviews, the following four themes are recommended for further exploration in the BSR Stars High-level Group (and the proposed working groups). It is recommended to further analyze how possible joint actions can be implemented across the BSR. Some very interesting case work that one can draw inspiration from is also included in the below.



ATTRACTING FOREIGN TALENT

In human resources BSR lags the top-performing English-speaking countries in terms of the quality of frame work conditions. The most significant challenge faced by the BSR is attracting foreign talent – both high-skilled knowledge workers and foreign students – to the region. Also the shortage of skills and talent has been voiced in many countries. A joint effort of the BSR to attract globally sourced knowledge could prove to be effective in overcoming barriers in this area. BSR can offer a wide range of challenging career opportunities high liveability, and cultural diversity attractive to most foreigners.

The EU has already taken decisive steps in this direction by adopting the Blue Card directive (see box 6.1.1). The BSR countries could make sure implementation and administration of these rules in the BSR is done in a coherent manner across the region, and could work together to eliminate barriers to internal mobility of foreign high-skilled workers once. Further, the BSR countries could work together to attract Blue Card holders resident in other EU countries. This is very much in line with the EUSBSR action plan, where one cooperative action is to 'Increase labour mobility'¹⁴.

As a supplement to this, the BSR countries could work together to explore the possibilities of making the region more attractive to foreign students. Emphasis could also be placed on ensuring that adequate possibilities exist for foreign students to work in attractive jobs alongside their studies, allowing them to gain a professional network relevant to their future career. An extended VISA permit could also be granted for graduates to let them find a job after graduation from a university in the BSR region.

¹³ <http://files.groupspaces.com/EUSBSR/files/320901/kAlz9HhKceE6QHrdsyb7/Action+plan.pdf>

¹⁴ <http://files.groupspaces.com/EUSBSR/files/320901/kAlz9HhKceE6QHrdsyb7/Action+plan.pdf>

BOX 6.1.1: THE EU BLUE CARD DIRECTIVE [EU]

Despite being in the midst of an economic crisis with high levels of unemployment, employers often cannot find the highly qualified workers they need. The EU Blue Card Directive puts in place common and efficient rules that allow highly skilled people from outside Europe to come and work in our labour markets where there is a need. The Blue Card Directive was adopted in May 2009 and Member States had until June 2011 to transpose its provisions into national law. All EU Member States except Denmark, the UK and Ireland are bound by the Directive.

The EU Blue Card scheme helps attracting highly qualified migrants to Europe, supporting Member States' and EU companies' efforts to fill gaps in their labour markets that cannot be filled by their own nationals, other EU nationals or legally resident non-EU nationals. It provides a common and simplified procedure applicable in the EU Member States bound by the Directive and ensures that potential migrants know what they need to do, whichever Member State they are planning to go to, rather than having to face 24 different systems. Once a Member State grants a Blue Card to a migrant that person can then benefit from free access to highly qualified employment positions in that Member State and can also relocate to another EU Member State where their skills may be needed. Coupled with preferential rules for acquiring long term resident status and for family reunification, the Blue Card scheme presents an attractive package to potential highly qualified migrants.

It is a demand-driven instrument which does not grant a right of admission and respects the competences of the Member States to determine the volume of labour immigrants entering their territory for the purpose of highly qualified employment. The Blue Card Directive is one building block of the EU migration policy, which has a role to play not only in filling shortages in the national labour markets but also in helping to face demographic challenges. The Directive does not prevent Member States from having their own system of national residence permits for highly skilled migrants, but such national permits cannot grant the right of residence in other EU Member States that is guaranteed under the Blue Card Directive.

Source: European Commission

**BOOSTING VENTURE CAPITAL**

The BSR Innovation Monitor 2012 has unveiled that the framework conditions for entrepreneurship has been hit by declining venture capital investments in many countries during the crises - the BSR being no exception. To boost venture capital in the Baltic countries Estonia, Latvia and Lithuania (together with the European Investment Fund) has pooled their venture capital investments in one overarching fund - the Baltic Innovation Fund (see box 6.1.2). This was carried out at the end of 2012.

