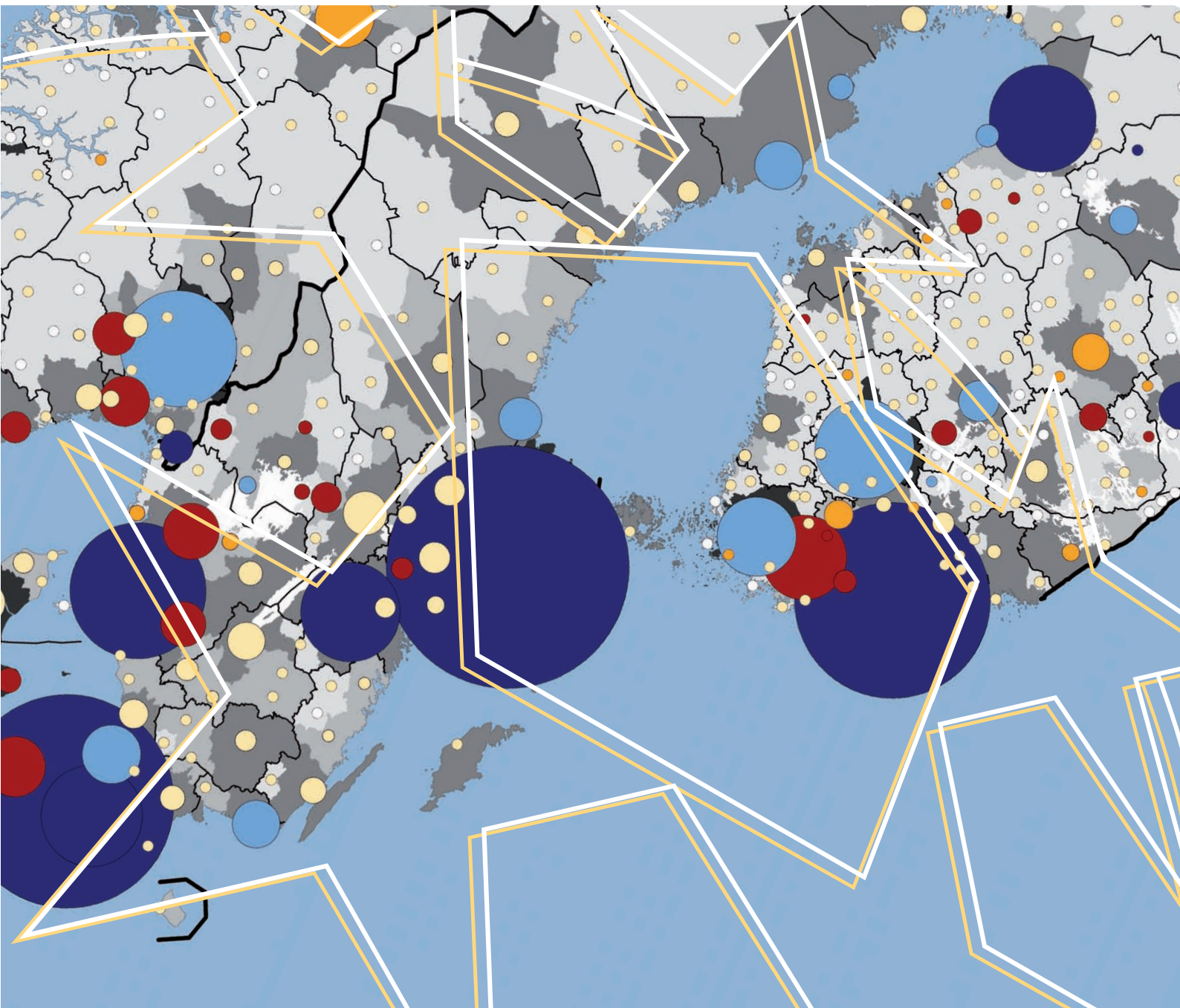


Regionally Differentiated Innovation Policy in the Nordic Countries – Applying the Lisbon strategy

**Sigrid Hedin, Alexandre Dubois, Riikka Ikonen, Kaisa
Lähteenmäki-Smith, Jörg Neubauer, Katarina Pettersson,
Daniel Rauhut, Veli-Pekka Tynkkynen & Åke Uhlin**

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Nordic co-operation

takes place among the countries of Denmark, Finland, Iceland, Norway and Sweden, as well as the autonomous territories of the Faroe Islands, Greenland and Åland.

The Nordic Council

is a forum for co-operation between the Nordic parliaments and governments. The Council consists of 87 parliamentarians from the Nordic countries. The Nordic Council takes policy initiatives and monitors Nordic co-operation. Founded in 1952.

The Nordic Council of Ministers

is a forum of co-operation between the Nordic governments. The Nordic Council of Ministers implements Nordic co-operation. The prime ministers have the overall responsibility. Its activities are co-ordinated by the Nordic ministers for co-operation, the Nordic Committee for co-operation and portfolio ministers. The NCM was founded in 1971.

Stockholm, Sweden 2008

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Preface

This working paper is the final result of the project *Regional tilpasset innovationspolitik i Norden* commissioned by the Nordic Senior Officials' Committee for Regional Policy, the Nordic Council of Ministers. According to the project description the main question to be answered was: How can national policymakers in Norden apply the Lisbon Agenda goals in respect of the desire to create regional innovation policies (referring to policy areas which set the framework conditions for innovation, i.e. growth, entrepreneurship, industrial, regional development, research and education and infrastructure policies) that are fully adapted to the Nordic context?

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A State-of-the-Art report was presented and discussed in the workshop "Regional Innovation Policies in the Nordic Countries – How can the Lisbon Agenda be applied" on 22 November, 2006.

The national overviews and the case studies performed within the project can be found in Nordregio Working Paper 2008:2 available electronically on Nordregio's homepage <http://www.nordregio.se/publications.htm>.

Executive summary

In recent years increasing emphasis has been placed on innovation in both the public and the private sectors. The main reason for this is that “innovation” is seen as being a vital ingredient of the emerging knowledge economy, as being the main driver of economic growth, and of being the best way to meet the challenges posed by the new global economy. In each of the Nordic countries strenuous efforts have made, at the national and the regional level, to promote innovation in both the industrial and the administrative realms.

This report provides an overview and an analysis of the Nordic innovation policies of relevance for regional innovation systems. The central question addressed is how national policy makers can apply the broad Lisbon Agenda goals to the specific creation of regional innovation policies adapted to a Nordic context. The main task was to investigate whether it was possible to define objectives and support schemes that would be essential in the creation of an innovation policy that addresses Nordic regions in general and regions outside the Nordic metropolitan areas in particular. Policy making in this area has been investigated by looking at innovation policy practice in the Nordic countries and by compiling a national overview of innovation policies in the Nordic countries with a regional dimension and regional policies with an innovation dimension. It is however difficult to make an easy distinction between what is, and what is not, innovation policy. According to the EU Commission innovation is included in different policy areas, i.e. innovation (research and development), competition, trade, employment, regional and environmental policies etc. As such, this report mainly investigates the connections and relationships between innovation policies, regional policies and to some extent rural policies. In general, we have looked at policies implemented during the last five years.

Well performing Nordic model(s)

The Nordic countries have seen a good level of economic development over the last decade and, from a European perspective, they are all high performers when it comes to innovation. A number of commonly used indicators show that the Nordic countries are also performing well when compared with the countries of the Pentagon, the economic core of Europe, despite their low population density, long travel distances and few large cities. There are many potential explanations for this superior Nordic performance. It may be explained by reference to the historical

practice of Nordic cooperation including, among other things, the existence of a common labour market since the Mid 1950s and significant funding for research, as well as by the existence of stable political systems, i.e. parliamentarianism and by the unusually high degree of local autonomy, developed education systems, the provision of welfare services etc. Another important explanation may be embodied in the notion of ‘trust’. One problem however is that comparable, reliable and harmonised data to show how the Nordic regions are performing in respect of innovation is lacking. This is a gap that needs to be filled in order for us to be able to develop new regional innovation policy instruments.

The EU and innovation

In the EU context it has only recently been recognised that innovation policies are about non-linear systems while thus far they have generally been regarded and governed as linear processes even in the Nordic countries. The movement from a linear to a more systemic approach to the governance of innovation is however now emerging in the Nordic countries. The linear way of thinking about innovation, implying that innovation is developed in a research laboratory and then ‘used’ by a company or a community, is now being replaced by a systemic way of thinking about innovation implying that innovation emerges “from the quality of interactions between producers, users and mediators of knowledge in the regions: local authorities, companies, centres of production or of transfer of knowledge, local coordination institutions, bodies providing financing of SMEs or research”. The regional level is considered to be well suited for these kinds of interactions. Another feature now emerging in the EU context is increased recognition of the territorial dimension of policies. The promotion of territorial cohesion is now, along with economic and social cohesion, included in the proposal for the treaty on European Union and in the Treaty establishing the European community.

Similarities and differences in regional innovation policies

It is obvious that, historically, the state has controlled innovation policy in the Nordic countries even if these policies have had regional elements and have been established at the regional level. Norway has probably gone through the most explicit process of regionalising its governance of

innovation policies. Common to Sweden, Finland and Norway is the idea of having “Centres of Expertise” (Centre of Expertise in Finland, VINNVÄXT in Sweden and Norwegian Centre of Expertise) that are expected to have a central role in developing regional innovation systems. These programmes have concentrated in those regions with the potential to become leading growth centres.

The partnership idea is widely implemented in national level regional and innovation policies. The encouragement of cooperation between companies, higher educational institutions and public actors, sometimes referred to as the “triple helix”, is a commonly used approach in all Nordic countries in an attempt to try to create innovation systems. Private actors are included not only to implement policies; they also participate in initiating new policies. New cooperation *fora* for actors have also been established - the *Danish Innovation Council* established in 2003 is a good example of such a forum that has members from many sectors, both private and public. Despite all of these partnerships, however, it may be questioned whether these organizations are mere paper constructions. In many cases, in practice, it has proved to be difficult to build a real partnership and to involve the various partners concerned in a truly democratic manner.

Regional blindness – same tools offered

In general, regional policy seems to be increasingly characterised by “regional blindness”. This means that there are no, or only few, specific measures addressing weaker regions and in principle all regions have the same tools to use but with different amounts of money at their disposal and different weights of measures available. Another trend is that the regions are encouraged to make use of their strengths. In general it can be said that the regional innovation policies in the Nordic countries have the tendency to favour already strong and competitive regions by using competitive calls, where calls are made for the submitting of applications in a competitive context in order to receive funding. Some special measures do however remain for peripheral regions, i.e. the action plan *Knowledge Moves Out* in Denmark and the *Business Gardens* and the *distributed incubators* in Norway.

Tensions regarding the organisation of regional innovation policy

Meeting the goals of the Lisbon Agenda will imply the need for significant change. In the national overviews, as well as in the regional case studies, we identify the following tensions concerning the organisation of regional innovation policies in the Nordic countries, all of which relate to messages found in the Lisbon Agenda.

- Private versus public actors

In the Lisbon agenda the preconditions can be summa-

rised as a *well-functioning market economy* which is open to structural change. The market is given an important role. Deregulation and privatisation have been undertaken in all Nordic countries over the last decade; however, the public sector remains a major player in all Nordic countries while the existence of an extensive and interventionist welfare system and a heavily unionised public sector remain basic economic reference points. In the Lisbon Agenda innovation is closely linked to entrepreneurship and SME's. If innovation is to be stimulated in the public sector this implies the increased presence of the market in the production of goods and services produced by the public sector. Despite the focus on the market in the Lisbon Agenda, the public authorities are however given a role in the mobilisation of innovation systems.

- State versus region

The Lisbon Agenda stresses an *increased role for regional authorities in innovation policy*. The regions are considered to be the most appropriate actors able to appreciate local and regional needs and to develop innovation policies. This speaks in the direction of an increased tolerance for regional differences. The regional level across the Nordic countries has, traditionally at least, been rather impotent in respect of the initiation of innovation policy; however, it is now becoming an increasingly important actor in their implementation. As such, innovation policies in the Nordic countries have, historically, been governed by the central state, i.e. the state has been the main financing party and was responsible for selecting initiatives. The demand for regional, and to some extent now also local, co-financing implies that these levels now have an important role to play in the implementation of innovation policies. But some initiatives also come from local and regional level, such as the development of the Centre of Expertise in Oulu, Finland. Here the challenge remains to develop governance and policy systems that enable bottom-up processes to meet top-down policy in a fruitful interplay. It is also important here that there is sufficient space for initiatives to emerge from the regional and local levels. The danger of “regional lock in” should not however be ignored here. A further challenge here remains the need to develop a partnership where national and regional actors participate as equal counterparts. Differentiated regional approaches are also needed due to the regional differences that exist within and between the Nordic countries.

- Narrow versus broad innovation approach

In the Lisbon Agenda the *definition of innovation is ambiguous* and is used synonymously with entrepreneurship and SMEs. Lately, the EU commission has asked for the application of a broad view of innovation, since innovation is connected to diverse routes. The definitions of innovation used in the investigated instruments in the Nordic countries are also rather ‘fuzzy’. Innovation is a boundary concept, with slightly different meanings even

for different ministries within the same Government. Traditionally the definition has been orientated towards technological innovation, but all Nordic countries are at present in the course of adopting a broader approach to innovation, or at least, taking the first steps away from the sole focus on technological innovation to i.e. user-driven innovation in Denmark.

- Research policy versus growth and regional policy

The innovation policy in the Nordic countries has traditionally been connected to research and development policies (hi-tech industry and science). It is however evident that innovation is not any longer considered to belong only to research and development. In the Nordic countries innovation policy still has a rather strong focus on high-tech industry and on the traditional emphasis of manufacturing industry as compared to that on the service sector. Due to the broader approach now being adopted in respect of innovation more policy fields address and will in future come to address innovation. In the Lisbon Agenda it is stated that *regional policy has become an important means* for the governments of the Member States to stimulate innovation. But innovation is increasingly included in growth policy, regional policy and other policy fields. This creates a policy system which is difficult to conceptualise and where there is a risk of competitive and overlapping instruments.

- Less developed regions versus growth areas

The data available tends to highlight the fact that the metropolitan areas dominate in terms of innovation performance and potential across the Nordic countries. Regional differences between regions must thus be considered in the development of new innovation policy instruments. However, as mentioned above, an emerging trend here is that the regions are given the same kind of instruments to use in order to develop their region, and this development is also applicable for innovation policies. But from DG REGIO it is stated that the mobilisation of the actors "is much more difficult to organise in less developed regions, due to a lack of experience and expertise, as well as a lack of understanding in respect of the mechanisms of innovation", so here special measures may be necessary.

Policy implications, instruments and knowledge gaps

The following policy implications for the Nordic countries can be developed based on the findings of this study:

- *Role of private and public actors:* the Nordic countries must be prepared to leave more assignments to private actors in order to become more market-orientated. This development may be more relevant in central parts of the countries where there is competition, but may be more difficult in peripheral areas where the competition may be weaker. The definition of the main objectives and the man-

agement may still be controlled by the political level. A particular Nordic approach here may also be to make sure that innovation is promoted *within* the public sector.

- *Role of the state and regions:* If the regional level in the Nordic countries is to have an increased role in the development of regional innovation policies this level needs to have more formal competence granted for this task. Here the national level may be responsible for making the key decisions, while the detailed decisions and fine tuning, related to the specific regional conditions, are left to the regional level. The role of the central level can be summarised as "*trigga det bästa och hindra det värsta*".

- *Role of regional innovation policy:* The regional differences in the Nordic countries demand a more differentiated regional innovation policy including more sophisticated enabling instruments. Less developed regions may for instance, due to the lack of capacity, need special instruments in the form of coaching and counselling in order to be able to encourage the development of innovations. Special instruments may also be developed to encourage cooperation between advanced and less developed regions. Better coordination between the policy fields addressing innovation is also needed in order to avoid competing or overlapping measures at the national and regional levels.

Furthermore a number of knowledge gaps can also be defined. The attempt to fill these gaps would benefit from a Nordic and European exchange of experiences and the adoption of a truly comparative approach.

- More knowledge and a systematic approach to investigating the transfer and interpretation of national policies to the regional level are needed. Here real time evaluation is one tool available for improving the dialogue between the central and regional levels.
- In order to develop more sophisticated enabling mechanisms, aiming at i.e. the mobilisation of actors, who for instance may be needed in order to support less developed regions in their innovation work and to make them more competitive, more knowledge of the role coaching and counselling play in this process is needed.
- In addition, more knowledge about experimentation as a tool for developing policies is also needed, especially if more regionally differentiated policies concerning innovation are to be developed. Government at the national, regional and local levels should then take a direct role in the experimental process acting as a learning organisation. Here the network Innovating Regions, the project INNO Learning Platform and the European Trend Chart provide useful tools.
- Furthermore, more knowledge of the regional social and economic structure and its connection to, and influence on, innovation performance and potential is needed. A broader definition of the concept of 'innovation' may also influence its future measurement. In addition, a territorial approach, implying a better cov-

erage of the regional level, is needed if this level is to be given an increased role in the development of innovation policies. Parts of this work can be performed in cooperation with the European Scoreboard.

- Finally, more knowledge is needed on the relationship and tensions between the regional growth policy now widely applied in the Nordic countries and the regional cohesion policy promoted by European Union.

Introduction

Over the last decade emphasis of the need for innovation across a range of policies has increased. The main explanation for this is that the “innovation” phenomenon is regarded as being a key feature of the emerging ‘knowledge economy’ and a vital component of the strategy designed to meet the challenges of a global economy and achieve economic development. Boosting innovation is considered to be an important measure in ensuring that Europe no longer lags behind the USA and Asia in economic growth terms and was an issue given particular prominence in the Lisbon Agenda. Traditionally innovation has mostly been dealt with in policies connected to research

and development. The establishment of the Lisbon Strategy has implied that innovation is explicitly encouraged in other policy fields, i.e. innovation is emerging in regional policy through the Structural Funds. This implies that the regional level has been given a greater role in respect of working with innovation. Another new feature in the EU context, and with a regional dimension, is that territorial cohesion is, along with economic and social cohesion, to be promoted within the Union in accordance with the proposal of the Treaty on European Union and with that on the Treaty establishing the European community.¹

Regionally differentiated innovation policies

From a broader European perspective the Nordic countries perform rather well when it comes to innovation. A number of variables and indicators show that the Nordic macro region exhibits a rather good performance in comparison with the rest of Europe (see Chapter Nordic Innovation Scene). In this report we will scrutinise this picture more thoroughly, above all, we will focus on policies related to innovation.

The aim of this report is to investigate whether it is possible to *define realistic objectives and support schemes that are essential for the creation of a regional innovation policy that addresses Nordic regions in general and regions outside the Nordic metropolitan areas in particular*. The overarching question to be answered in this report then is: *how can national policymakers best apply the Lisbon Agenda to help create regional innovation policies that are well adapted to a Nordic context*. Specific focus is placed on discussing the potential to create a regional innovation policy which takes into account the specific conditions that exist in the regions outside the Nordic metropolitan areas.

To specify, the following issues will be addressed:

- What are the specific Nordic, national and regional preconditions that policymakers have to be aware of in the development of “regional innovation policy” in the Nordic countries?
- How have regional innovation and innovation systems been encouraged and developed thus far by na-

tional policies in the Nordic countries? Which actors can be identified in the initiation and implementation of regional innovation policies?

- What does the Lisbon Agenda entail for innovation policy in the Nordic countries? How do the ideals of the Lisbon Agenda “fit” the Nordic countries and the innovation policies that has been developed there thus far?
- Is there a need to develop a “Nordic way” of interpreting the Lisbon Agenda, i.e. a need to adapt application to specific Nordic preconditions, concerning for instance geography, human capital, the welfare system and rural and peripheral regions?

Delimitations and use of results

The overall target group of this report is Nordic civil servants working with regional innovation policy at the national and regional levels. In the report it is mainly *policy making* that is investigated by looking more closely at how innovation *policy* in the Nordic countries is performed by providing a broad overview of the landscape of Nordic regional innovation policies. However, it is not easy to simply draw a clear line between what innovation policy is, and what it is not. According to the EU Commission, innovation policy has a “ubiquitous nature”. Innovation is included in different policy areas, i.e. innovation (research and development), competition, trade, employment, regional and environmental policies etc. This implies that an

¹ Official Journal of the European Union (2007).

interaction between these policy areas is needed in order to facilitate innovation. The task of creating an efficient innovation policy is consequently demanding; "because innovation is everywhere, it is nowhere".² The report thus looks at the connections and relationships between innovation policies, regional policies and, to some extent also, rural policies. Consequently, both the national innovation system policies and regional innovation policies are addressed. It must be stressed that they are so intertwined that they are difficult to separate while overlaps, "grey zones" and a certain 'opaqueness' exists between the concepts of national innovation systems, regional innovation policies, regional policies, and regional development policies, all however have a more or less dominant in-built innovation component. In general, we have looked at policies implemented during the last five years up to the autumn of 2007.

Methods used and working steps

The questions that will be discussed in this report are first and foremost concerned with the patterns and in-built tensions of the Nordic innovation policy landscape as compared to the broader European one. This report should not be viewed as a scientific and critical investigation of the effectiveness of particular policies, but more as a broad overview of the landscape of Nordic regional innovation policies. The report focuses on already existing knowledge and experiences concerning national and regional innovation policy by providing an overview and analysis of innovation policies of relevance for regional innovation systems. The work has been undertaken in line with the following steps.

Firstly, a brief historical and political background to the concepts of innovation system and innovation is provided. In addition, the implications of the Lisbon Agenda from a Nordic perspective have been studied and analysed by looking at documents related to the creation, implementation and further development of the Lisbon strategy.

In order to set the scene for a review of the specific Nordic pre-conditions a background to the so called "Nordic model" has been compiled. Furthermore, a minor screening exercise concerning the innovation indicators and variables used for measuring innovation potential and performance at the EU-level was undertaken in order to probe whether it is possible to construct regional typologies concerning innovation performance and potential.

Concerning the overview³ of innovation policies in the Nordic countries an explorative approach and comparative methodology have been used by performing a structured review of a selected number of studies on, and policy documents related to, regional innovation systems. The main selection criteria for the scrutinised material have

been to analyse central programme descriptions and programme evaluations. Firstly, a national scoping exercise has been undertaken in order to identify the relevant policy instruments, seeking to promote regional innovation in place since the mid-1990s (e.g. VINNVÄXT in Sweden; REGINN in Norway, DISKO in Denmark; Centres of Expertise in Finland). Each national report has been drafted in accordance with a set of guidelines (e.g. evaluation results and lessons learned in respect of innovation policies and programmes, policy recommendations and how they have been implemented, analyses of important policy documents etc.). Concerning the national adoption of EU policies we have looked at how the Nordic countries have dealt with the Lisbon Agenda. In order to test future approaches to regional innovation policy making we have reviewed various national strategy papers addressing innovation policies in one way or another.

All national overviews have been complemented with a case study. These case studies were undertaken in order to take a closer look at the meeting between the national and regional innovation policies and actors at the regional and, to some extent also, at the local level to get a better understanding of how policy is transmitted and transformed to the regional level and to regional actions. The case studies thus display concrete examples of the performance of innovation policies and the interface between the national and regional level. In Denmark a *Regional Technology Centre AluVaekst*, belonging to the action plan *Knowledge Moves Out*, located in Southern Jutland has been scrutinised. In Finland the development of the *Centre of Expertise programme* in the Oulu region was investigated. For Iceland we took a closer look at the *Growth Agreement* with a cluster approach developed for the Eyjafjörður region. In Norway we investigated how *SIVA's innovation infrastructure* has been applied in the Oppland County municipality. Finally, for Sweden the project *Triple Steelix* belonging to Vinnova's programme *Vinnväxt*, located in the functional region of Bergslagen was investigated. A pilot study was undertaken in order to construct and test guidelines. The case studies follow the same structure but due to differences between both the investigated instruments and regions the content varies.

A cross-national analysis of the national reports and case studies has been produced. The analysis is based on a number of tensions or dichotomies found in the national overviews and case studies. The analysis is also highlighted by a number of illustrations in respect of the phenomena addressed. In addition, we relate the analysis to findings and suggestions put forward in the European Commission Working Document, *Innovative strategies and actions. Results from 15 years of Regional Experimentation*.

Finally, we have analysed what implications the Lisbon Agenda will have for the development of regional innovation policies in the Nordic context. In addition, some proposals as to how the tensions and challenges addressed in the cross analyses can be met are given. The policy implica-

² Commission of European Communities (2003).

³ The national overviews and case studies can be found in Nordregio Working Paper 2008:2 available electronically on Nordregio's homepage <http://www.nordregio.se/publications.htm>

tions were elaborated during the course of two workshops with the project reference group in September and November 2007.

Disposition of the report

After this introduction a chapter which includes a discussion of the concepts of *innovation* and *innovation system* follows. In addition, a background to the Lisbon Agenda and how it addresses innovation is included. The chapter entitled, *The Nordic Innovation Scene* aims at highlighting the specific Nordic preconditions for the application of the Lisbon Agenda. The description starts by introducing what is mostly referred to as the “Nordic Model”. This concept is based on some welfare typologies that have been used to categorise countries. This section is then followed

by the outlining of a number of quantitative variables used in the measuring of innovation. This section is followed by a chapter presenting a cross analysis of the national overviews and case studies undertaken within the project. In the cross analysis the focus is placed on the broad patterns concerning innovation policies in the Nordic countries. If the reader is interested in the details we advice them to have a look at the national overviews of the present national policies of importance for regional innovation systems in the Nordic countries and the case studies found in Nordregio Working Paper 2008:2. The report ends by presenting the conclusions that can be drawn from the study and by developing policy implications that need to be taken into consideration in connection with the application of the Lisbon Agenda in a Nordic context.

Innovation – from technical to value concept¹

Introduction

In the following section we will give a brief description of the history of the concept regional innovation system and the discourse(s) that preceded the Lisbon Strategy. In an ordinary dictionary the verbs *to invent* and *to innovate* are treated more or less as synonyms, and in some dictionaries with the additive within brackets that innovation has to do with what is new or with renewal. In order to appreciate that there is in fact a slight difference we have to go back to the linguistic roots of the two original Latin verbs – *invenio* meaning to find out, and *innovo* meaning to renew something or to come up with something new. When the distinction between *invention* and *innovation* is made, invention is predominantly regarded as the creation of a new idea or concept, while innovation suggests turning the new concept into a *commercial success* or *widespread usage*.² In addition, the difference between *innovation* and *invention* can also be connected to creativity.

“Creativity is the ability to think and act in ways that are new and novel. In our minds, there are two kinds of creativity, innovation and invention. Innovation is thinking creatively about something that already exists (e.g., the tape recorder, Walkman, and CD player are all innovations on the phonograph). Invention is creating something that did not exist before (e.g. the phonograph).”³

Innovation in the policy context

From the mid 1990s onwards, and at an ever-increasing pace, all of the Nordic governments have introduced the idea of innovation systems as a new policy field. During the 1990s the high profile concept of innovation was introduced, a concept that everyone immediately wanted to use for somewhat different ends, a concept that was pioneered by scientists, legitimised by the OECD, sanctioned and endorsed by the EU through the Lisbon strategy, and more or less welcomed by all policy makers in the nation states

of Europe. What has not been observed, though, is that the concept of innovation, which was first regarded as a socio-technical term, has gradually turned into a *value* concept. That is, innovation is now looked upon as an absolute value in the sense that an individual innovation as well as the innovative society, whether local, regional, national or supranational, is something positive and good for business, employment, returns on investments, economic growth, the welfare system, and so forth.⁴ Hence, it is evident that innovation was not introduced onto the political agenda merely by the establishment of the Lisbon Strategy in 2000.

Innovation systems

When discussing innovation the term innovation system must also be mentioned. The term innovation system was used for the first time by Friedrich List in the 1840s. He sent out from Prussia to find out about the workings of the British industrial system.⁵ The modern concept of ‘system’ has a socio-political and technological context which today is a part of the concept of *innovation system*. This was the way it was used the next time the term *innovation system* came up, which was in a book by Christopher Freeman in 1987 about the Japanese national innovation system.⁶ Furthermore, it is important to emphasise that there is a difference between the concept of innovation system and our *notions* about what we call an innovation system.

The modern notion of innovation system was developed in the latter half of the 1980s by researchers who tried to formulate a useful concept for policy design. It soon however took on a life of its own. What was originally an analytical research concept soon became a powerful metaphor in public debate and in numerous policy programmes for economic growth and development. In Finland the concept was already being used in the national growth plans at the end of the 1980s. According to authoritative opinion this is the best explanation for the so-called “Finnish economic wonder” that was to develop in the 1990s.

Moreover, when we widen our field of vision to the

1 The argumentation presented here about the concepts of innovation and innovation systems is more thoroughly elaborated by Åke Uhlin in *The Idea of Innovation Systems and the Need for a New Horizon of Expectation* in Mariussen, Å. & Uhlin, Å. (eds.) (2006). *Transnational Practices. System Thinking in Policy Making*, Nordregio.

2 See for instance Centre for innovation studies, <http://thecis.ca/index.php?catID=2>

3 MHA Institute <http://www.mhainstitute.ca/Default.aspx?PageContentID=94&tabid=106>

4 The following argumentation is built on Berlin, I. (1990). Gray, J. (1995) and Raz, J. (1988).

5 List, F. [1841] (1904).

6 Freeman, C. (1987).

Innovation

A fundament for the definition of innovation is the elements that, according to Schumpeter, (1934/1959) contribute to economic development:

1. The introduction of a *new good* —that is one with which consumers are not yet familiar—or of a new quality of a good.
2. The introduction of a *new method of production*, which needs, by no means, be founded upon a discovery that is scientifically new, and can also exist in a new way of handling a commodity commercially.
3. The opening of a *new market* that is a market into which the particular branch of manufacture of the country in question has not previously entered, whether or not this market has existed before.
4. The conquest of a *new source* of supply of raw materials or half-manufactured goods, again irrespective of whether this source already exists or whether it has first to be created.
5. The carrying out of the *new organization of any industry*, like the creation of a monopoly position (for example through 'trustification') or the breaking up of a monopoly position

A distinction is sometimes made between an incremental and a radical innovation. An *incremental innovation* is a small-scale, progressive modification of products and processes, whereas *radical innovation* is regarded as discontinuous events which drastically change existing products and processes. Schumpeter's elements have been developed into a range of definitions of innovation, i.e. marketing innovation, organizational innovation, process innovation, product innovation, service innovation etc. These innovations more or less connect to development in the business life sectors. But there are also innovations relating to the public sectors, i.e. social and political innovation, where *social innovation* stands for new strategies, concepts, ideas and organizations are developed in order to meet various social needs, i.e. working conditions, education, community development and health, and in turn extend and strengthen civil society. *Political innovations* refer to new ways of organising society, i.e. creating forums that produce general effects on society and institutions and developing negotiation techniques that produce general effects on society and institutions. The definition of innovation has thus become broader and innovation is now considered to be an economic and social, rather than exclusively a technological term. In addition, innovation is no longer applied in the private sector alone, as new modes of action are also demanded in the public sector. A difference here can thus be made between business innovations, public sphere innovations and civil society innovation (Aarsaether, N. & Suopajarvi, L. (2004). However, the actors of importance for innovation policies in the Nordic countries tend to maintain a rather traditional approach to looking at innovation mainly related to the definition used by the OECD. According to the OECD's Oslo manual (2005) innovation is the implementation of a new or significantly improved product (goods or services), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations. The Swedish agency *Vinnova* uses the brief definition; "new or improved services, products and processes". The same approach can be seen in the definition used by the *Nordic Innovation Centre*. "Innovation covers a new product, including a service-product, a new process or a new organisational or managerial structure." *Statistics Finland* also claims that innovation is a new or substantially improved *product* (good or service) brought to market by an enterprise. Innovations are also defined as new or substantially improved *production methods* introduced. Innovation may be based on some new technology, a new application of previous technologies or application of new knowledge acquired by an enterprise. The *Finnish Funding Agency for Technology and Innovation (TEKES)* highlights the importance of including the *usage* of this new product or service by stating that "Innovation implies that knowledge and competence is used in a new way, either commercially or societally".

other Nordic countries it is easy to see how the idea of innovation system rapidly became accepted. In Denmark at the end of the 1990s an extensive national study of the Danish innovation system was produced, namely the DISKO project. In Sweden the National Board for Innovation Systems (VINNOVA) was founded in the year 2000. In Norway, where the focus of interest for many years has been on regional innovation systems, an amalgamation of several small agencies into the new agency *Innovation Norway* was carried through in 2004.

Today the concept of innovation system is very much present in all kinds of contexts concerning economic growth, regional development and societal planning. The EU and the OECD have both played important roles in the process of legitimising the concept, first as a boundary concept and then as an arguably scientifically grounded ideology for economic growth. Reijo Miettinen scrutinizes in his work *National Innovation System; Scientific Concept or Political Rhetoric* (2002) how this has happened and discusses to what degree, if at all, these ideas about innovation systems are actually scientifically grounded. He focuses on two OECD reports, *National Innovation System* from 1997 and *Managing National Innovation Systems* published two years later. The two reports are to a great extent founded on unpublished material that was produced in OECD seminars and workshops with international expert groups consisting of both civil servants and researchers. According to Miettinen this is an important part of the explanation as to why the concept so swiftly soaked through into the policy context; with civil servants who had participated in these meetings simply bringing the idea of innovations systems back to their ministries and agencies. Miettinen however emphasises that in the reports themselves there is no theoretical discussion whatsoever, and that the definitions of the concept are often simply taken for granted.

A boundary and trans-discursive concept

Innovation system has a function as a boundary concept, i.e. concepts that can be used between different scientific fields as well as between science and politics. A certain level of vagueness in a new concept is acceptable between parties who otherwise would have difficulty in communicating. Furthermore, a boundary concept can also serve as a metaphor for something that is so new that there are no "old customary words" that can be used in order to describe or define it. What is more, the concept of innovation system is not only a boundary concept; Miettinen designates it to be a "trans-discursive term" with at least six different functions and fields of usage. He calls these functions socio-epistemic because in daily usage it is difficult to differentiate the societal and the epistemic functions from each other. That is, the trans-discursive concept of innovation system *simultaneously* seems to have at least six different functions:

1. A traditional epistemic function within the sciences;
2. An umbrella function between different academic disciplines as well as between academia and politics;
3. It supplies a new world-view and diagnosis of an era;
4. It serves as a boundary crosser between various social groups;
5. It serves ideological and consensus-creating functions;
6. It is used in order to mobilize people and organisations.

Against the background of these six trans-discursive functions Miettinen urges us to reflect upon the tension between the epistemic (the beginning of the list) and the social (the end of the list) usages of the concept innovation system. However, there can be no doubt of Miettinen's own position. He emphasises that "[the concept's] strength as a rhetorical device in policy is dependent on its epistemic qualities", and "Scientific credibility is [...] vital for the ideological, empowering and consensus-creating functions of trans-discursive terms". This then is the gist of Miettinen's overall examination and critique of the term and the concept of innovation system, its genesis and its accuracy.

The system approach

Today there is a tendency to exclude or "forget" about the systems part of the concept innovation system. One talks about innovation policies, not about innovation systems policies, one also talks about innovation strategies, not about innovation systems strategies, and so forth. This of course is all right as long as we do not forget that innovations always occur in complex social systems. On closer inspection even the famous solitary inventors, such as Gutenberg, Darwin, Bell, Edison, Jobs, etc., were not that lonely; they had co-workers, colleagues and competitors, i.e. as a rule there has always been a long pre-history with an ever growing "demand" for the invention. And after the "invention moment" a fast growing system of add-on usages involving more people, organisations, institutions and businesses has evolved. That is, if we want to discuss the concepts and terms of regional innovation policies and strategies we must not fail to notice the systems perspective; innovation policies are always, or rather *should* always be, about systems implications.

Miettinen does not miss this point. He takes a closer look at the idea of innovation as a result of processes in systems. He asserts that the view about systems that is developed in the OECD reports is developed from evolutionary economic theory, and that, above all, it takes into account interactive learning between different actor groups in the marketplace. But in this assertion one finds the nucleus of Miettinen's critique of the innovation systems approach, i.e. that there is no scientific substance to the systems part of this approach. He points out that economists in general, and institutional and evolutionary economists

in particular, without exception, are not renowned for having developed significant knowledge within this field of research.

The short version of Miettinen's line of argument is the following: What researchers within social psychology, sociology, business administration and geography say about actor-networks is of interest in this context because they have studied networks from the individual to the regional level, i.e. these researchers have been able to develop substantial scientific knowledge. On the national level, on the other hand, the research field for economists, it is too difficult to study actors and nodes and the dynamism between them. Therefore economists have not been able to develop substantial knowledge about innovation.

From these two premises Miettinen derives two conclusions. Firstly, since economists have not been able to develop knowledge about innovation on the national level one has to remain sceptical of the systems approach used in their concept of innovation system. Secondly, the OECD has moved its focus of attention from national innovation systems to regional innovation systems because it is easier to govern the latter type of system.

The conclusion that economists have not been able to develop knowledge about innovation on the national level cannot *per se* be seen as an argument for rejecting the systems approach. What could potentially be rejected is *the way* in which economists have used this approach. From this it follows, however, that one is also obliged to question Miettinen's statement that it is too difficult to obtain knowledge about innovation on the national level. Miettinen has narrowed his field of vision to actor-networks that researchers within social psychology, sociology, business administration and geography have studied from the individual to the regional level. But he has excluded, for instance, those historians and sociologists that during the last century studied national systems of various kinds. But, and what is more important, he has also, rather inexplicably, excluded almost sixty years of advancements within systems theory.

The concept of innovation system was introduced in Finland, Miettinen says, with a forceful political rhetoric and was presented as a strategic and fateful choice for the nation. But what started as an idea, or a way of thinking, increasingly developed into its reification. The Finnish national innovation system, Miettinen argues, has come ultimately to be described as something objectively existing and tangible, something that can be planned and managed. This, he points out, in a way comes close to the greatest fantasy of policymakers, namely to be able to *control* processes in complex social systems. But this, we want to add, is of course impossible for logical reasons, no one can *control* a complex social system. It is possible, though, to *influence* such systems, for instance with policies, rhetoric, and narratives, i.e. with the spoken and written language.

The term innovation system supplies a new world-view and a diagnosis of an era. Miettinen restrains himself to

the situation for and in Finland, which at the beginning of the 1990s had to cope with two major crises, both an international economic crisis, and a sharp decline in Finnish exports due to the sudden collapse of the Soviet Union. But what was at stake, and still is, was a more general problematic situation for European nation states. At present there seems, to some extent at least, to exist some sort of academic consensus that the nation states of Europe, as a consequence of globalization, new communication technologies, the end of the Cold War, etc., are encountering a phenomenon that has been described with various metaphors, as "the fall of the strong state", "the withering of the nation-state" etc. A rather populist view of this alleged crisis for the nation-states is that this is an effect of the EU exerting supranational control. According to another and in our eyes more serious apprehension the very idea of the European Union project is to save and preserve the nation states, not to subjugate them, and one of the most important instruments in this context is to encourage regions within and between the nation-states to develop innovation policies. No, the "fall" and the "withering" are due to five generic problems or crises that over time and in varied forms have encountered all of the European welfare states since the mid-1970s:

1. A rationality crisis due to the fact that Keynesian intervention policies no longer function adequately;
2. A financial crisis, i.e. most nation-states face difficulties with regard to their ambitions to maintain the welfare state, e.g. concerning problems regarding the ageing population;
3. A fragmentation crisis meaning that local cultures are returning to prominence and regions are exerting more and more influence on the nation-state;
4. An identity crisis due to weakened national identity and the 'giving up' or 'pooling' of more and more sovereignty to the EU;
5. A crisis concerning legitimacy, i.e. wavering confidence in politics and particularly in politicians.

Now, given that this, at the beginning of the 1990s, was an accurate picture of the European scene, there was certainly not only a demand for a new concept with capacity to diagnose an era, but also a need for a new *Weltanschauung*. That is, the concept of innovation system in all its trans-discursive functions was not only designed as a new analytical tool in order for researchers to study European 'best practise' on national and regional levels, but the concept was also used as a metaphor for the creation of a new world-view seen from an European perspective, a view that in 2000 was epitomised in the Lisbon agenda. That is, innovation (system) not only is a boundary concept and a trans-discursive term, it has also been loaded with values and has thus become a so-called "high profile" concept, a concept that reminds us of a common European past, that presently urges us to unite around a common European

cause, and, above all, that is supposed to serve as a guiding light towards a common European horizon of expectation. Innovation (system) is thus the high profile concept *par préférence* in the European Union, the concept to which the member states have committed themselves, but also the multi-faceted concept that all of us now have to now pay attention to if we want to be a part of the evolving society. Hence, the high profile concept of innovation (system) has, in essence, become a value concept. But not only that, it has also become an 'absolute value', i.e. a true and basic value.