The lack of venture capital is a challenge in most BSR countries. It goes without saying that other BSR countries can benefit from similar solutions e.g. pooling venture capital investments across the BSR drawing inspiration from the Baltic Innovation Fund. Pooling venture capital will increase the opportunities to spread the risk in investments, due to investments being placed on a bigger market and thereby having better investment opportunities. That will ultimately lead to a higher yield, which likely will attract more venture capital to the BSR. It is therefore proposed to establish a transnational venture capital fund in BSR drawing on the experience from both the Baltic Innovation Fund as well as the work undertaken in relation to the EUSBSR action plan regarding creating a Baltic Sea Fund for Innovation and Research¹⁵.

¹⁵ <http://files.groupspaces.com/EUSBSR/files/320901/kAlz9HhKceE6QHrdsyb7/Action+plan.pdf>

BOX 6.1.2: BALTIC INNOVATION FUND (BALTIC COUNTRIES)

In September 2012, the Baltic Innovation Fund was announced as an initiative aimed at boosting equity investments in Baltic Small and Medium sized enterprises (SMEs) with high growth potential. The Baltic Innovation Fund (BIF) is a Fund-of-Fund initiative launched by the European Investment Fund (EIF) in close co-operation with the Governments of Lithuania, Latvia and Estonia. The Baltic Innovation Fund is the result of strong co-operation between the three Baltic States and the EIF which is unique in a European context and which positions the region to benefit from greater levels of private investment than ever before. Furthermore, the three governments are taking a lead by investing in the Baltic Innovation Fund through their respective national agencies and utilising the revolved Structural Funds from previously successful SME support schemes to accomplish this. This unique trans-national process provides a real opportunity for further developing the Baltic private equity (PE) & venture capital (VC) market and for stimulating employment and competitiveness in the region.

The European Investment Fund is investing EUR 40 million in addition to investments of EUR 20 million made by each of the national agencies - INVEGA in Lithuania, the Latvian Guarantee Agency (LGA) in Latvia and KredEx in Estonia. The Baltic Innovation Fund will invest the EUR 100 million into private equity and venture capital funds focusing on the Baltic States over the next four years through a 'fund-of-funds' process. The investment process for the Baltic Innovation Fund will begin in 2013 when the EIF will start to process transactions with selected Fund Managers. Each Fund manager will be expected to attract an additional and equivalent amount of private finance from pension funds and private investors which will double the amount of investment capital within the programme. Over a 4 year investment period three to six Fund Managers will receive investment commitments which will then be invested into innovative high-growth SMEs.

BIF'S INVESTMENT STRATEGY

BIF will attempt to build a balanced portfolio of venture capital and private equity investments with an investment focus on the Baltic States. The balance will cover the aspects of instrument focus, vintage and an appropriately diversified number of underlying transactions. The EIF, as manager of the BIF, is contemplating the following investment opportunities:

1) Investments into venture capital and private equity funds (including mezzanine funds) with proven experience and insight into the Baltic market and 2) co-investments alongside business angels, family offices and institutional investors into early to growth phase SMEs. BIF co-invests with selected investors which are either located in the Baltic States, provide for a relationship with the Baltic ecosystem or can consider investments into the Baltic States. Furthermore, other innovative instruments such as technology transfer investment vehicles may also be considered for investment but only if appropriate quality investment opportunities are identified.

Source: Baltic Innovation Fund,

http://www.eif.org/what_we_do/equity/news/2012/baltic_innovation_fund.htm



IMPROVING PUBLIC-PRIVATE KNOWLEDGE TRANSFER

The analysis of the framework conditions for knowledge creation has shown that BSR NW is the best-performing region in the policy area of cooperation on R&D between public research institutions and the business environment there is still considerable room for improvement in the BSR in general. Not only is BSR SE facing certain challenges in this area; peer reviews have revealed that countries in BSR NW are still searching for more efficient ways to transfer knowledge between public and private entities.