Innovation system and policy

There are national and even regional policies for innovation systems, but do such systems exist in the real world? Three positions seem to have crystallised over the last decade regarding possible answers to this basic question: (a) Yes, such systems exist, and it is possible to design, plan, implement and manage them⁷; (b) No, this is just about political rhetoric, there are no innovation systems just actor networks⁸; (c) Well, it is perfectly possible to say that certain processes in retrospect can be perceived as innovation systems, but it is doubtful if such complex processes can be realised for the future through political programmes within "ordinary" societal frameworks⁹.

The third position seems to attract more and more researchers these days. However, on closer inspection this position nevertheless contains a paradoxical question: Namely, whether it is possible to assert beyond doubt that historical innovations systems do indeed exist, i.e. if such systems were established in the (recent) past by people, why should it not be possible for people to create such systems in the (near) future? At present it looks like the answer to the question is embedded within four concepts: (1) complexity, (2) learning, (3) trust and (4) governance.

1. Historical innovation systems seem to have been created under such complex circumstances that it is (a) virtually impossible to untangle and understand what really happened, and (b) for this reason it is not pos-

sible to repeat innovation processes like these. That is to say, it is not just that history never repeats itself, it is also that complex social systems are not transparent.

2. We know a lot about individual learning, and even about organisational learning, but we know very little about societal learning. The challenge for a government then in this respect is to organise such societal learning in which it includes itself. However, do the governments learn from evaluations of innovation programmes?
3. Innovations are, by definition, about what is new. And what is new is by definition unknown. The challenge from a policy perspective is to make people trust the un-known. That is to say, what is needed is to convince people that it is necessary to break away from the well-known and to move into the unknown. Societal trust, and especially trust in narratives about the future, is desperately needed.
4. The expression "bottom-up-from-the top" is often used with irony. The thing is, though, that the Government in a Nordic democracy for constitutional reasons not only is obliged to govern from the top but also in such a way that things develop from the bottom. This is about governance. And governance is about mutual trust, i.e. not only the bottom trusting the top, but as well the top trusting the bottom. Expressed in another way, it seems pretty obvious these days that regional partnerships are more than willing and able to take full responsibility for regional development. Central government, however, seems reluctant to let go of the kind of centralised power that typically has been piled up over decades and even centuries in the Nordic countries. This unwillingness can be seen as an attempt to arrest the withering away of the nation state.

The strong belief in being able to construct innovation systems becomes evident when we now take a closer look at the elements of the Lisbon Agenda.

Innovations and the Lisbon Agenda

The Lisbon Agenda is a strategic document expressing the goals and aims of a desired European development. Strategic documents seldom contain details, which is also the case with the Lisbon Agenda. The underlying reason for launching the Lisbon Agenda was the fact that the economies of the Member States were not as dynamic as in the

EU's major competitor countries (e.g. the USA and Japan). Several indicators show a better level of performance for the USA than for Europe: relative unemployment is higher in the EU, there is a 'skills gap' and age gap between USA and Europe, the USA has a higher share of the working age population working in the service sector, etc. In short, Europe is not using its full economic potential, which is the reason why the USA is enjoying a better level

⁷ e.g. Lundvall, B-Å. (1992). Edquist, C. (1997). etc.

⁸ e.g. Miettinen, R. (2002).

⁹ e.g. Nilsson, J-E. & Uhlin, Å. (2002), Mariussen, Å. & Uhlin, Å. (2005)

of economic performance.¹⁰

The Lisbon Agenda aims at “preparing the transition to a knowledge-based economy and society by better policies for the information society and R&D, as well as by stepping up the process of structural reform for competitiveness and innovation and by completing the internal market”.¹¹ The Lisbon Strategy intends to deal with low productivity and the stagnation of economic growth in the EU, through the formulation of various policy initiatives to be taken by all EU member states. The broader objectives set out by the Lisbon strategy is to be attained by 2010.

The role of innovations

The definition of innovation used in the European Union is “the successful production, assimilation and exploitation of novelty in the economic and social spheres”.¹² Since the enterprise is the heart of the innovation process, it is through enterprises that the economic benefit of the successful exploitation is captured. By competition and the desire to create new market space the enterprises are spurred to innovate.¹³

Entrepreneurship and the emergence of SMEs are thus closely connected to innovation. To become more innovative and entrepreneurial, the SME sector must grow and this is achieved by (1) building a dynamic business environment, and (2) encouraging risk taking and the spirit of enterprise.¹⁴ The close links between entrepreneurship, SMEs and innovations are also found in other documents.¹⁵ The creation of a stimulating environment for starting up and developing innovative business, especially SME's, is thus central to achieving the aim of the Lisbon Agenda. Economic reforms may be needed in order to achieve this.¹⁶

Later on, the preconditions are defined more clearly: “Innovation requires highly competitive markets, well-functioning capital markets (including venture capital markets), a supportive regulatory environment, and flexible, mobile and skilled human resources”.¹⁷ The question of economic reforms is also explicitly addressed: “the resistance to structural change that is frequently encountered in Europe must be overcome when it stands as an obstacle to innovation, especially when change is resisted merely because it challenges existing procedures that people have become accustomed to”.¹⁸

The role of the government and the market

The achievement of the strategic goals of the Lisbon Agenda “will rely primarily on the private sector, as well as on public-private partnerships”.¹⁹ After the Lisbon Agenda was decided some clarifications on this have occurred: “Competition policy is clearly important since competition is one of the main drivers of innovation [...] The effects of competition and cooperation on innovation are increasingly being recognised”.²⁰ Furthermore, “state aid is an example of an area of competition policy where the Member States and the Commission must be alert to the scope for measures in support on innovation that are not in contradiction to the open competitive environment that incites enterprises to innovate”.²¹

The public sector plays an important role in all European countries. The potential for innovations in the public sector must be further stimulated. “Efficient, open and competitive public procurement can be a powerful instrument to push innovation”.²²

The regional dimension

The Lisbon Strategy itself says very little about regional policy and innovations, but it has had a major influence on most EU policy areas. An important means for encouraging innovation is regional policy. One example of this is the European Regional Development Fund (ERDF) contributing to support innovative activities.^{23,24} Moreover, it is explicitly formulated that the regional dimension of innovation policies must be strengthened. Since the improvements in the climate for enterprises to innovate are being devised and implemented at the regional level. As a consequence, the increasing importance of regional policies in the promotion of innovations must be sensitised by the regional authorities. The regional authorities “must learn from what others are doing, but avoid simple duplication – they must develop their own specific route of improved innovation capacity, depending on their own unique set of circumstances”.²⁵

The second phase

At the Spring Summit of the Luxembourg Presidency of the Council in 2005 the findings of the report entitled “*Facing the Challenge*”, were reviewed by the members of the Council. This report marked the mid-term review of the Lisbon Strategy, published in November 2004 by the high-level group chaired by Wim Kok (the Dutch ex-Prime Minister) which analyses progress towards achiev-

¹⁰ European Commission 28 February 2000.

¹¹ The Lisbon European Council 23 and 24 March 2000.

¹² COM (1995).

¹³ COM (2003).

¹⁴ European Commission 28 February 2000.

¹⁵ The Lisbon European Council 23 and 24 March 2000, and COM (2003).

¹⁶ The Lisbon European Council 23 and 24 March 2000.

¹⁷ COM (2003). 112, p. 9.

¹⁸ COM (2003). 112, p. 10.

¹⁹ The Lisbon European Council 23 and 24 March 2000, p. 12.

²⁰ COM (2003). 112, p. 16.

²¹ COM (2003). 112, p. 17.

²² COM (2003). 112, p. 20.

²³ COM (2003). 112.

²⁴ During the Structural Fund programme period 2007-2013 around 35 percent of the budget is to be allocated to innovations.

²⁵ COM (2003) 112, p. 20.

ing the objectives of the Lisbon Strategy. The report analyses the strengths and weaknesses of the EU economy, as well as the potential for the EU to become the world's most competitive economy by the year 2010.

The *Kok Report* as it became known concludes that delivery of the strategy in the last 5 years has been disappointing; it finds that the agenda has been overloaded, coordination has been poor and there have been conflicting priorities. The report is critical of EU Member States for a lack of determined political action in implementing the Lisbon agenda's economic reform programme. It warns against complacency, stating that the *status quo* is not an option, if EU Member States genuinely wish to achieve the goal of becoming the most competitive area in the world by the year 2010.²⁶

Innovation, research and universities

In the mid-term evaluation innovations are explicitly linked to research and universities. Investment in R&D is considered to boost innovations. By protecting intellectual property innovations will be promoted. "Companies will only invest in innovation if they have the certainty that they will be able to reap the reward of that investment".²⁷

The need for a good entrepreneurial environment and its links to innovations, which was outlined in the Lisbon Agenda, is confirmed by the mid-term evaluation.²⁸ Eco-innovations are stressed in the mid-term evaluation.²⁹

In the Lisbon Agenda entrepreneurship and the emergence of SMEs were closely connected to innovation. In the mid-term evaluation three new concepts are mentioned as being important for innovation: knowledge, R&D and universities.³⁰ In a later communication from the Commission the importance of these concepts is developed further by introducing another key concept: *innovation poles*. In order to stimulate regional innovation strategies high-technology small and medium-sized enterprises, universities and the necessary business and financial support should be brought together in innovation poles.³¹

The European Commission has tabled an integrated innovation and research action plan, which calls for a major upgrade of the conditions for research and innovation in Europe. It launches 19 ambitious initiatives to promote innovation and research, such as the redeployment of state aid, improved efficiency of intellectual property protection, mobilisation of additional funds for research, creation of innovation poles, and improving university-industry partnerships. For the first time, the plan offers an integrated approach to EU research and innovation policies, and is particularly focused on improving the conditions for

private sector investment in R&D and innovation.³²

Declining responsibility for the Member States' governments?

In a Commission document prior to the mid-term evaluation the Member States were told to reduce and redirect State aid.³³ The European Economic and Social Committee concludes that "in order to establish a genuine dynamic and competitive knowledge-based European economy, more emphasis should be placed on knowledge and innovation at the Community level".³⁴

In a communication from the Commission after the mid-term evaluation of the Lisbon Agenda a reform of the Member States' aid to R&D and innovations is declared. Instead, structural and cohesion funding should be used to "invest more in facilities for research and innovation which enables more regions to participate in EU-level research activities".³⁵

The European Commission has adopted new regional aid Guidelines under the EC Treaty state aid rules. These Guidelines will apply from 2007 to 2013, the same period as that of the next EU Structural Fund programming period. The Guidelines set out the rules for allowing state aid which promotes the development of poorer regions, covering aid such as direct investment grants and tax reductions for companies. The Guidelines specify rules for the selection of regions which are eligible for regional aid, and define the maximum permitted levels of this aid. In line with EU cohesion policy and European Council requests for less and better targeted state aid, the new Guidelines re-focus regional aid on the most deprived regions of the enlarged Union, while allowing for the need to improve competitiveness and to provide for a smooth transition.³⁶

Contradictions

There are quite a few contradictions when analysing innovations and the aims and goals of the Lisbon Agenda. Social considerations should be made, but it seems as if economic performance is given higher priority. A precondition for innovation is the existence of a flexible and mobile labour force. Here most of the social security schemes in the European welfare state systems in effect reduce flexibility and mobility.

Moreover, it has not been fully clarified as to what exactly governments are supposed to do in respect of encouraging innovation. The market's role is set prior to the government's role, but at the same time both regional authorities and public sector administrators are allotted a central role in the process.

²⁶ The High Level Group (2004).

²⁷ The High Level Group (2004). p. 22.

²⁸ The High Level Group (2004). p. 28ff.

²⁹ The High Level Group (2004).

³⁰ The High Level Group (2004).

³¹ European Commission (2005).

³² European Commission (2005b).

³³ European Commission (2004).

³⁴ European Economic and Social Committee (2004).

³⁵ European Commission (2005a). p. 23.

³⁶ European Commission (2006a).

On the one hand structural change should not be allowed to be obstructed by vested interests, but on the other hand these “vested interests” (e.g. public administration and regional authorities) are given a central role in the

process of stimulating and/or increasing innovation.

These contradictions may be useful to bear in mind when we now turn to taking a closer look at the specific conditions in the Nordic countries.

The Nordic Innovation Scene

In this chapter the focus is on identifying the specific Nordic preconditions in applying the Lisbon Agenda. The chapter starts by introducing 'the Nordic Model' of welfare provision. This concept is based on welfare typologies that have been used to categorise countries. The

following section displays a number of quantitative variables of relevance for innovation systems. The main aim of these variables is, as far as it is possible, to display regional differences concerning innovation in the Nordic countries.

The Nordic Model and Innovation

This study departs from the assumption that the Nordic countries share some characteristics regarding the territorial governance challenges, as well as territorial governance and policy styles. These are seen as connected to both *welfare provision* and *innovation*. This may in some cases also reflect certain hypothesis on the existence of a "Nordic model" or even a "Nordic recipe for success". In recent times this debate has emerged from time to time, e.g. inspired by international comparisons of international competitiveness, governance etc. "The Nordic Region can become a winner in the global innovation economy" was the starting point and main message of a report compiled by the Danish "House of Monday Morning" think tank, together with the secretariat of the Nordic Council of Ministers, published in 2005. The study relied on an interview survey of selected business leaders and influential opinion leaders in the Nordic countries. Various other international surveys and studies on international competitiveness have reported in the same vein¹, pointing to both the "hard" and "soft" factors contributing to this apparent "success". For the governance topic the "soft infrastructure" factors are more interesting and are increasingly valued as factors influencing economic growth in the long term. They include for instance the quality of the financial system, good political and corporate governance, and the rule of law, all being dimensions of 'good governance' factors which the Nordic countries are traditionally thought to represent. Some additional success factors have also been identified in the most recent World Economic Forum (WEF) report referring to a "healthy macroeconomic environment and transparent and efficient institutions, as well as an excellent educational system and a highly innovative business community"².

These factors are broadly reflective of the issues con-

nected to "good governance" more generally³, which do not as such always distinguish or address the tensions between *good* governance and *effective* governance⁴. The nature of governance styles however has been analysed within different disciplines and cognitive and theoretical frameworks. The welfare state and its expansion into an increasing variety of spheres of welfare through intervention and policy initiative has, in the Nordic countries at least, been accentuated by the extent of the interventionist policies pursued and by the fact that the public sector has played a major part, not only in the financing and organisation of services, but also as a source of employment. This means that any changes in the welfare state structure are also reflected in citizens' welfare, but also in a wide variety of other issues such as employment, economic activity and innovation.

In order to further scrutinise specific Nordic conditions we will now take a closer look at how the Nordic countries position themselves in response to various typologies displaying capital accumulation, welfare system, organisational modes and innovation systems.

Typology for industrialisation and capital accumulation: a historical perspective

Access to capital is viewed as being crucial for the development of innovation. In 1962 the American economic-historian Alexander Gerschenkron presented a typology of capital accumulation during the industrial revolution in an attempt to explain industrialisation and economic backwardness. The typology contains three types. In short, the capital needed to industrialise Great Britain and the USA was accumulated through private savings and entre-

¹ e.g. World Economic Forum (2006a).

² in the case of Finland; WEF (2006b).

³ e.g. Commission of the European Communities (2001); see also ESPON (2006).

⁴ e.g. Jessop (2003).

preneurship, in Germany it was accumulated through the banking system and in Russia through the state⁵. The Scandinavian countries⁶ do not fit neatly into any single one of his pre-determined types, but in all: the state was the main agent of capital accumulation supplemented by the banking system and private capital⁷.

In international comparative terms the Scandinavian countries show similar causes of industrialisation. Literacy in the Scandinavian countries was the highest in Europe (and the World!) in 1850 as well as in 1914 and this human capital was important for the industrialisation process. All countries had good access to the sea and had a functioning merchant fleet. All of them however lacked coal, which was probably the reason why these countries were not among the first to industrialise⁸. The Scandinavian countries also enjoyed political stability, no corruption, no feudal structure, institutionalised property rights, entrepreneurship, and a self-owning class of farmers, a centralised government and an active state cooperating with private actors⁹. However, the most important trait in the industrialisation of the Scandinavian countries is their ability to adjust to the international division of labour and to find their own special areas in which they became world leaders. Naturally, this meant that the Scandinavian countries became highly dependent of the notoriously fluctuating world market¹⁰.

The Scandinavian countries were poor and in the European periphery until after the World War II. Compared to other countries in the European periphery, nevertheless, they continued to display good economic performance levels. The level of political stability, moreover, made Scandinavia interesting to foreign investors and Scandinavia thus benefited from the large importation of capital contrary to the situation of most other countries in the European periphery¹¹. In southern Europe in countries such as Italy, Portugal and Spain development was impeded by intellectual and religious intolerance, illiteracy, corruption, weak government and the continuing existence of more or less autonomous areas, as well as by the lack of a strong entrepreneurial tradition.¹² Compared to the East Central European countries in the periphery, Scandinavia had e.g.

no remnants of a feudal structure, of serfdom, illiteracy, or history of intellectual and religious intolerance. Moreover, many of the countries in East Central Europe had neither easy access to the sea or to a well functioning infrastructural system¹³.

Typologies of welfare regimes

One hypothesis explaining the rather good performance of the Nordic countries in respect of innovation (see figure 1) may be the existence of the welfare state. As the core of the welfare state has been its ability to provide for the welfare of its citizens, the main focus of analysing state traditions has addressed the comparison and typology of welfare regimes¹⁴, welfare policy styles being the most popular objects of analysis here. Moreno and McEwen (2005) identify three main types:

- *The conservative continental welfare regime*: based on occupational categories and more targeted to maintaining status than reducing inequalities;
- *The liberal Anglo-Saxon regime*: focused on poverty alleviation, pursued in accordance with market principles, dependence on market solutions for social protection;
- *The social-democratic Nordic regime*: premised on the combination of solidaristic ideas with growth and full employment, and the minimisation of family dependence. This system relies upon taxes for its maintenance, characterized by the principle of universality and favouring the public provision of free services over cash transfers.¹⁵

According to the Esping-Andersen typology of welfare regimes Denmark, Finland, the Netherlands, Norway and Sweden belong to the *Social-democratic regime*; the USA, Canada, Japan, Australia and Switzerland belong to the *Liberal regime*. In the *Conservative regime* Esping-Andersen places countries like Austria, Belgium, France, Germany and Italy. Great Britain and Ireland are not placed in this typology since their welfare systems contain elements of all three regime types. Esping-Andersen's famous typology was first constructed in 1989; in 1999 he constructed a somewhat different typology¹⁶. Although he has been criticised he is still the one who has produced the best explanation for the social differences in the Western World. His main critics have argued that he has not taken gender issues into consideration, and that his model is overly focussed on the national level with regional differences being ignored. Furthermore, his typology is static and ignores

5 Gerschenkron, A. (1962).

6 Here the term Scandinavian refers to Denmark, Finland, Norway and Sweden. Iceland is not mentioned as a separate area or territory in these studies.

7 Berend, I.T. & Ranki, G. (1982)., Cameron, R. (1997). The needed capital to industrialise areas such as France, the Flanders (Belgium) and Lombardy (Italy) was accumulated through private savings and entrepreneurship as well as through the banking system (Dillard, D. (1967)., Rider, C. (1995).

8 Cameron, R. (1997).

9 Landes, D.S. (1998).

10 Cameron, R. (1997). The dependence of the international division of labour, the Scandinavian countries created a kind of monetary union by weighting their currencies, the "krona", at the same level to the gold in the 1870's and became a part of the international gold standard (Lobell, H. (2002).

11 Cameron, R. (1997)., Berend, I.T. & Ranki, G. (1982).

12 Landes, D.S. (1998).

13 Berend, I.T. & Ranki, G. (1982).

14 e.g. Esping-Andersen, G. (1990, 1996 and 1999).

15 Moreno, L. and McEwen, N. (2005). p. 4-5. Sometimes these three main welfare regimes have been accompanied by a fourth category of southern European or Mediterranean category (Moreno; L. (2000).