The task of dissemination knowledge from public research into the private sector for commercial exploitation and economic growth therefore remains a top priority across all BSR countries. Several countries have programmes focusing on fostering research-industry collaboration in strategic areas of national competence (e.g. SHOKs in Finland, Strategic Innovation Programme in Sweden, National Competence Centres in Norway and the Baltic countries). These programmes have different approaches for catalyzing collaboration on innovation between companies and knowledge institutions.

Peer learning related to “business models” used (i.e. what financing is provided for different actors and activities, what institutional setup is utilised for framing cooperation, etc.) may provide inspiration for adjustments to national innovation and cluster programme approaches. Therefore, priority could be given to facilitate peer learning among policy makers on the various tools employed in the BSR countries.

BOX 6.1.3: DOCTORAL STUDIES AND INTERNATIONALIZATION PROGRAMME (ESTONIA), DORA

The doctoral studies and internationalization programme “DoRa” is intended to assist innovative companies that successfully apply research results, technology and professional design in their services and products by funding the creation of supported doctoral student positions. In order to be admitted as a partner to the program, the business must be engaged in a development activity that possesses good application prospects and be willing to conclude an employment contract with the doctoral student and to pay at least the legal minimum wage to that student. The partner universities must find a suitable partner and will be responsible for the quality and progress of the supported students’ academic progress.

Eligible expenditures include tuition fees, a monthly allowance and the remuneration of the student’s co-supervisor at the company. Supported positions will be funded on the same terms that apply in relation to doctoral studies under the funding scheme established in Estonia in relation to government funded provision of higher education. This activity intended to foster development in the priority areas specified in Estonia’s national RD&I strategy (information and communication technology, materials technology, environmental technology, biotechnology, energy technology and health). Eligible partners include Estonian universities offering accredited PhD programmes in the aforementioned priority areas.

The DoRa programme runs from 2008 to 2015 and the last doctoral student (of 52 in total) with this financing model was admitted in 2011. About 85% of the overall budget of EUR 32.2 million is covered by the European Social Fund. The programme is being implemented by the Centre for Higher Education Development at the Archimedes Foundation.

Source: Archimedes, <http://www.archimedes.ee/stipendiumid/programm-dora/>

As evident from OECD and EU strategies and from our peer review talks, the BSR share a common orientation of regarding significant challenges and societal needs as the driver of innovation opportunities. As the same (limited) number of societal challenges are being identified and addressed in all countries, it seems reasonable to increase the cooperation between private companies and public research institutions across national borders in the BSR region based on these common challenges.

One approach to stronger cross-border cooperation within the BSR is to match customers and environments that share similar challenges with different clusters, companies and research organisations in a number of thematic networks aimed at collaborative development of solutions to the identified challenges. Matchmaking could happen through physical events at various locations in the BSR on each theme, but could also be facilitated through online matchmaking services based on themes, along the lines of the Demola project (see box 6.1.4).

The thematic networks could be guided by the BSR (macro-regional) Innovation Strategy for Smart Specialisation proposed above, thereby pooling similar demands for solutions as well as specialised knowledge and technology from across the region to co-create common solutions to the common challenges experienced throughout the BSR – solutions that could be commercialised through partnerships and spin-offs not only within the BSR, but on a global scale as well.

BOX 6.1.4: DEMOLA (FINLAND ETC.)

Demola is a functional and internationally recognized open innovation platform for students and companies. In Demola, university students develop product and service demo concepts together with companies and create new solutions to real-life problems. Demola provides an inspiring atmosphere of creative co-creation and new learning opportunities for students and professionals at various universities and organisations. The immaterial rights of the results stay with the student teams. Companies can then purchase the rights or license the products or services from them. Demola also creates new spinoff companies around these innovations.