16 Esping-Andersen, G. (1999).

Table 1. *The welfare regimes of Esping-Andersen*

1990 Worlds	Social democratic	Norway, Sweden, Denmark, Finland, Netherlands
	Liberal	Australia, Canada, United States, Switzerland, Japan
	Conservative	Austria, Belgium, France, Germany, Italy
	Not classified	Ireland, New Zealand, United Kingdom
1999 Worlds	Universalist	Denmark, Norway, Sweden, Finland, Netherlands (the United Kingdom)
	Residual	Australia, Canada, United States, New Zealand, (the United Kingdom)
	Social insurance	Austria, Belgium, France, Germany, Italy, Japan
	Not classified	Ireland, Switzerland

Note: Esping-Andersen (1996) considers the United Kingdom to be a part of the Liberal sphere.
Sources: Esping-Andersen (1990, 1999).

Table 2. *The welfare regimes of Hick and Kenworthy*

Progressive liberalism	Traditional conservatism
Denmark	Italy
Norway	France
Sweden	Belgium
Finland	Austria
The Netherlands	Germany
United Kingdom	Ireland
Switzerland	

Table 3. *The welfare clusters of Vogel*

Nordic	Central	Southern
Denmark	Belgium	Greece
Finland	France	Italy
Netherlands	Germany	Portugal
Norway	Luxembourg	Spain
Sweden	United Kingdom	

Sources: Vogel (2002a, 2002b).

the fact that the welfare regimes have developed or have been terminated by the transition from an industrial to a post-industrial society; much has happened since 1989, especially given the fall of the Communist regimes in Eastern Europe. A number of sub-typologies, e.g. the “South European” type, can be identified, which is something Esping-Andersen also has been criticised for¹⁷.

Despite the considerable influence of Esping-Andersen’s categorization of three “worlds” of *welfare capitalism*, researchers have largely neglected investigation of his

dimensions of welfare state policy and politics. Building on and extending the foundations provided by Esping-Andersen, Hicks and Kenworthy (2003) explore the identities and consequences of welfare state regime dimensions.

Their principal component analyses identify two such dimensions. The first, which they label *progressive liberalism*, rearranges Esping-Andersen’s separate *social democratic* and *liberal* dimensions into two poles of a single dimension. Its positive pole is characterized by

extensive, universal, and homogenous benefits, active labour market policy, government employment, and gender-egalitarian family policies. The second pole, which they label *traditional conservatism*, is similar to but broader than Esping-Andersen’s conservative dimension. It features not only occupational and status-based differentiations of social insurance programmes and specialized income security programmes for civil servants, but also generous and long-lasting unemployment benefits, reliance on employer-heavy social insurance tax burdens, and the extension of union collective bargaining coverage.

¹⁷ Elmér, Å. et al. (1998).

The analysis covering 18 countries over the 1980s and 1990s suggests that progressive liberalism is associated with income redistribution and gender equality in the labour market. The principal consequence of traditional conservatism appears to be weakened employment performance¹⁸.

By analysing the welfare mix, defined as the configuration of labour market, welfare state and family characteristics as well as the timing and sequences of transition into adulthood, Vogel (2002a, 2002b) finds evidence for three European welfare regimes or welfare clusters. He calls them *Nordic*, *Central* and *Southern*.¹⁹

Four general remarks can be made regarding Vogel's welfare clusters. (1) The difference between Vogel's welfare clusters and Esping-Andersen's welfare typology is not large; (2) Vogel's typology gives an *ad hoc* impression since some countries are moving between different clusters. Obviously it is difficult to place them in the structure of clusters; (3) The New EU Member States are not included in Vogel's typology since his typology only deals with West European countries; and (4) since one of the explanatory variables is GDP *per capita* some countries will always be in the top while others will always remain at the bottom.

Typologies of organisational mode

Later on in this report we will address a general tension between the state and regional level present in the Nordic countries. This tension relates to the core motivation or *raison d'être* of state formation, another axis of analysis has entailed the *organisational mode*, in connection to which the welfare issues also emerge, though as a secondary theme, in relation to welfare provision. Here the Nordic countries have most often been classified under the *unitary state model*²⁰, though increasingly in varying degrees of functional decentralisation, thus representing either unitary or decentralised unitary styles of government²¹. The territorial aspects of governance styles are also relevant for our analysis here and in this respect the administrative culture in the country in question is also of interest. Four main state traditions have been proposed:

1. Anglo-Saxon (minimal state)
2. Continental European: Germanic (organic)
3. Continental European: French (Napoleonic)
4. Scandinavian (mixture of Anglo-Saxon and Germanic)

These differ from each other both in policy style, state-society relations and the degree and form of decentralisation.

18 Hicks, A. & Kenworthy, L. (2003). Just as is the case with Esping-Andersen's typology, the typology of Hick, A. and Kenworthy, L. (1998, 2002, 2003). neither contains the New EU Member States nor all of the West European countries.

19 Sometimes Ireland and Austria are included in the Central cluster, sometimes not. Furthermore, Austria, Ireland and the Netherlands are sometimes included in the Southern welfare cluster too.

20 Moreno, L. and McEwen, N. (2005). p. 14.

21 Loughlin, J. (2004). ESPON (2006). p. 129-130.

What is typical of the Nordic countries and particularly reflected in the cases that are represented in connection with regional innovation policy in this report is the strong tradition of local autonomy, as well as the policy style, though it may be argued, and it will be shown in the analysis, that there are differences of degrees between technocratic and consensual policy styles here. In the analysis it also becomes obvious that innovation policies are governed by the state. The reliance on expert knowledge and technocratic decision-making is however a general feature and in most cases decision-making and policy style also reflect the underlying value of consensual decision-making, at least when compared to other types of policy regimes.

A closer analysis and comparison of these styles is beyond the scope of this report, but we may endeavour to look a little more closely at the last of the four, i.e. the Scandinavian State tradition. It is the least homogenous of the four mentioned, being more of an amalgam of different aspects of the other types, perhaps with the exception of substantive dimension of the welfare state tradition, as outlined above in connection to the welfare regimes and perhaps representing the most influential aspect of the Scandinavian/Nordic tradition. The characteristic that best distinguishes this tradition is substantive, specifically a welfare state tradition, and the process that is most relevant for the ongoing regionalisation and an interesting and ambiguous process of ongoing simultaneous centralisation and decentralisation/regionalisation is the underlying process of welfare state retrenchment. This is, in turn, brought about by a number of factors, most specifically for the theme at hand here demographic pressure, the universalisation of neo-liberal ideals and *New Public Management* practices in welfare provision and the overarching internationalisation and globalisation processes, reflected in all areas of life from production to consumption.

Traditionally the Nordic countries have extensive commitments to the social and economic well-being of their populations and this prevails, though the ways in which these commitments are addressed and are catered for vary. The strong participatory and local autonomy ideals also reflect a strong participatory ethic in Nordic society and government, which is also reflected in the regional innovation discourse prevailing in the cases analysed in this report, as well as in the more decentralised modes of governance that the Nordic countries are also increasingly actively developing and testing in policy practice.

Innovation system typologies

Typologies have also been developed for innovation systems. The usual way to classify innovation systems in a hierarchical order, i.e. in national, regional, and local systems, has been challenged in different ways. Within the French '*régulation*' approach, for instance, it is suggested that there are a variety of innovation models that co-exist,

Table 4. Key Features of Four State Traditions

	Anglo-Saxon	Germanic	French	Scandinavian
Is there a legal basis for the "State"?	No	Yes	Yes	Yes
State-society relations	Pluralistic	organic	antagonistic	organic
Form of political organization	limited federalist	integral/ organic federalist	Jacobin, "one and indivisible"	decentralized unitary
Basis of policy style	Incrementalist	"muddling through" legal	corporatist legal	technocratic consensual
Form of decentralization	"State power" (US); local government (UK)	cooperative federalism	regionalized unitary state	strong local autonomy
Dominant approach to discipline of public administration	political science/ sociology	public law	public law	public law (Sweden); organization theory (Norway)
Countries	UK; US; Canada (but not Quebec); Ireland	Germany; Austria; Netherlands; Spain (after 1978); Belgium (after 1988)	France; Italy; Spain (until 1978); Portugal; Quebec; Greece; Belgium (until 1988)	Sweden, Norway, Denmark

Source: Loughlin (1994).

models that have been modified in the course of history through a long process of trial and error. "We put forward the notion of social systems of innovation defined as a set of institutions, routines and structures that govern the innovation process and the diffusion of technological change in a context characterised by externalities and learning effects."²² Thus, they suggest four different social systems of innovation: The *marked-based model*, which is typical for the USA, the UK, Canada and Australia, the *meso-corporatist model*, which is typical for Japan, the *public-institutions-based model*, which is typical for France, Germany and the Netherlands, and the *social-democrat model*, which is typical for Sweden, Norway and Finland. In this latter model public research plays an important role. Mobility and the skills of the labour force are rather high. Education expenditure is high. Though the financial system is not very sophisticated, and venture capital is not available. Compromise and negotiation between the parties involved

²² Amable et al (1997).

in the social system of innovation is normal. The system is also characterised by egalitarian objectives in terms of income and education. In this model, Amable *et al* note, "one can see most clearly the construction of a social system of innovation that has little to do with a market-based logic"²³.

Based on the different typologies concerning welfare system and organisational mode it can be stated that the Nordic countries always end up in the same category.²⁴ This is what most reviewed studies call 'the Nordic model'. It seems to be the case also for innovation systems. We suspect that this may be the case also for the innovation policies. We will now turn to how the Nordic counties are performing in respect of innovation by looking at a number of variables in use for measuring innovation performance.

²³ Amable et al (1997), p. 44.

²⁴ With the exception of Iceland that has not always been classified in the different models.

The Nordic Innovation Context

In this section data is presented in order to give a picture of the innovation structures existing in the Nordic countries. We start by highlighting some of the indicators used in the EU context. These are mostly related to business life and competence level. To add a further dimension to the discussion we have also included some variables that we think may be important for innovation potential and performance in the Nordic countries. This family of variables aims to provide a picture of the broader regional context for innovation.

The task of 'quantifying' innovation is difficult on many accounts. First of all, innovation is, in itself, a rather fuzzy concept, which has been shown in the historical background given to the concept. Innovation is often generally understood as relating primarily to high-tech innovation. This very restrictive definition is hardly applicable to Nordic regions, as it is too narrow and does not include the broader definition of innovation increasingly now used. The second main difficulty is that innovation is rarely treated in a territorial manner. This influences what scale, i.e. European, national, regional or local, is used for "measuring" innovation.

In the current section, we will deal with Nordic countries and to some extent regions in a European perspective. What is the position of Nordic regions compared to other European regions? Starting from this observation, it is necessary to ask whether this way of looking at 'Nordic innovation' is relevant for the Nordic countries and regions themselves. What are the advantages and disadvantages then of applying the existing European way of measuring innovation?

European Innovation Scoreboard

Because innovation has become an important component of the EU's likely economic prospects, it has become very important to measure and monitor how the European countries, and to some extent also their regions, perform. It is the task of the European Commission's DG Enterprise to elaborate the European Innovation Scoreboard (EIS) in order to ensure that pan-European comparison on the issue of innovation is possible. Since 2000, the Community Innovation Survey (CIS) has become a major data source of the EIS. The, currently, 26 indicators used for the elaboration of the EIS are divided into 5 categories, 3 describing the input side of innovation, and 2 the output side. It is made clear in the methodology of the EIS that innovation is not a linear process. That is to say, if one wants to assess the innovation efficiency of a system (for instance a nation or a region) it is not sufficient to divide the output by the input. Moreover, the level in output is impacted by inputs, in the form investments for instance, that were made years earlier. In that sense, the time dimension makes it more difficult to make a simple output/input assessment for each year.

The EIS is essentially implemented by using data at the national level. Increasingly, efforts are put in order to develop a relevant methodology for drafting the *Regional Innovation Scoreboard* (RIS)²⁵. In the RIS of 2006 203 EU25 regions are analysed. Only 7 indicators of the 26 indicators are used. The utilised indicators mainly focus on the technical aspects of innovation.

- Innovation drivers: Human resources in science and technology; Participation in life-long learning
- Knowledge creation: Public R&D expenditures; Business R&D expenditures
- Applications: Employment in medium/high-tech manufacturing; Employment in high-tech services
- Intellectual property: European patent applications

Based on the indicators in the EIS the following typology for regions has been developed. It can be noted that the Nordic metropolitan regions are placed in the top ranked category.

1. High-tech 1 cluster: This cluster includes three Nordic regions; Stockholm, Helsinki and Copenhagen-Malmö, with employment in service and tertiary sector above HT2 regions
2. High-tech 2 cluster: This cluster contains 3 European regions strong on industrial patents: Munich, Stuttgart and Eindhoven
3. Regions with GDP and education and R&D levels above the EU average, with high percentage in medium and high-tech activity
4. Regions with GDP *per capita* and education level above EU average but a R&D level below
5. Regions with a GDP close to the EU average, but with education and R&D levels below
6. Poorest performing regions of EU15, collective capacity to learn is the main engine for development²⁶

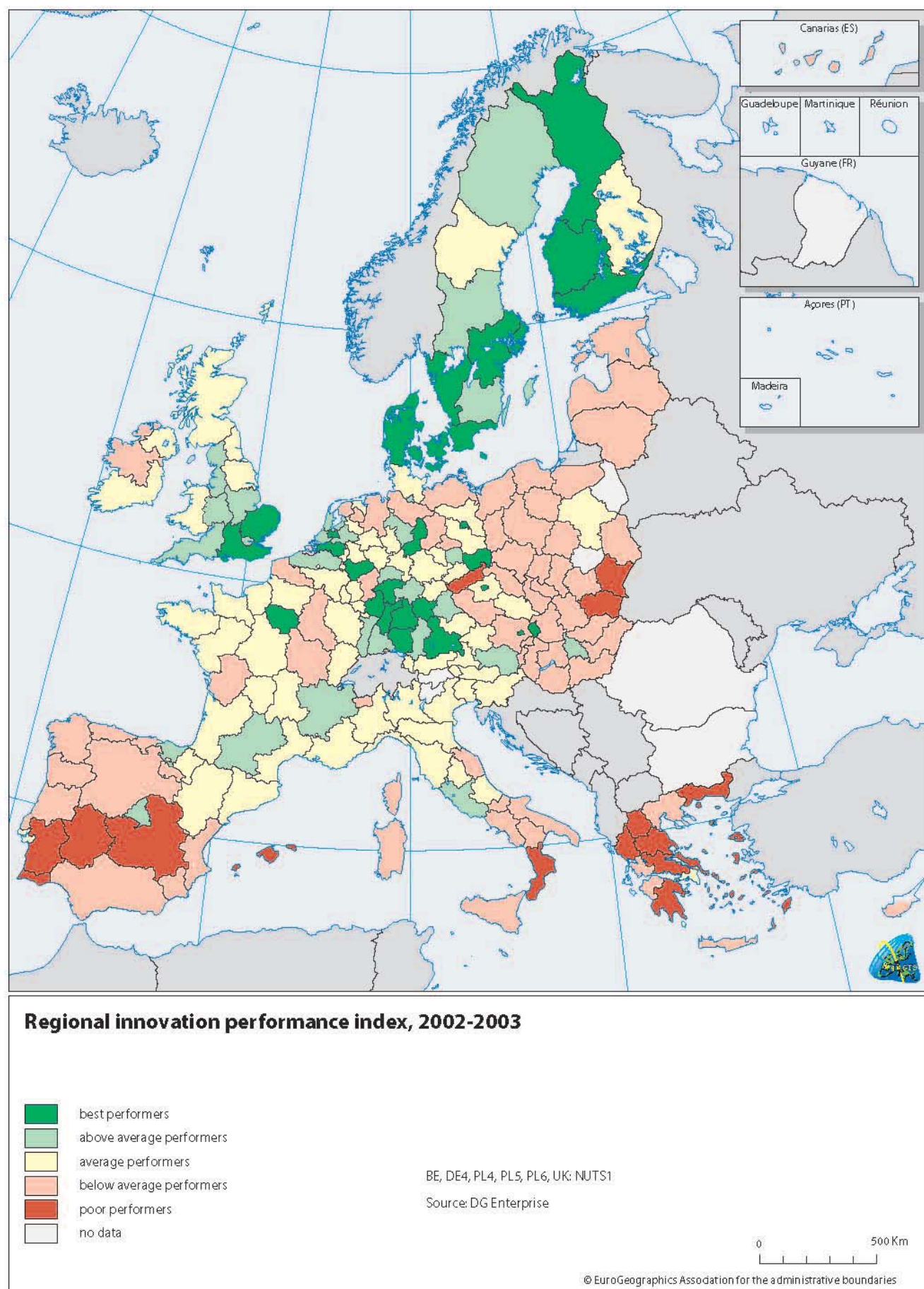
*The fourth report on economic and social cohesion*²⁷, published in May 2007, includes a *Regional Innovation Performance Index* (see Figure 1) aimed at measuring the best regional performers in innovation. These indicators are based on the ones developed by the EIS. This type of measurement is interesting when trying to position Norden (however, Norway and Iceland are excluded) in Europe. The result of this index shows that Stockholm is the most 'innovative' region in Europe and that Sweden is, on average, the most 'innovative' country in Europe. The other Nordic countries belonging to the EU, i.e. Denmark and Finland, are also strong performers in that regard.

²⁵ Pro Inno Europe Innometrics (2006).

²⁶ ADIT (2005).

²⁷ European Communities (2007).

Figure 1. Regional Innovation Performance Index, 2002-2003
 Source: European Communities (2007). p. 79.



This approach to displaying regional differences in terms of innovation performance is however not able to provide a pertinent picture of the potentials for innovation in Nordic region. The first causal factor here is the large size of the Nordic regions chosen, corresponding to NUTS2 regions. The fact that the whole of Denmark is one single NUTS2 region prevents us from analysing the disparities *within* the country. Moreover, the fact that the extended regions of Göteborg, Malmö and Oulu are performing very well is probably due more to the strong performance of the respective city than to the region as a whole. The second main comment relates to the choice of the indicators of this index: most adopt a rather narrow definition of innovation as they focus in the main on high-tech innovation, thus not taking into consideration the possibility that more traditional industrial branches may be innovative and that a broader approach to innovation can be used.

The difficulty in bringing the measurement of innovation from the national to the regional lies in the relevance and availability of indicators. There is a strong difference between an indicator that is available at the regional level (for instance Patent) and their relevance for regional development issues. In brief then, the elaboration of regional indicators merely 'mimics' the collection of indicators at the national level, without taking into consideration their overall relevance in the regional innovation system.

At the EU-level several problems, connected with the collection and presentation of regional innovation data, have also been stressed. Firstly, the RIS regional data is only available for 7 of the 26 EIS indicators. In addition, regional data from the Community Innovation Survey (CIS) indicators is lacking²⁸. Moreover, only a few countries provided reliable regional CIS3 data. Furthermore, most countries did not include a regional dimension in their sample stratification, due to the small sample size.

Regarding the next CIS that will be performed, CIS4, data will be available for 22 countries, but data will only be available for the NUTS I and II levels. To fill the regional data gap the Deputy Director General Françoise Le Bell, DG Enterprise and Industry, stated during a Conference on *Regions for Economic change – Innovating through EU Regional Policy*, in June 2006: "From 2007 onwards, the Commission will update and improve the regional scoreboard every two years, notably based on the CIS." And "Member States are encouraged to develop their own initiatives, based on the EIS methodology, to measure and benchmark regional innovation performances on the basis of a commonly agreed approach."²⁹

28 There is no regional data for: Broadband penetration rate, Early stage venture capital, ICT expenditures, Exports of high-tech products, USPTO patents; Triad patents, Community trademarks; Community designs, CIS3; Share of enterprises receiving public funding, CIS3; SMEs innovating in-house, CIS3; SMEs co-operating with others, CIS3; Innovation expenditures, CIS3; SMEs using non-technological change, CIS3; Sales of new-to-firm not new-to-market products, CIS3; Sales of new-to-market products

29 Hollanders, H.

To summarise, there are two dimensions that need to be improved in order to elaborate *Regional Innovation Indicators for the Nordic countries*. The first relates to the regions themselves. The geographical regions used in the European context are not adapted to Nordic realities. Moreover, NUTS2 regions in *Norden* do not represent a level where policy initiatives can be taken. In that sense, the regional level should thus be understood as the administrative regional level. This is particularly of interest as each region develops *Regional Development Programmes*. The second dimension relates to the indicators themselves. The indicators should reflect the particular conditions of each region in accordance with selected dimensions. In that regard, the knowledge infrastructure might be of importance (access to universities for instance).

Regional typologies of innovation

In general, more data and deeper analyses are needed in order to be able to develop a regional typology of innovation for the Nordic countries and regions. Some attempts have however already been made at the European level to develop typologies of regions. However, these typologies are mainly based on NUTS II data. In the *Strategic Evaluation on Innovation and the knowledge based economy in relation to the Structural and Cohesion Funds, for the programming period 2007-2013*³⁰, the following four 'strategic' groups of regions have been developed. The grouping of regions was based on four factors:

- *Public Knowledge*: Human resources in science and technology combined with public R&D expenditures and employment in knowledge intensive services are the most important variables for this factor.
- *Urban Services*: This factor takes into account the differences between industrial areas and service-based areas, including the public administration services of the government.
- *Private Technology*: This factor contains the correlated variables of business R&D, occupation in S&T activities, and employment in high- and medium-high-tech manufacturing industries.
- *Learning Families*: The most important variable is the share of the population below the age of 10. Regions scoring highly here have good potential for life long learning in the region which seems to be associated with the lively labour force participation of women.

Based on the assessment of the four factors the following regional typologies were created:

- *Global Consolidation Regions* are on the top rung of the ladder of European innovative regions. Regions in this group include: Copenhagen, Ile de France, London, Prague, Stockholm and Vienna, etc. These re-

30 Technopolis (2006).

gions are clearly well above the average for all four factors as well as GDP/capita with the exception of the private technology factor where they are close to the EU average.

- *Sustaining Competitive Advantage Regions* (strong industrial and learning regions e.g. Baden-Württemberg, Flanders, Ireland, Piemonte, Rhône-Alpes, Salzburg and Scotland, etc.) are relatively strong on private technology (reflecting the industrial tissue and heritage of these regions) and on learning families but much weaker in public knowledge and urban services (suggesting a difficulty in restructuring towards more knowledge-based services).
- *The Boosting Entrepreneurial Knowledge Regions* (second-tier capitals and regions with strong public research e.g.; Athens, Berlin, Bratislava, Catalunya, Lisbon, Midi-Pyrénées, Warsaw, and Wallonia, etc.) are strong on public knowledge and relatively competitive in terms of urban services but need to boost private technology and in particular learning family driv-

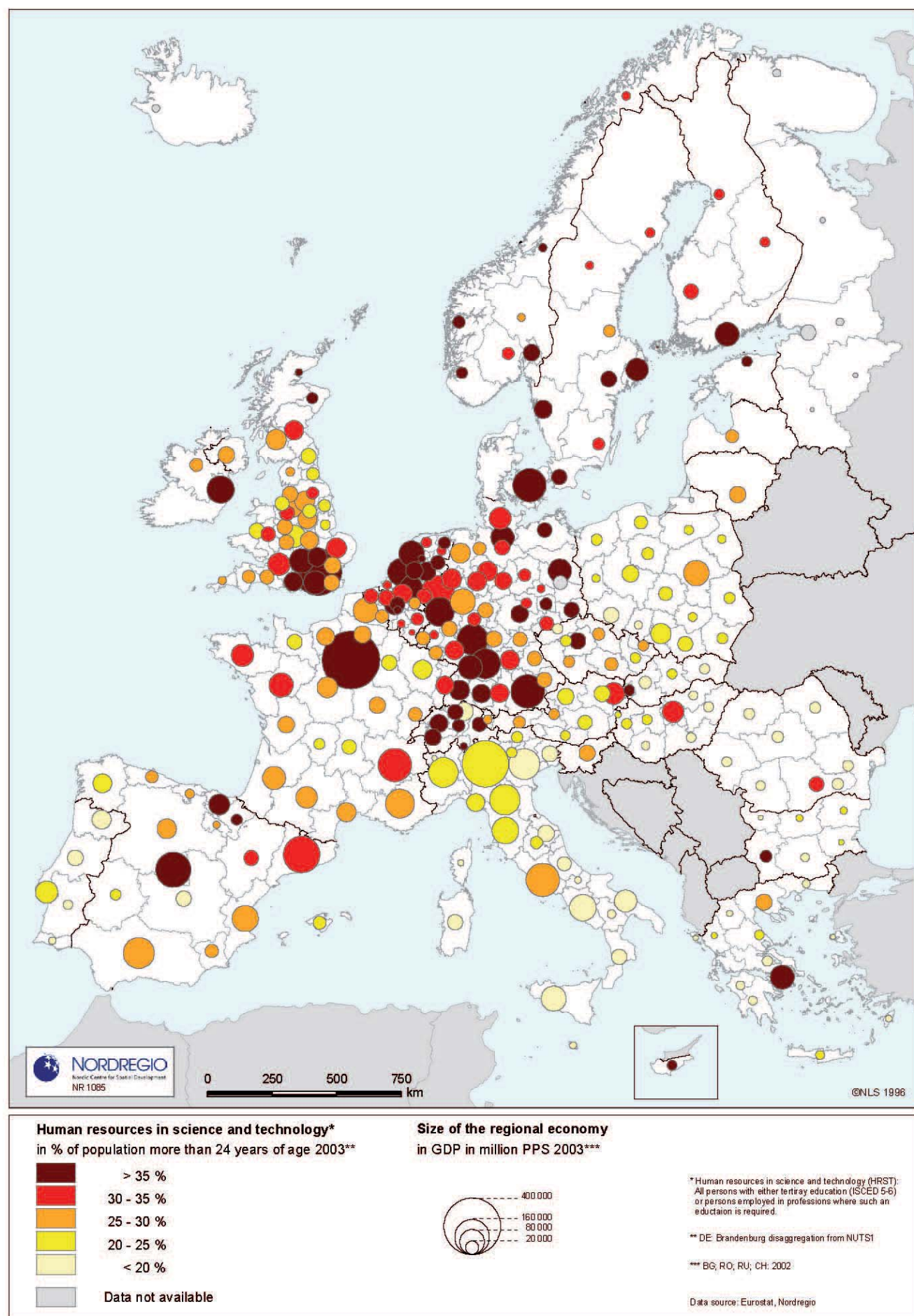
ers of their knowledge economies.

- *The Entering Knowledge Economy Regions* (broadly similar to the Structural Funds “Convergence” regions) lie on the southern and eastern rims of the EU. This group includes most of Greece, southern Spain, Poland except Warsaw, Estonia, Lithuania, Portugal except Lisbon, the *Mezzogiorno*, etc.). These regions are broadly speaking ‘users’ rather than ‘producers’ of technology.

The Nordic metropolitan areas as well as almost the whole of Finland belong to the *Global Consolidation Regions*. The regions outside the major cities in Sweden are characterised as *Sustaining Competitive Advantage Regions*. Only the eastern part of Finland belongs to the *Entering Knowledge Economy regions*.

Comparing the typology of four knowledge economy regions with the four main types of regions eligible for Structural Fund support suggests that if the Structural Funds were to be drawn on the basis of divergence in innovation needs and potential, the outcome would be different from that based on income per head gaps.

Figure 2. Regional distribution of human resources in S & T 2003



While there is a strong correspondence between the Convergence and 'Entering Knowledge Economy' regions, the knowledge economy approach distinguishes a number of regions (notably capital cities and other major 'innovation hotspots') where innovation potential may be fostered more easily. Equally however, some 'northern' regions are identified as having a potential level closer to that of 'less-innovative' southern regions. The conclusion here seems to be that such a typology should not be read as a scorecard of more versus less innovative, but rather should serve as food for thought for policy makers that they cannot blindly mimic the policies of the 'innovation hotspots' but rather need to build their own approach tailored to specific regional potential.

Despite the shortcomings of the existing way of measuring regional innovation performance and potential we present

here some of the maps displaying these variables below. Please note that it is mostly data on the NUTS II level that is presented here.

Educational level, universities and research

The regional distribution of human resources concentrates in the European economic core and the metropolitan areas (figure 2). Also in the Nordic countries, in absolute terms, these human resources are concentrated to the metropolitan areas. However, when comparing the Nordic periphery with the peripheries in the other European countries, a significant difference can be seen: almost all Nordic "peripheral" regions score higher in relative terms than most other European peripheral regions, but also higher than several metropolitan regions (Italy and central Great Britain, for example).

Figure 3. Leading university cities of Europe 2005

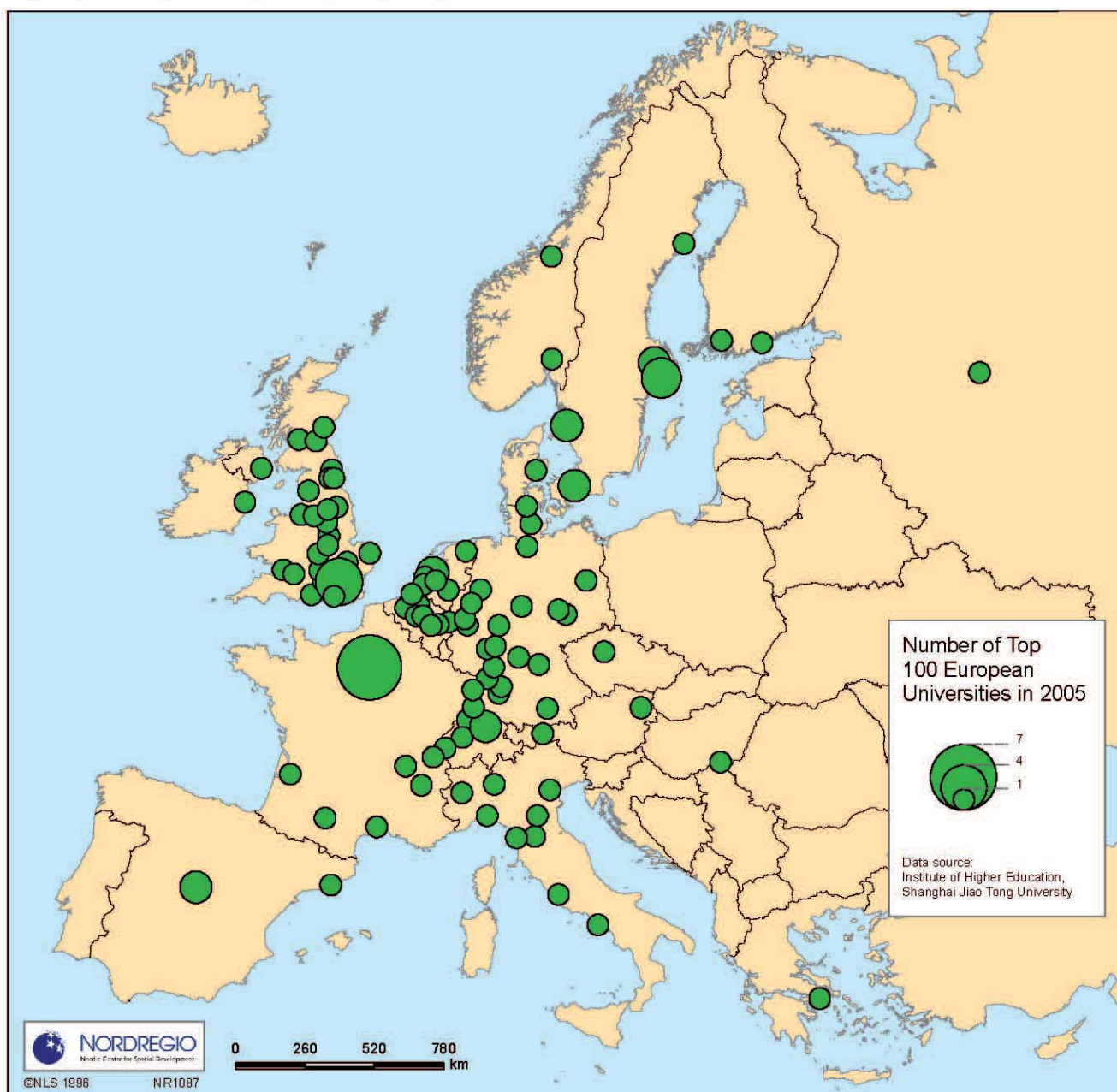
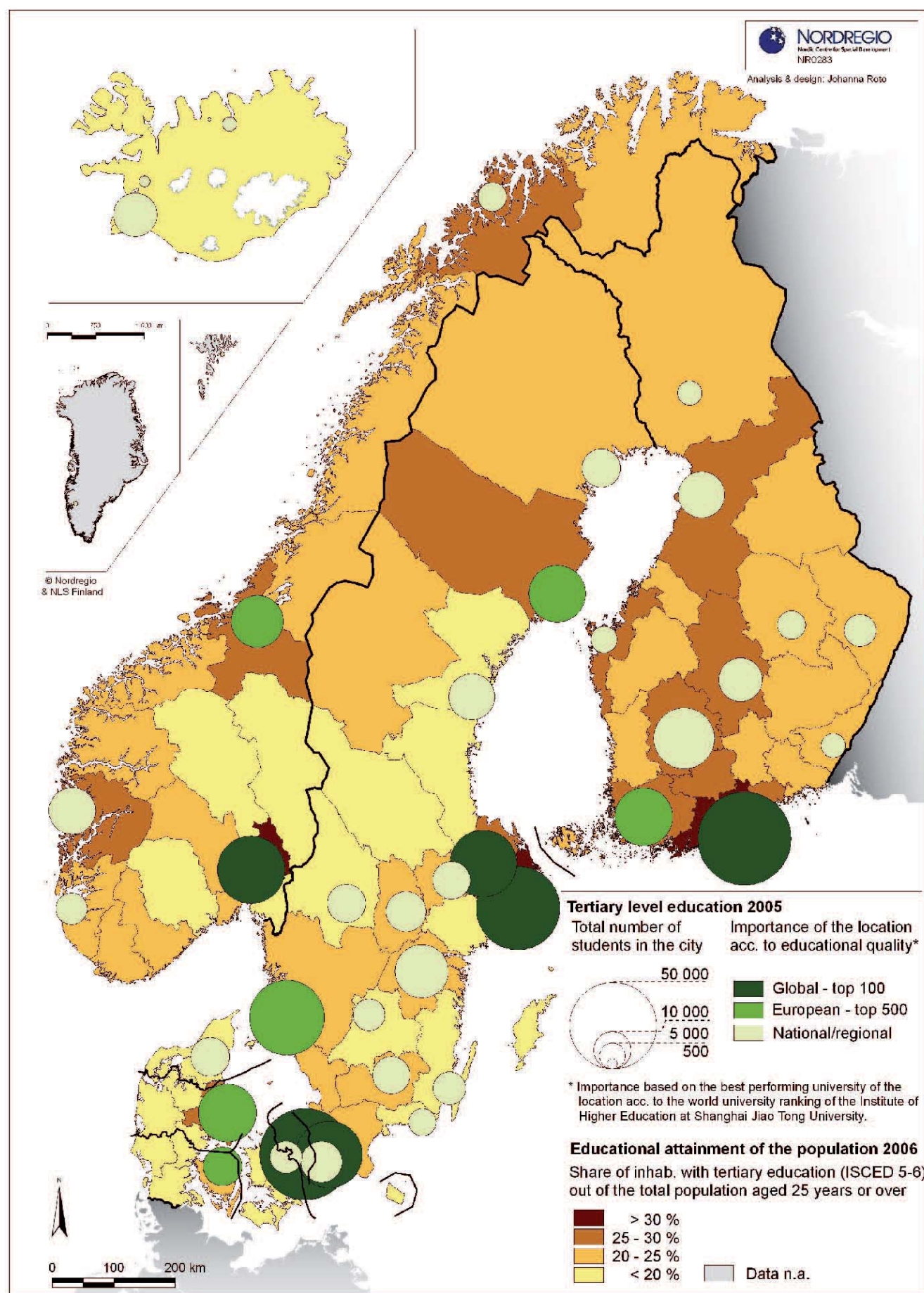


Figure 4. Tertiary level education and educational attainment of the population



Not surprisingly, the leading university cities in Europe are also concentrated to capital regions and big cities. Figure 3 illustrates that several of the leading university cities are located in the Nordic Countries.³¹ In the working paper *Geographies of Knowledge Production in Europe* a comparison is made between regional centres that have a university and those without one. Different growth patterns can be asserted. It seems that universities are very important locomotives pushing forward regional growth. However, the causality of this has not been proven³².

In Figure 4, Nordic university towns/cities are displayed by their importance. The ranking is qualitative and based on the World University ranking of JITU (Institute of Higher Education Shanghai). Nordic universities of global or European importance are located to capitals or other major *metropolises*. There are, however, a number of universities not included in the index, where performance is at least of regional or national importance. Not surprisingly the share of the population aged over 25 with tertiary level education tends to be higher in regions with a university.

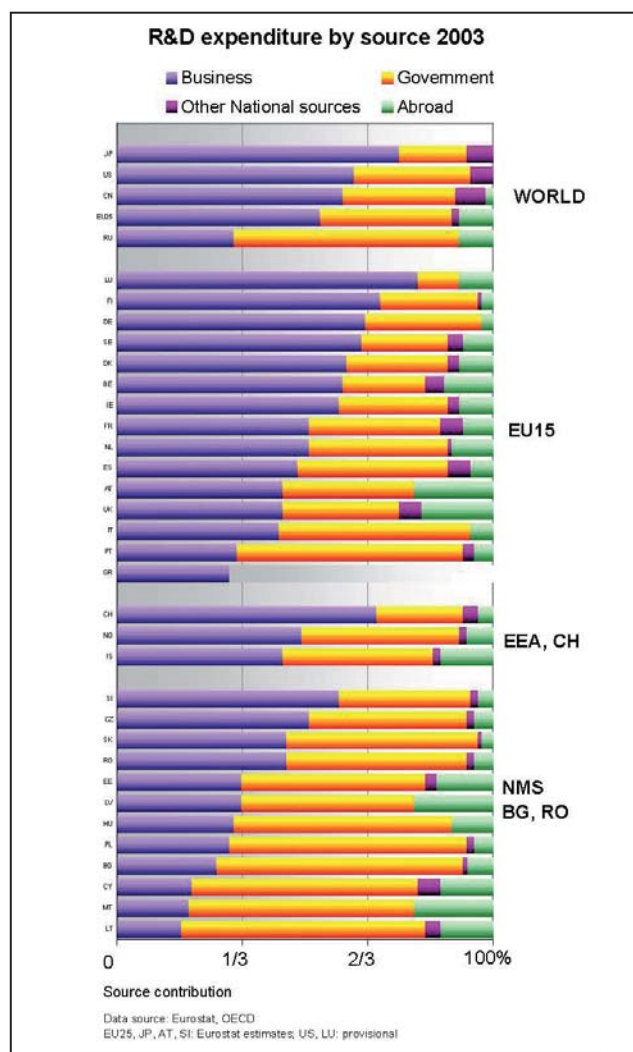
In the EU, the Barcelona objective is that at least 3 percent of GDP shall be spent on R&D. In this context the R&D intensity is rather high in the Nordic countries also exceeding those of the USA and being in line with the Japanese situation (figure 6 and 7). However, focusing on the regional administrative level (NUTS III) marked differences in the expenditure levels become evident (figure 7).

The objective is fulfilled by only 14 out of 70 Nordic regions³³ including Iceland, the Faroes and Greenland. Except in capital regions high R&D expenditures were³⁴ made in major Nordic metropolises and some important regional centres. Norway, and Oslo in particular, proves to be the exception here. However, roughly one third of the

total Nordic R&D expenditure is distributed to the five Nordic capitals alone. Adding the large Swedish R&D hubs of Västra Götaland and Skåne to this group leaves somewhat more than half of the total Nordic expenditure to be distributed to all other regions. Despite this fact, the regions spending most intensively on R&D in relative terms are not the capitals but the regional centres hosting a major university such as Uppsala in Sweden. However, private actors undertake the major part of the Nordic R&D effort. The public sector stands for only slightly more than 30 percent of the expenditure. Furthermore public R&D is mainly conducted at the universities. Norway does however have a comparably large public R&D sector.