Demola focuses on projects related to technology, services, digital media and games, social innovation and business concepts with a local impact and a global market potential. Companies bring their project ideas for student teams to cultivate. Demola offers the teams the tools and the teams design the solutions collaboratively. Results are honed into real products and services to be part of the companies' operations or spawn new companies. During the first three years of activity over 200 services and product prototypes were co-created by 1000+ talented students and 93% of the results were claimed for business use.

Source: Demola, <http://tampere.demola.fi/about>



DEVELOPMENT OF PUBLIC LEAD MARKETS

The right market conditions are important to spur innovation. According to the BSR Innovation Monitor 2012 BSR is performing well in the policy area of public demand, while the quality of customers and suppliers and the regulation in generally leaves rooms for improvement, cf. figure 4.3.2.5. To spur innovation the individual governments have a variation of opportunities. One of the opportunities is to develop public lead markets, e.g. by using public procurement to foster innovation. Public lead markets will help business to evolve by meeting public demands in an innovative way, while on the same time the public sector can help business to overcome barriers to the public market (see e.g. box 6.1.5).

BOX 6.1.5: BUSINESS INNOVATION FUND (DENMARK)

The Business Innovation Fund is an official government initiative established in 2009 under the Danish Ministry of Business and Growth. The Business Innovation Fund is serviced by the secretariat of the Danish Business Authority.

The aim of the Business Innovation Fund is to promote growth, employment and exports by supporting business opportunities within green growth and welfare as well as providing support for change-over to exploit new business and growth opportunities in less-favoured areas of the country. Green innovative solutions cover all types of products and services that reduce environmental burdens and that are profitable. Thus, it must be economically viable to develop and use them. The welfare area comprises all types of products and services that may enhance the welfare quality, efficiency and satisfaction.

The Business Innovation Fund provides financial support to large, cross-functional innovation projects within green business and welfare. The aim is to develop innovative commercial products and services that can meet the increasing global demand for green solutions and welfare as well as generate growth and employment in Denmark.

About EUR 100 million has been allocated to the fund covering the period 2010-2012. Private enterprises operating within green business or the welfare area can apply for grants within three focus areas: innovation, market maturation and change-over. Public players can enter into consortiums with private enterprises and thereby apply for grants from the Fund. The Business Innovation Fund provides grants and guarantees to enterprises that have developed climate- and environment-friendly solutions or welfare solutions ready to be launched in the market, but which encounter barriers to reach the market. A prototype must have been developed, and the product or service must have gone through a successful phase of demonstration to qualify for support.

The fund has supported 137 projects with EUR 78.4 million in total. SMEs with fewer than 10 employees have received more than half of the resources with 32% being allocated to companies with 10-50 employees. According to a midterm evaluation of the Business Innovation Fund (April 2012) the supported companies experience the barriers in which the fund focus on. Over more the resources provided by the fund significantly helps the supported companies with overcoming market maturation barriers. Finally the midterm-evaluation indicates that the societal revenue will be 5-10 times the invested funds over a period of 5 years.

The Business Innovation Fund will change its aim and from 2013 focus solely on market maturation, with the intention to make sure that even further innovative products and services will reach the market.