Accordingly most of the Nordic countries' R&D expenditure is financed from business (figure 5). It is, however, only in Finland where more than two thirds of this expenditure comes from this source, which is in line with the goals of the Lisbon Agenda. Especially in Norway and Iceland the government finances a considerable part of R&D expenditure comprising around 40 percent of the total. Otherwise the overall Nordic financing mix of R&D is comparable to that of other leading industrialized nations like the USA, Canada or Japan but more business-orientated than in the EU25 in general.

Figure 5. R & D expenditure by source of funding 2003



31 This result is gained by using the measurement of the qualities of universities globally by the institute of Higher Education of Sanghai Jiao Tong University that is one of the most cited works in this field. The measurement considers some 2000 universities on all five continents and is based on five groups of criteria:

- Alumni of an institution winning Nobel Prizes and field medals (10%)
- Staff of an institution winning Nobel Prizes and Field Medals (20%)
- Highly cited researchers in 21 broad subject categories (20%)
- Articles published in Nature and Science (20%)
- Articles in Science Citation Index-expanded, Social Science Citation Index, and Arts & Humanities Citation Index (20%)
- Academic performance with respect to the size of an institution (10%) (Hanell & Neubauer 2006).

32 Hanell, T. & Neubauer, J. (2006).

33 Denmark: 7 R&D regions. Here expenditures by administrative region are not available. Norway: Oslo and Akershus joint to one region.

34 When comparing the volume of regional R&D expenditures (in Euro) across Norden one has not only to bear in mind the different purchasing power for knowledge intensive services between countries but also between regions. The major part of the expenditure finances labour costs, namely the wages of the researchers. Wage levels, however, clearly differ across Nordic borders. Consequently the same nominal amount of R&D expenditure may finance different volumes of R&D in different countries and regions in terms of worked hours.

Figure 6. Total R & D expenditure as a share of GDP 2003

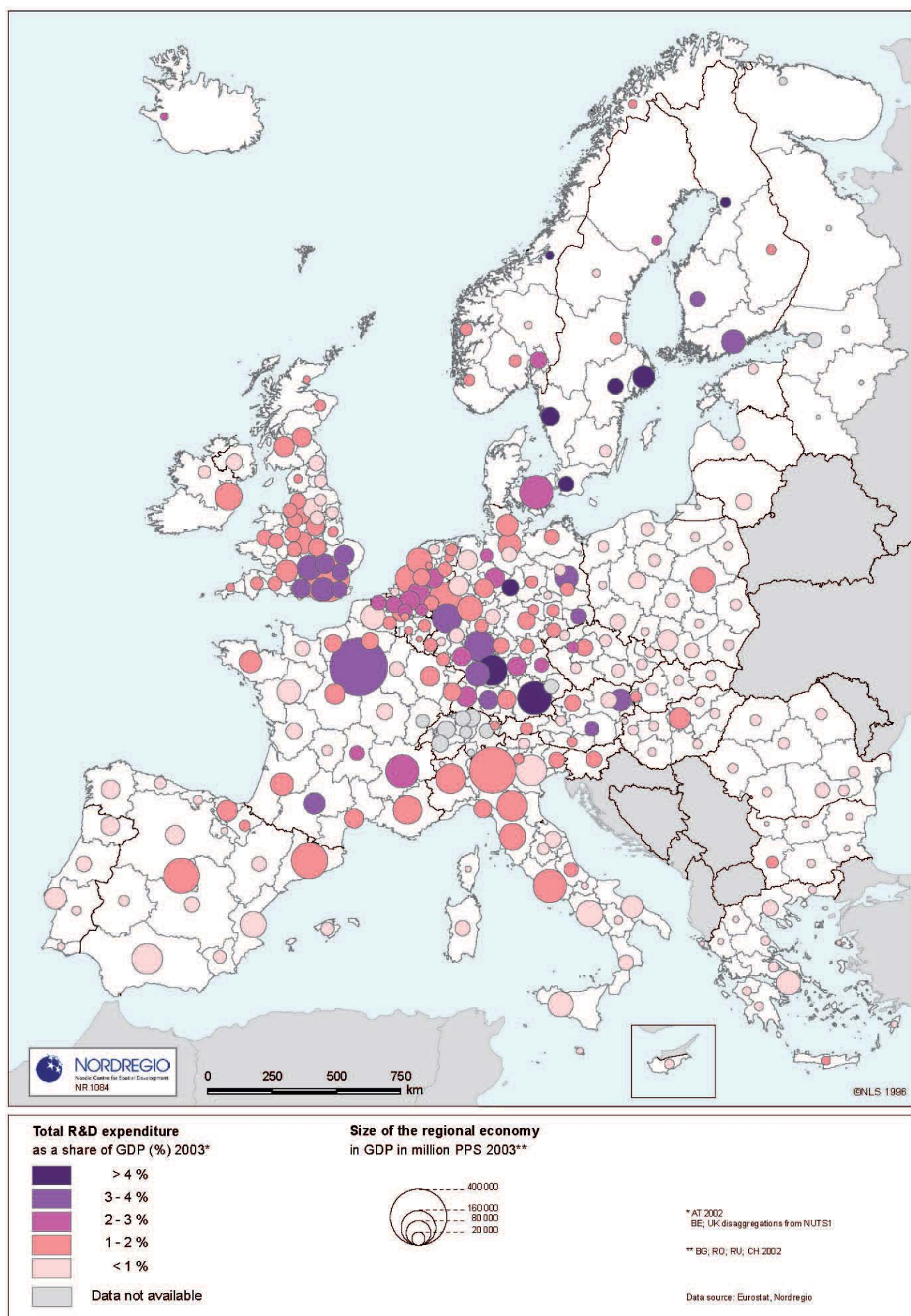
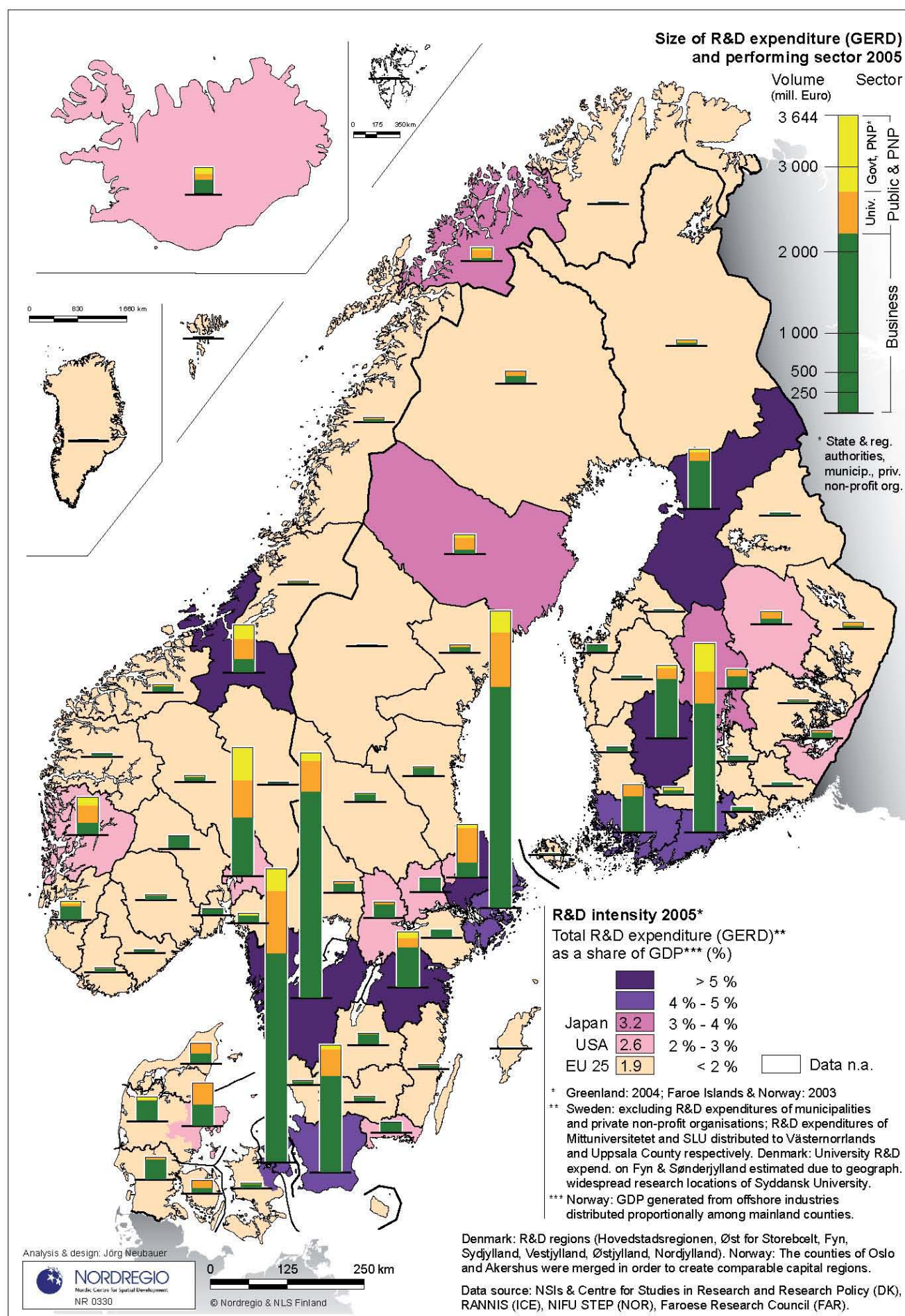


Figure 7. R&D expenditure and performing sector 2005

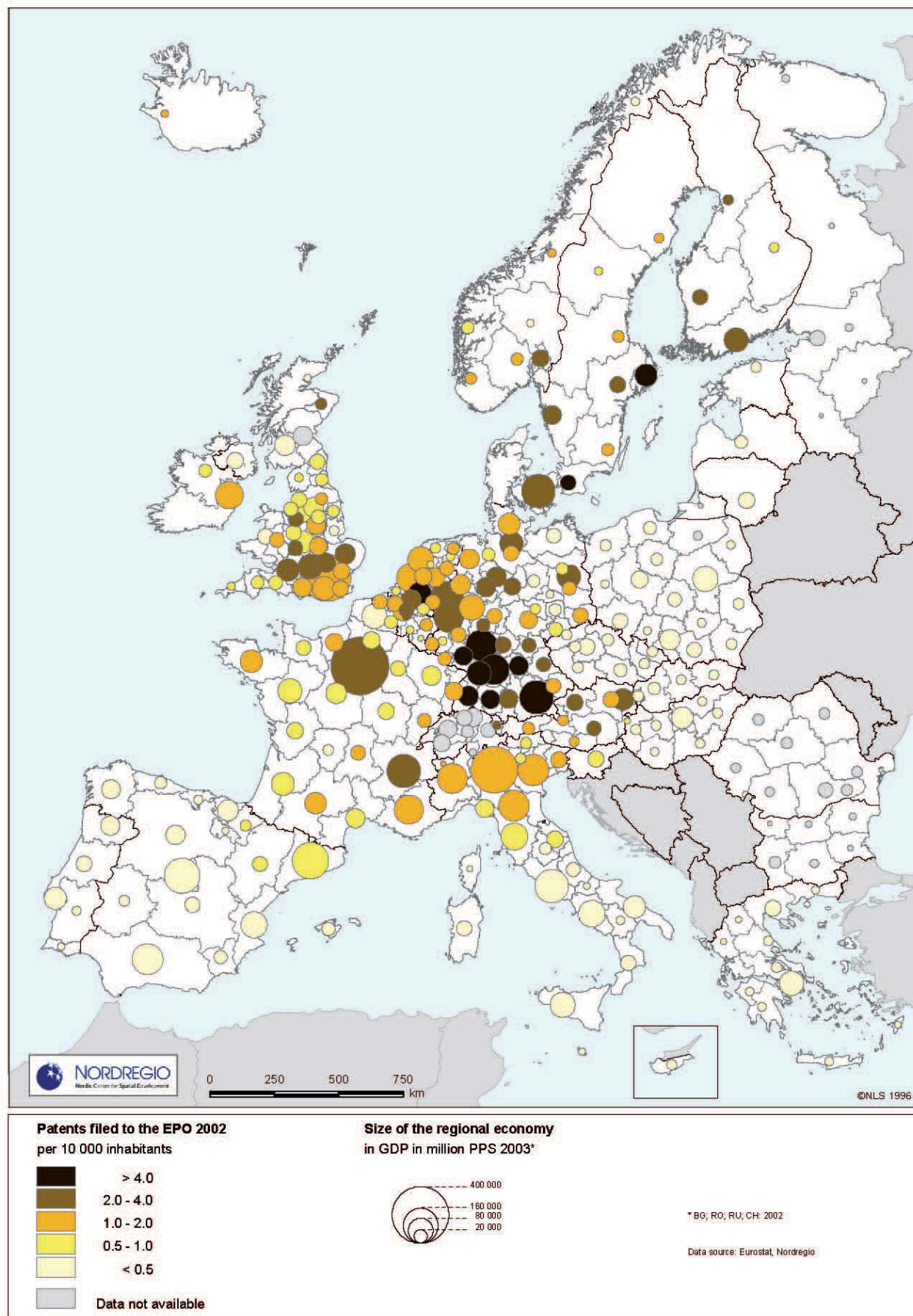


EPO (European Patent Organisation) patents

The dominance of the economic core of Europe, the Pentagon, is evident when it comes to patents filed at

the EPO (figure 8). However, the Nordic countries make an important contribution here given their small size.

Figure 8. Regional distribution of patent applications filed at EPO



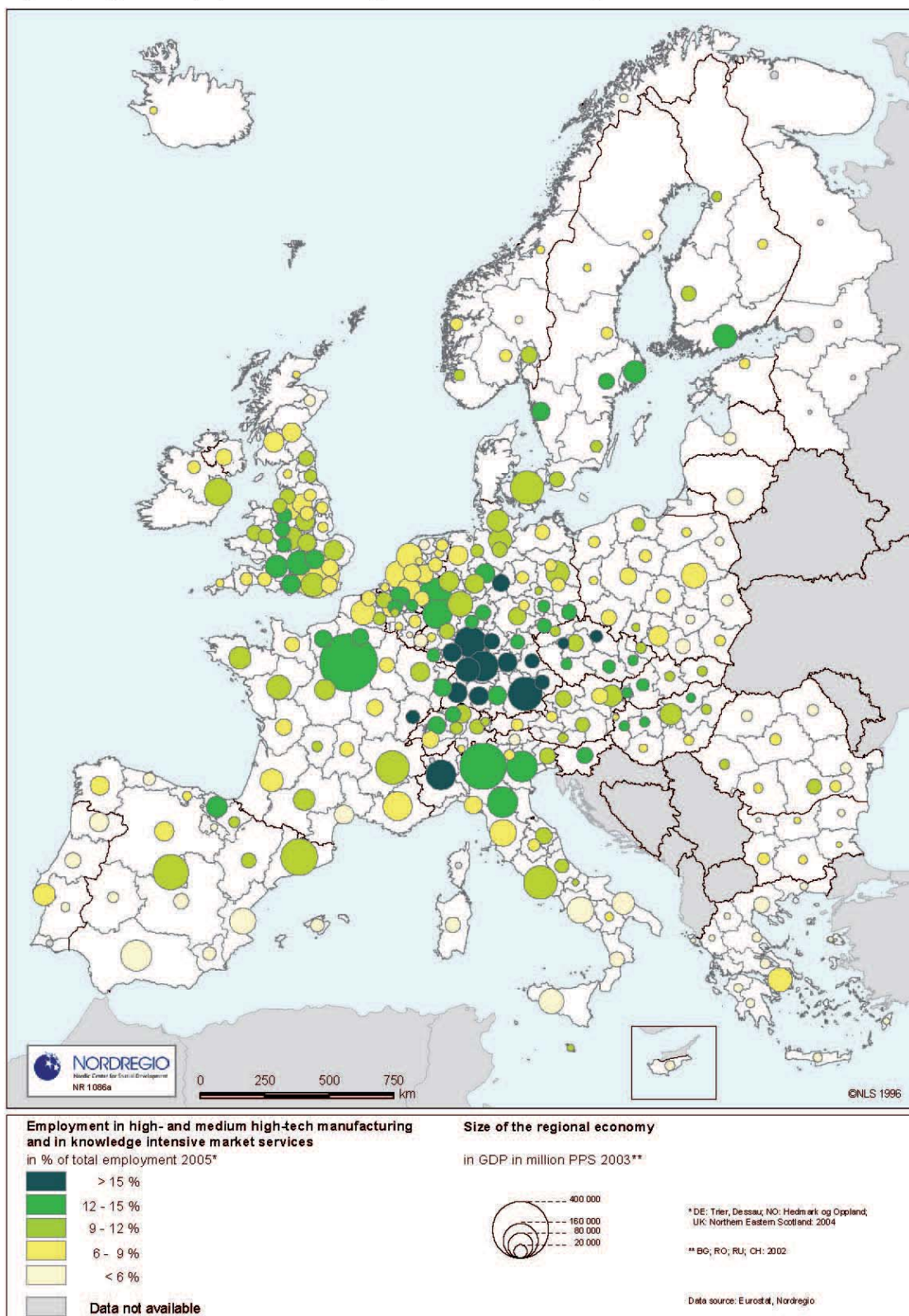
Dominant branch of employment

The knowledge intensive employment endowment concentrates to Europe's core and, in general, too major cities as figure 9 shows. In the Nordic context the biggest concentrations can also be found in metropolitan regions such as Copenhagen, Stockholm and the Helsinki regions. Outside the metropolitan areas few centres for knowledge

intensive industries can be found. In the European core high-tech manufacturing industry is the dominant employer, the remaining areas, including the Nordic Countries, encompassing Europe's highly qualified human resources endowment, specialise in knowledge intensive market services³⁵.

³⁵ Hanell, T. & Neubauer, J. (2006). p. 16.

Figure 9. Regional employment in knowledge intensive industries 2005



Nordic labour markets and innovation

In figure 10, employment in high-tech manufacturing and research and development in natural science and engineering in the Nordic countries is displayed. The map does not however display whether there is a link between these two branches. In the map the centrality of local labour markets has been added displaying the following categories: capitals & metropolises, regional centres, small and medium-sized cities and non-urban labour markets. Labour markets with both a specialisation in production and research are characteristic of the capitals and other major metropolises. An average specialisation in production but strong R&D production or *vice versa* is characteristic of major metropolises. Specialisation in high-tech production but low R&D activity is found in regional centres close to capitals or the major metropolises. In some Nordic countries there are also some examples of specialisation in R&D in some “peripheral” regional centres. These centres have a university of importance, i.e. Rovaniemi, Kupio and Tromsø. Labour markets with neither high employment in high-tech manufacturing or research and development in natural sciences are evident in regional centres, small and medium-sized cities and non-urban labour markets at a distance from major metropolises. These labour markets could be seen as “peripheral”. Due to the lack of data we can only speculate on the consequences these circumstances have for the level of innovation performance and potential in these regions and towns.

Innovation is not something that should only be analysed in the context of large agglomerations. Smaller labour markets may also have local economies based on innovation processes. Innovation processes should thus be analysed in the light of local ‘economic life’, and not through top-down political objectives, such as the Lisbon indicators. This perspective emphasises the fact that innovation is not only about high-tech, but it has also concerns the adaptation capacity of local industries to changing economic environments. However, the proximity of small labour markets to universities which can ‘produce’ the knowledge for developing further innovations is in that sense essential. In figure 11, a typology showing the poten-

tial physical-functional connection between different cities and towns in the Nordic countries is displayed. Cities and towns situated in a polycentric surrounding are considered to have a better chance of positive interaction. As stated previously, regional centres with a university also display a better growth pattern than those without a university.

A clear pattern emerges here such that metropolitan areas dominate when it comes to the variables used to display innovation performance and potential. However, the more peripheral, that is to say those regional centres outside capital areas, in the Nordic countries are also doing rather well when it comes to questions of investment in human capital (education in general) and research and development.

It is also worth noting that the variables presented may be an outcome of policies undertaken perhaps 10-20 years ago and may also be connected to the ‘Nordic model’. The latter connection may however be difficult to prove. The outcomes of policies carried out today can be spotted only after a few years have passed. In addition, many unconnected policies may have impacted on the results. This has been found to be a problem for policymakers and this is why the current trend in policy evaluation is to highlight the importance of *real time evaluation*, which has borrowed its rationality structure from the corporate world. However, societies and communities have a considerable amount of historical inertia invested in them. Processes related to such delicate questions as creativeness and innovativeness are probably harder to manage ‘real time’ than the effectiveness of an industrial plant.

In addition, a lack of data can be identified since “regional” data is only available for the NUTS II level. Additional data, more variables and indicators at lower levels are all needed then to help get a better picture of how innovation potential and performance really looks in the Nordic and European regions. It is also evident that more sophisticated variables and indicators are needed in order to more fully investigate the broader view on innovation, i.e. innovation applied in the public sector and in respect of social innovations.

Figure 10. Specialisation in high-tech manufacturing and/or research and experimental development in natural science and engineering in Nordic labour markets 2005

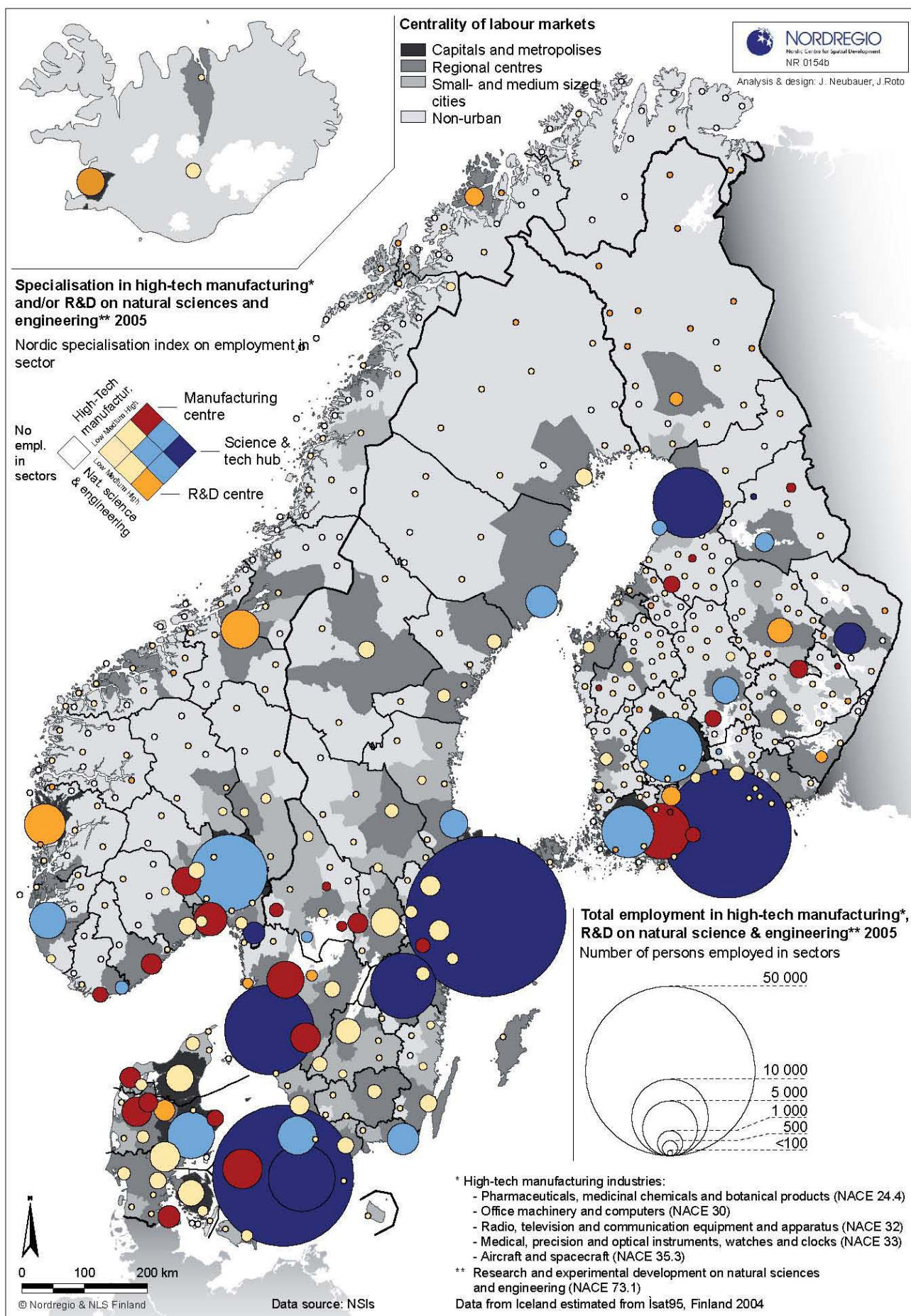
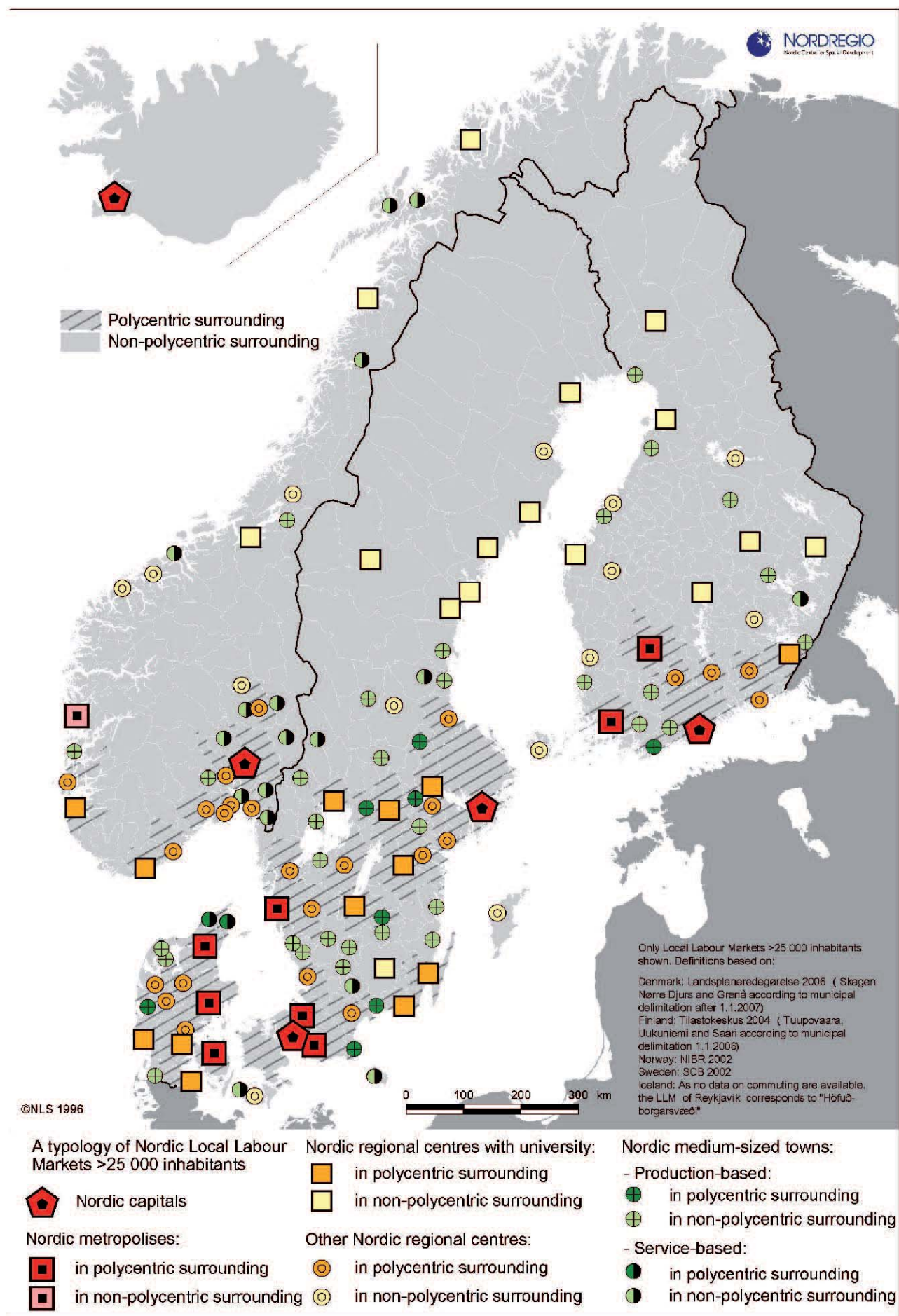


Figure II. A typology of the Nordic Local Labour Markets with over 25 000 inhabitants



Dichotomies regarding how to organise regional innovation policies in the Nordic countries

Introduction

In the following chapter a number of dichotomies relating to the organisation of the regional innovation policies found in the national reports and case studies are discussed. These dichotomies display the basic tensions found in the analyses of policies developed and implemented for national and regional innovation systems and also in the Lisbon Agenda. This approach has been applied in order to attain a clear set of distinctions. Here however we would like to stress that the reality is not black or white. In addition, there are several ways of looking at dichotomies.

- Firstly, a dichotomy can be viewed as a set of antagonistic concepts that are in conflict and cannot be combined.
- Secondly, a dichotomy can display extremes or poles where practice is to be found somewhere along the continuum
- Finally, a dichotomy can view complementary concepts that can be combined into a new, greater whole.

Text boxes including descriptions of a number of the phe-

nomena addressed are used in order to display these dichotomies more fully. This is a way to follow up the more interesting elements found in the national reports and the case studies. We also relate the analysis to what implication the European Commission Working Document and Guide document *Innovative strategies and actions. Results from 15 years of Regional Experimentation* may have for the Nordic countries and regions. A new approach is visible in this document. Above all it is for the first time stated that these policies are experimental in a societal sense, i.e. in relation to how things are organised and managed. This also implies that the policy makers are themselves experimenting and that policy development is very much a learning process. It should also be noted that policy deals with non-linear systems. How are the Nordic countries able to cope with this new approach? In the Working Document no explicit references are made to the Lisbon Agenda. However, the issues addressed are in line with the ambition to fulfil the objectives of the Lisbon Agenda. But before presenting the dichotomies we will briefly summarise and discuss the findings of the national overviews and case studies.

The Nordic Countries and their innovation policies

Based on the national overviews made and case studies undertaken it is evident that innovation has emerged as a value concept in the Nordic countries. The ambition, and also belief, in being able to construct complex social systems the creation of innovation systems imply through rather simple policies, is evident. In all of the Nordic countries, innovation systems are stimulated and developed by national policies, while a variety of tools are used to this end. A number of national actors can be defined in each country. Even if it is evident that all Nordic countries study

each other's programmes and collect ideas from other countries as regards the development of innovation policies, nevertheless, different systems have emerged. There are however also many similarities, particularly between Norway, Sweden and Finland. The idea of having "Centres of Expertise" i.e. Finnish and Norwegian Centres of Expertise, or *Vinnväxt* in Sweden, is a theme that runs through innovation policy instruments in these countries. It is interesting to note however that Iceland, due to the reasons mentioned in the national overview found in Nor-

dregio Working Paper 2008:2, has its own system.

Common to all countries is the notion of encouraging networking and partnership in one way or another and binding their policies closer together. The important role of the state is also obvious. Other common, perhaps not that surprisingly, denominators are a rather strong focus on high-tech and science and a high investment rate in research and development.

According to the picture that emerges from the Nordic Scene chapter, the Nordic countries are performing rather well when it comes to innovation in a European perspective - at national scale. However, precise information about the situation in the regions is lacking. But from what can be seen from the current data available the metropolitan areas dominate concerning innovation performance and potential in the Nordic countries.

Specific 'Nordic' conditions also seem to exist in respect of innovation systems. One is the existence of high levels of 'trust' in the Nordic countries and a low degree of formal hierarchy. This may be based on the so-called 'consensus culture' founded on a common background of values and a history of ethnic and religious homogeneity. In addition, the small population implies a small home market, which has forced companies to work internationally. The Nordic countries have an open economy and are dependent on importing and exporting goods and services

from and to the rest of the world. The Nordic languages are spoken by few people so it is necessary to learn a foreign language and cooperate. The Nordic cooperation tradition both in its popular and more institutional forms may also be part of the explanation. This cooperation is facilitated by similar languages. Institutionally, some cooperation is coordinated by the Nordic Council of Ministers. This cooperation includes that concerning research i.e. in respect of *Nordforsk* and the Nordic Innovation Centre. Also the common Nordic labour market introduced in the Mid 1950s may be a factor behind the positive development in the Nordic countries.

Another denominator in the Nordic countries is the existence of their rather similar administrative organisation, i.e. parliamentarianism and a high degree of local autonomy. This, together with the geographical distances, perhaps with the exception of Denmark, has led to a certain decentralisation of structures. To some extent the existence of small populations spread out over large geographical areas explains the need for administration structures which rely upon a high degree of local autonomy. Additionally, the Nordic countries have historically enjoyed rather stable political systems. Nordic educational systems are, moreover, characterised by free education to the university level, which implies that university education is available for all. This implies that the labour force will be highly skilled.

Private versus public actors

The concept of partnership, both public-private as well as private-private, has evoked a lot of enthusiasm in all Nordic countries and is visible in both innovation policies and regional policies. The emergence of partnerships as a legitimate "practice" began in the mid 1990s and can mostly be connected with EU-membership. In regional innovation policy integrating governmental, private and research community actors is a standard approach in the attempt to create an innovation system. It becomes evident that many of the instruments aim at facilitating interaction between higher education institutions, small and medium-sized companies and, to some extent, public actors. The "triple helix" approach and the inclusion and engagement of the local business community is shown to be very important in the scrutinised policies.

Concerning the partnership idea, an interesting observation here is that private actors are included not only to *implement* policies they also participate in *initiating* new policies, for instance *Vinnväxt* in Sweden. Norway seems to have a more varied practice of giving weight to a business-oriented policy formulation and goal-setting. This can be related to the fact that in Norway, at least as it can be compared to Sweden, there remains a strong regional

policy focus on the development of peripheral regions, while the related state governance tradition is in conflict with such a "neo-liberal" business orientation. Denmark seems to stand apart in respect of the number of cooperation *fora* at different levels. Here, also the highest level is involved, i.e. the Councils of Globalisation and Innovation (see text box). In Iceland, the national Science and Technology Policy Council has been established. Finland has a similar top level organisation (Science and Technology Council) with key national figures including the Prime Minister, from public and private spheres alike, but its focus is on hi-tech R&D and not on all sectors of innovation policy.

When the partnership concept is practiced it also raises questions about its democratic legitimacy. Partnership is obviously a new kind of institution in the democratic welfare state that has to be investigated in respect of its accountability aspects. It may also be questioned whether these partnerships are, in reality, anything more than mere 'paper constructions' and whether they work in practice. Another challenge here is to discover whether it is possible to produce self-organising dynamics and positive characteristics. Which actor

should take the lead in this process and what tasks can be distributed? Should a bottom-up or top-down ap-

proach be applied and how is it possible to ensure commitment?

The Danish Innovation Council

The Danish Innovation Council was established in October 2003. Its founders were the Think Tank *House of Monday Morning* from the Ministry of Economics and Business Affairs, the Ministry of Science Technology and Innovation, the Danish Ministry of Education, Danfoss, FUUH, *Novozymes* and the Danish Bankers Association. The council consists of both a national and an international network. Around 400 innovators and people from central private and public sectors of society, i.e. government, private businesses and educational and research institutions, are members and constitute a "broad based partnership". The Think Tank *Monday Morning* runs the Innovation Council secretariat.

The council is a means for achieving the objective that the country will be "one of the world's most innovative societies in the next decade".

The following five headlines are used to describe the work of the Council:

- We identify new agendas
- We establish a close international sparring network
- We determine what we do best in Denmark
- We develop ideas on how we can become even better
- We transform visions into action

The main task of the council is thus to identify and map Denmark's opportunities and objectives in the global knowledge society. The most important effort is to construct and facilitate partnerships and projects. The Innovation Council also develops specific recommendations and a common strategy on how new knowledge environments can be created in order to create as many jobs as possible in Denmark.

An international sparring network has been created by establishing a strategic innovation alliance between leading business, political and research organisations in Finland and Silicon Valley. The objective of this innovation alliance is to strengthen the competitive positions of all involved parties through the exchange of knowledge and ideas.

There are also five Regional Innovation Councils (Nordjylland-not active, Midtjylland, Syddanmark, Sjælland and Hovedstaden). These councils are also based on broad partnerships, and the main objective is to achieve long term and short term regional growth by acting as a "catalyst" for "new thinking" in the region concerning economic development.

More information:

The Danish Innovation Council, <http://www.innovationsraadet.dk/indhold.asp?id=205>

The case studies highlight the fact that *international co-operation* is an important element in innovation work. This development can, for instance, be seen in the Centre of Expertise programme in Finland and in the establishment of the Growth Agreement for the Eyjafjörður region. The inclusion of actors from other countries in the partnership and/or network is one way to receive access to the needed competence. For the Regional Technology Centre *AluVaekst* in Denmark, which is based on strengths found in the regional context, the strategy of creating international networks is, for instance, one way of ensuring access to competences lacking in the regional context and is thus a way of becoming more “regionally independent”. Internationalisation may be driven by the companies in the region, since the larger ones may be multinational and have establishments in many countries. Small and medium-sized companies on the other hand may be dependent on companies located in other regions and countries in respect of either R&D or sub-contracting.

The governance and government discussion relates to which tasks should be performed by the public sector and which can be left to private actors. As in the Lisbon Agenda the public authorities are given a role in innovation mobilisation in the Working Document *Innovative strategies and actions. Results from 15 years of Regional Experimentation*, but how strong the intervention shall be must depend “on the degree of institutional and social development and organisation of the region, but also its political competences, history and culture, [...]”. A question to be asked here then is whether this implies that the role of the public authority, national and regional, should be stronger in the development of a less developed region?

Public intervention is normally expected when it comes to financing research and development. The Barcelona goal is that at least 3 percent of the national GDP is invested in Research and Development. In a European perspective however this sum is rather small in the Nordic countries in comparison with the larger European countries, i.e. Germany and France. It must also be highlighted that not all development costs are included in the statistics. The differences in the total sum spent between the Nordic countries can, to some extent, be explained by the enterprise structure, i.e. the existence of large international companies in Sweden such as Ericsson.

About 30-40 percent of the research and development undertaken in the Nordic countries is financed by the public sector, even if there is an expressed wish, in i.e. Denmark to increase private funding. Market failure and the different risk perspectives are usually used as the motivation for public interventions. The public and private sectors can often have very different perspectives when they provide research funding. In general terms, the business sector has a shorter time perspective and the aim is that the research will end up in a product, good or service, which it is possible to commercialise. The public sector can allow a longer time perspective and finance basic research where there is no guarantee that the end product will be possible to commercialise. Lack of ‘seed’ and ‘venture’ capital is stressed in some case studies, which may be a sign of market failure. But the question remains one of how public funding is best used to correct this market failure.

The main target group of the investigated instruments in the case studies were mostly *small and medium-sized companies* (Regional Technology Centre in Denmark, *Vinnväxt* in Sweden and Business Gardens in Norway). Due to European competition rules it is difficult to develop instruments that provide state aid directly to companies. Here it is easier to channel the money through higher education institutions or by establishing networks. From 2008 Norway will use the new option of the European regulatory system for regional state grants to provide special support to newly established growth-oriented firms inside eligible geographical areas. Since the creation of a *triple helix* is important in most policies, the *role of universities and higher education institutions* is stressed in all instruments. The goal is to stimulate cooperation between companies and universities. This is based on the assumption that increased knowledge transfer and research will increase innovativeness. The special focus on small and medium-sized companies is probably based on the analysis that the larger companies either have their own R&D departments or can handle the cooperation with higher education institutions themselves. Concerning research and development it is difficult to involve small and medium-sized enterprises, since they only participate if there is easy money available for them and since they are under significant time pressure.¹

State versus region

Much can be said about the different roles of the State in the Nordic countries. A fundamental difference can be observed in the current debate mainly related to the principally different historical backgrounds of the Nordic coun-

tries. Sweden and Denmark together with England, France and Spain are the oldest states in Europe. They are often referred to as *state nations*. That is, they were recognised as territorially independent states with stable state administrative bodies and functions long before they started to

¹ COM (2003).

Innovations in the public sector

Innovations and policies aiming at enhancing the innovative capacity of regions and nations have often focused on technical innovations and goods. There are, however, some interesting examples where the focus has been placed on so-called 'service innovations' and innovations within the public sector.