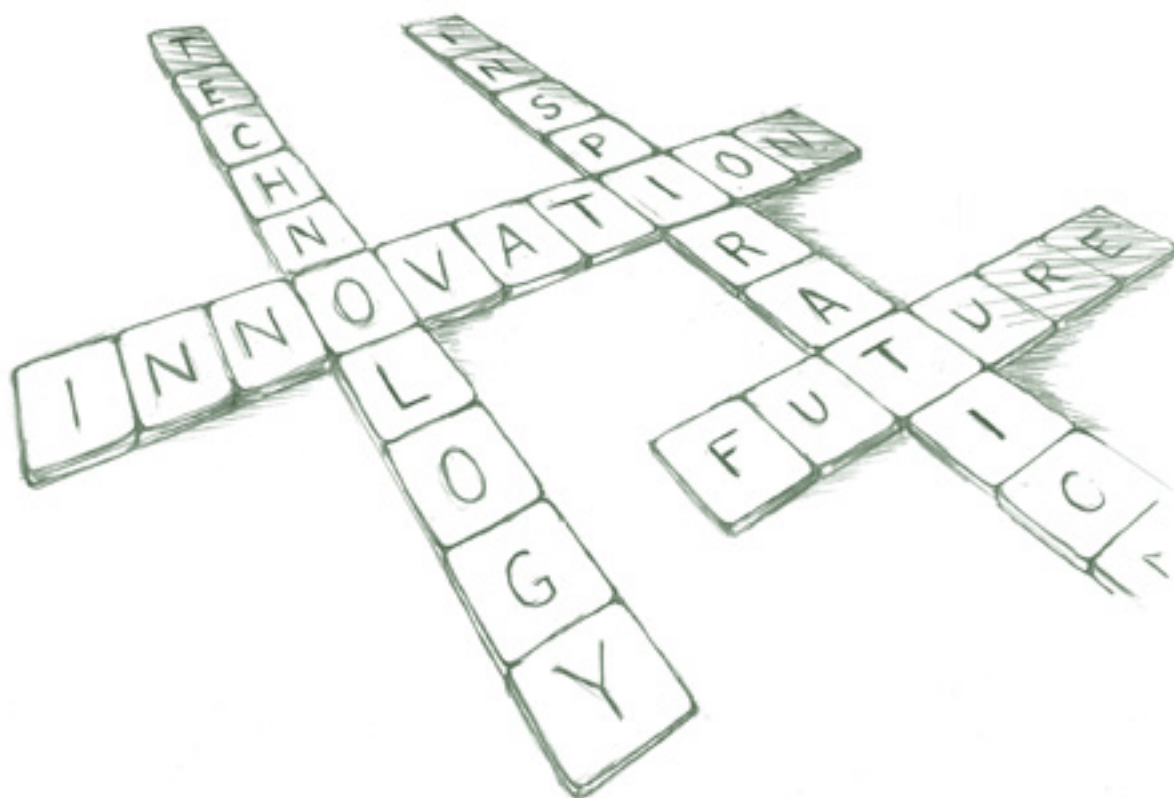
Source: Business Innovation Fund, <http://www.fornylsesfonden.dk/english/about>

While the public-private knowledge transfer should have a global perspective (see recommendation above), it is on a practical level recommended to develop national test beds for the testing of innovative products and services developed in the BSR (related to global challenges). However, these test beds should be made available to all the BSR countries. Making the different national test beds accessible for the companies of other BSR countries and combining them with market maturation initiatives will ideally hold two major advantages: 1) it will potentially provide the customer with the most innovative solution among all BSR countries and 2) it will expand the market for not only developing solution, but also help overcome barriers to public markets for business across the BSR, which eventually can lead to increased global sales.

This recommendation can also be seen in a cluster perspective as an initiative supporting the concept of thematic networks (mentioned above) aimed at developing solutions demanded by the market, while maintaining a global perspective.

Furthermore, on the monitoring level it is recommended to **use and further develop the BSR Innovation Monitor as a tool for future benchmarking of innovation performance and framework conditions within BSR**. The BSR Innovation Monitor provides supplementary information to the EU Innovation Scoreboard – and complements data with qualitative information on strategies and policy approaches. Further, it could be developed further to reflect also the newest and future trends in innovation.

Finally, it is recommended to **explore the possibilities to monitor benefits and economic impact of clusters**. Peer reviews have revealed the need to provide further evidence (for policy makers and for companies) that the “cluster instrument” works.



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