One example is the Publin-project on *Innovation in the Public Sector* which has been a research project under the EU Fifth Framework Programme. Publin has studied policy learning and technical and administrative innovation in the public sector, and tried to get a better understanding of behavioural changes, learning processes and the implementation of new or improved technologies in public organisations.

The study covers innovation in policy-making organisations, regulatory agencies and public enterprises, and takes into consideration the influence cultural traits, politics, management, networks and co-operation, entrepreneurship and evaluations has on innovation. The project engaged twelve partners, and resulted in nine reports and eleven national case-studies.

Another example is the Swedish research programme *Innovativa kommuner, landsting och regioner (Innovative municipalities, county councils and regions)*, financed and administered by the Swedish Association of Local Authorities, Trygghetsfonden and VINNOVA. The point of departure here was that innovations in the public sector are as important as in the manufacturing sector. An overarching question here was how municipalities, county councils and regions can create systems that enhance the renewal and development of their activities. In the research programme there were nine research projects on different aspects of this theme.

The deregulation of the public sector may imply innovations, by for instance allowing private initiatives to perform services that previously were reserved for public actors, i.e. child care, health care and education. This may, in turn, imply an innovation of the organisation of the mentioned activities.

More information

The Publin project, <http://www.step.no/publin/>

Swedish Association of Local Authorities, <http://www.skl.se/artikel.asp?C=2033&A=4281>

recognise themselves as nations. Finland, Norway and Iceland are often alluded to as *nation states*, i.e. they started to develop a sense of historical, cultural, linguistic and social community *before* they were able to declare themselves as independent states and start to build all the institutions that are the other side of the concept "state".

It is obvious that a field of conflict exists between state and regions in all of the Nordic countries. The nation state is squeezed between, on the one hand, supranational regionalism from above, i.e. EU regional policies, and on the other hand, an increased regionalism from below. This situation has a complex background due to various kinds of crises which, since the 1970s, have hit not only the Nordic countries but most of the nation states in the Western

world. However, "the withering of the nation state" and "the fall of the strong state" have another side which could be described as "counter actions" from the state. This has most clearly been the case in Denmark, Finland and Sweden. For example, The European Council recently (Strasbourg 31st of May – 12th of June 2005) in a report about *Local and Regional Democracy in Sweden* in rather harsh words criticised the Swedish Government for constantly interfering with local and regional self-government. The programme for Regional Growth Agreements initiated, controlled, evaluated and accepted or rejected by the Government, followed by similar programmes for Regional Growth Programmes and, recently, Regional Development Programmes, have to be seen as utterly centralised

activities. Central agencies and "the state in the region" through the County Administrative Boards (*länsstyrelserna*) have been the key players. Nothing comparable has been seen for instance, in Norway. That is, since 2004 regional development has become an expanded responsibility for the county municipalities (*fylkeskommunerna*), but thus far at least no particular directives in respect of national government's responsibilities in this field have been published. But despite the dominance of the nation state it is obvious that the more strategic development approach is giving way to the emergence of the regional level in the Nordic countries.

It is obvious that innovation policies in the Nordic countries thus far have, more or less, been governed by the central state. The important role of the national level through i.e. control of the main financing instruments and responsibility for selecting initiatives is highlighted in the case studies. Norway seems to be the odd one out in that there is an explicit political declaration from the present Government to "regionalise" more of the governance of innovation policies. The Swedish parliamentary committee ("*Ansvarskommittén*") was presented, in February 2007, and its propositions regarding the division of responsibility between the national and regional level have caused intense debates about the division of responsibilities as well as over the geographical division proposed. In Denmark, it is still too early to say how much power the newly established regions will receive from the Government concerning the development and implementation of regional innovation policies. In Finland, the decision by the Government to reduce the number of Centres of Expertise in order to focus innovation policies into one or two top fields gives an indication of the fact that the central state intends to maintain a strong grip on the innovation policy field.

In most of the case studies examples are provided of actively involved public actors at the regional and, to some extent also, the local level. The involvement of these local actors may, moreover, be connected to the level of local autonomy in the Nordic countries. In this context, it must also be stressed that it is not only the regional and local actors who are implementing the policies. Initiatives also

come from the bottom. The development of the Centre of Expertise programme in Oulu is but one example of the fact that initiatives at the regional and local level influence the development of national policies. In addition, the Icelandic case study highlights the existence of a certain amount of mobilisation at the regional and local levels, however, the national level was an important participant in the development of the Growth Agreement for the Eyjafjörður region. Each case study however highlights the continuing reality that the national level remains of premier importance since it provides a lot of the financing of the instrument. However, the demand for regional, and to some extent also local, co-financing implies that these levels have an important role to play in the initiation and implementation of innovation policies.

The strong state may however be contrasted with the existence of a strong tradition of local autonomy in the Nordic countries. This strong local autonomy may imply that the major cities, given, for instance, their size and the fact that they are centres for higher education, contain company headquarters etc dominate in respect of innovation policies initiated and developed at the local level. Here there is however a risk that if the regional level does not receive increased responsibility and 'undifferentiated' regional policy remains in place, less developed peripheral areas may face increasing difficulty in developing and utilising their inherent potentials.

In the *Working Paper Innovative Strategies and Actions. Results from 15 years of Regional Experimentation*² it was concluded that the region is the most appropriate actor to develop innovation policies. This is in line with the approach found in existing national regional policies, i.e. to let the regions define and work on their own regional strengths. However, this stands in strong contrast with the innovation policies developed by the nation state in the Nordic countries. A relevant question here is whether the Nordic regions are strong enough and have the necessary mandate to enable them to develop the policies the Working Document demands? The challenge here then is to develop a partnership where national and regional actors participate as equals.

Narrow versus broad innovation approach

It seems obvious that the innovation system concept is frequently used as a boundary concept, but with slightly different meanings by different ministries within the same Governments. Looking at the case studies the definitions of innovation used in the investigated instruments are rather fuzzy. This makes it possible to include many things. The main aim is to facilitate entrepreneurship as well as to increase knowledge intensive production.

The innovation policies in the Nordic countries undoubtedly however retain a rather strong focus on hi-tech industry. Traditionally the emphasis here has been on manufacturing industry rather than the service sector and this is still visible, although, there is now a discernable shift towards the latter. In the case studies it is highlighted that traditional production, i.e. steel and aluminium, is ad-

² European Commission (2006b).

dressed by existing policy instruments. Here it is however important to increase the knowledge intensive part of the production process. In a region the shift from the traditional sector, i.e. Oulu, from forestry to information and communication technology and the well-being industries, has been encouraged by the Centre of Expertise.

The usage of a narrow versus a broad approach can also be connected to maturity and to the stage of innovation chain that are addressed by the policy instrument. A general movement is from technical innovation to service and social innovations, and from infrastructure and regional innovation capacity to utilisation and user-driven innovation. In Denmark the notion of societal innovation is more explicit than in the other countries by means of its explicit focus on user-driven innovation, rather than economic and technological driven innovation. Also in Norway a broad approach is emerging, the creation of *Innovation Norway* is an example of this development. A shift can be seen in some of case studies. In the Centre of Expertise programme in Oulu the focus has changed from working on technological innovation to the stimulation of the business applications of these innovations. This approach has an effect on the number of patents sought.

Across all the Nordic countries the need to transfer and to commercialise research findings has been found to be crucial in promoting competitive innovations. This interplay between research and development and the actual commercialisation of those findings in the R&D field has been named in several countries as the main 'know-how'

gap on which significant future efforts should be concentrated.

The fact that it may take time to develop an innovation as well as an innovation system is not explicitly taken into account in the investigated instruments. In general each investigated programmes is limited to 2-4 years. This implies the existence of a rather short term perspective, which stands in contrast to the complexity of the task of creating an innovation system, if such a thing can be created at all. The *Vinnväxt* programme and Norwegian Centre of Expertise do however allocate money for a period of 10 years. Long term financing may, on the other hand, imply that the possibilities for new initiatives to attract financing are limited. However, in some of the case studies it can be seen that the investigated initiative have been developed over several years by using different instruments at different times. This is, for instance, the case in respect of Regional Technology Centre *Aluvaekst*. In the case of Oulu it is also shown that the Centre of Expertise programme in this regional context has had the chance to develop over a period of some 15 years.

In the case studies it can be concluded that in some instruments an explicit *gender or women's perspective* is included, i.e. in *Vinnova's* programme, *Vinnväxt* and SI-VA's innovation infrastructure. The gender aspect also constitutes an important part of the Lisbon strategy, since an increased female labour market participation rate is included as one of the overall objectives to be achieved.

Research policy versus growth and regional policy

The general structure of the country concerning i.e. its administrative division is very important for the design of the respective national instruments. In most countries innovation policy has been and remains intimately connected with research and development policies. However, industrial or growth policy, and regional policy also now increasingly address the question of innovation. When discussing regional policy it must be noted that in the Nordic countries there is *regional policy with innovation dimensions*, i.e. the Regional Centre Programme in Finland, as well as *innovation policies with regional dimensions*, i.e. *Vinnväxt* in Sweden.

In the national reports and the regional case studies it is obvious that the variety of existing policies creates a policy system which is difficult to overview. In addition to growth policies and regional policies, it is also evident that innovation is dealt with in a number of sector policies. Lately, innovation is visible in the comprehensive globalisation strategies developed in some countries. i.e. Denmark and Finland. These globalisation strategies can, moreover, be

directly connected to fulfilling the Lisbon strategy.

The plethora of measures and instruments in use implies that it is difficult to pinpoint which policy instrument really make a difference in respect of boosting innovation and which are not so efficient. This has consequences for the development of new measures. It may also be the case that instruments may be competing with each other, as for instance shown in the Oulu case.

The inclusion of innovation in many policies is coordinated in some countries and rather uncoordinated in others. In Norway (*Innovation Norge*), Denmark (Innovation Council) and Finland (the Science and Technology Council) are all explicit initiatives designed to coordinate sector policies addressing innovation development. Norway has established cooperation between ministries as a means to avoid overlapping or contradictory measures. This coordination seems to be more or less lacking in Iceland, however *Impra* functions as an intermediary agent.

Different ways to tackle the variety of national and to some extent also international policy instrument available

(mainly referring to EU-funding) are highlighted in the case studies. From the local and regional point of view one can see that some actors, i.e. companies, try to navigate among all instruments available in order to get support. The *AluVaekst* Regional Technology Centre in Denmark is, for instance, actively looking for public money from the regional, state, Nordic and European levels.

The operative work to develop an innovation system is mostly undertaken at the regional or local level and is a

task that is performed in a rather complex context. This has to some extent been taken into account in some of the investigated policy instruments. *Vinnova's Vinnväxt* programme does, for instance, have a process-orientated approach, which allocates resources for learning and evaluation during the project. This approach, which is rather resource demanding, has been defined as something that may be needed for the Regional Technology Centres in Denmark.

Innovation and gender

Innovations are increasingly seen as one of the main ways to enhance prosperous nations and regions. Innovations are often perceived as new products produced in a non-linear process in the context of the knowledge-economy. Innovation policies often aim at supporting these processes of creating innovation through different measures. Researchers working with a gender perspective have however argued that such understandings are often "masculinist" since the focus of innovation policies is put on male dominated sectors of the economy, e.g. manufacturing, the car industry, forestry and the paper industry; on producing technical products; and on large companies in the private sector. Sectors of the economy where women are active to a large extent, for example in the public sector, are not seen as 'innovative'.

Measures and goals in relation to innovation policies, also, often focus on developing and enhancing higher education and entrepreneurship – areas of society which are to a large extent also gendered. In addition to this the labour market is also marked by horizontally and vertically gendered divisions. For example women and men are, to a large extent, found in different sectors of the economy, and men dominate the higher hierarchical levels of organizations – also institutions working on higher education, whereas professors to a large extent are men (80 per cent of the professors in Finland are men; and 91 per cent in Denmark). Around 70 per cent of the entrepreneurs in Finland are men, while the figure for Sweden is 75 per cent. From a gender perspective it is perceived to be important to take these gendered divisions into account in discussing measures designed to enhance innovation.

Gender equality policies are also often seen as a horizontal policy area and shall thus be integrated into innovation policies. In the European Union Member States this is also an obligation. However, gender equality is not integrated into innovation policies in the Nordic countries to any higher degree. Another issue emerging in multicultural Europe is also the role of ethnicity and innovation. Here a vast knowledge gap can be defined.

More information:

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Less developed regions versus growth areas

The general development trend in the field of *regional policy* in the Nordic countries points to increasing “regional blindness”, meaning that there are few specific measures now available to address weaker regions, instead all regions have available to them the same tools. One such example is the Regional Growth Programme in Sweden, where the regions are encouraged to make use of their endogenous strengths. The idea of building on regional strengths is evident in many of the investigated innovation policies. This implies that development is likely to be highly dependent on the regional and local context, such as in the *Business Gardens* in Norway, which in turn means a demand for local commitment and local embeddedness. Despite the new approach to regional policy significant differences remain in how much state money goes to different regions. In relation to ‘narrow’ or ‘traditionally conceived’ regional policy most still goes to the less developed regions while measures are weighted.

The national reports and the case studies undoubtedly illustrate the fact that special innovation instruments, i.e. the Regional Technology Centre in Denmark, are also available to non-metropolitan areas in the Nordic Countries. The *Norrland Fund* in Sweden is an explicit measure available for a specific geographical area. *Impri* in Iceland is available for all regions while its rural focus is stressed. The Norwegian programme *Arena* includes a dimension to address also the greater “*omland*” of a stronger centre, where the sub-contractor network of an *Arena*-cluster has been formed. Finland is addressing both the so called “strong” regions at the Centre of the Expertise programme and the “other” regions through the Regional Centre Programme. In the future the decreasing number of Centres of Expertise will imply increased networking between the remaining Centre of Expertise and the Regional Centres. The same approach can to some extent be displayed in the recent development of SIVA’s innovation infrastructure where the *distributed incubators* concept has been developed in order to encourage networking between *Business Gardens* and incubators. Through nationwide intra-regional networking the problem of geographical focusing of innovation policy is to be avoided.

In the case studies significant regional differences *within* the investigated regions can be observed. This implies that not only regional differences within a country must be considered in the development of new innovation policy instruments and calls for more differentiated approaches. However, one can see that this dimension is at least taken into account by e.g. the SIVA’s innovation infrastructure and the *Multipolis network* in Oulu.

In the context of rural policy the innovative approach has not been that obvious thus far. Here it may be the case that the aspect is taken into account in the EU-pro-

grammes, i.e. *Leader*. Lisbon Strategy however now demands that innovation aspects also be included in rural policies and included in the programme period 2007-2013.

In the discussion of the regional dimension it is important to stress that what is considered a region varies between the investigated instruments. In some instruments the focus is even on the local context (i.e. SIVA’s *business garden* concept). This is perhaps not that surprising considering the rather strong position the local level has in the Nordic countries. An undoubted trend here is that functional regions are however becoming more important, i.e. as in the *Vinnväxt* programme. The assumption here being that innovation systems are considered to be functional, and thus do not follow administrative borders. However, the administrative unit remains important since it is here the general connection, if any, with regional development is made and the administrative units participate, both locally and regionally, as partners as well as contributing with co-financing.

From the case studies undertaken we can see that the investigated instruments are included in regional planning documents and integrated as a means of fulfilling the general development goals for the region. The measures are thus not isolated measures. But it is up to the region to include them in the regional growth agreement, local and regional development plans etc. An exception here can be seen in the Danish case study but this may be due to the newly established nature of the regions there.

In the case studies it is shown that the call systems or tendering processes are used as a component of the instrument, i.e. *Vinnväxt*, Centre of Expertise and Regional Technology Centre. There seems to be more competition in Sweden, Denmark and Finland. In Norway there is more focus on peripheral regions. In the process of establishing the Norwegian Centre of Expertise programme extra money is allocated to less developed regions in order to make them able to develop a proposal that could see them qualify as a Norwegian Centres of Expertise. The usage of a ‘call’ system implies the potential to select the most attractive proposals. The case studies show that the system tends to favour already strong and competitive regions, where there already is some kind of mobilisation/cooperation between private and public actors, i.e. *Vinnväxt* in Sweden. Moreover, the approach may imply that one picks the winners and finances things that would have taken place in any case, however, now it becomes a part of the innovation policy and therefore also becomes a way to illustrate – in a propagandistic manner – that the policies are efficient and produce results. Lack of capacity and financing in the application phase may exclude the creation of bids. However, ‘seed’ money is a means to encourage new collaborators to apply.

The regional dimension is explicitly addressed in the

LEADER

Innovation is a key concept of the LEADER Community Initiative. The EU's LEADER programme for rural development aims at supporting new and innovative methods for renewal of rural areas. A LEADER project is to be innovative in the local area and should be transferable and usable in other rural areas. (<http://www.fao.org/sard/static/leader/en/biblio/innovation.pdf>)

Eligible Leader projects are to be locally anchored, innovative, to create networks and new ways of cooperation and to have a bottom-up perspective. Support is only given to associations or community groups - not individuals. LEADER activities contribute to local partnerships, linking public and private institutions as well as the different interests of various local actors in a common strategy. (Eurofutures 2003) The LEADER programme is designed to identify new and innovative directions for the development of the rural economy through an open, integrated approach including almost all possible rural actors. The programme is only to a minor extent directed towards farming activities. (Larsson 2000.)

The LEADER method is considered valuable and it includes important components for local rural development. This method is likely to be strengthened in future, in the new rural development programme period for 2007-2013. For example in Sweden, there were 12 Local Action Groups (LAGs) carrying out the operations within the Swedish LEADER + programme and during the new programme period it is planned that there should be around 40 LAGs (<http://www.skl.se/artikel.asp?C=5296&A=33497>).

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The Swedish Association of Local Authorities and Regions 16/10/2006. <http://www.skl.se/artikel.asp?C=5296&A=33497>

*Innovative strategies and actions. Results from 15 years of Regional Experimentation*³. Here it is stressed that the “more developed regions and large metropolises can adapt to globalisation. Their strong demand for quality goods and services stimulates the activities of a wide range of enterprises and specialised bodies which pool information, knowledge and expertise through their continuous interactions, thus allowing them to seize new innovation opportunities”. In addition, the advanced regions have an advantage since it is here the “competences, infrastructure and capital necessary for innovation” are found. In addition, “the greatest variety of actors and strongest interactions” are found in the advanced regions.

The potential for coping with globalisation is not that strong in the less developed regions. Here the comparative advantage labour costs are mentioned as a means for at-

tracting productive investment. However, this means can only be used in the short term. Consequently, “the establishment of policies in the stronger sectors of their economy” that “facilitate interactions between innovation actors” must be developed. However, it is stated that the mobilisation of the actors “is much more difficult to organise in less developed regions, due to a lack of experience and expertise, as well as a lack of understanding in respect of the mechanism of innovation”. Special measures are thus needed here. It is also stressed that the need to develop special policies for the less developed regions remains. It should be noted that the Nordic countries have traditionally in their regional development policies emphasized – to varying degrees – the need to address different types of regions. This approach is also to some extent visible in policies addressing innovation.

³ European Commission (2006b).

The Lisbon Agenda applied in a Nordic Regional Innovation Policy Context

One conclusion of the current study is that the movement from a *linear* to a more *systemic* approach to the governance of innovation is emerging in the Nordic countries. During the performance of this study we realised that it is increasingly being acknowledged that innovation policies concern non-linear systems. Social systems are complex and thus non-linear. Traditionally however they have been *regarded* and *governed* as if they were linear. The linear way of thinking of innovation, implying that innovations are developed in a research laboratory and then put into use by a company or a community, is now increasingly being replaced with this new *systemic vision*. This systemic approach means that innovations emerge “from the quality of interactions between producers, users and mediators of knowledge in the regions: local authorities, companies, centres of production or of transfer of knowledge, local coordination institutions, bodies providing financing of SMEs or research, collective foresight systems, etc.”¹ The regional level is considered to be well suited to these kinds of interaction. The clearest presence is in the connection with the promotion of partnership. When more and more institutions now say that we have to accept non-linearity this circumstance raises questions about governance, leadership and organisational issues.

Before addressing what implications the Lisbon Agenda may have for regional innovation policies in the Nordic countries it must be pointed out that the emphasis on innovation *did not* first appear through the Lisbon Agenda. The innovation systems concept has been used previously in the OECD as well as in the EU and national contexts. However, the Lisbon Agenda implies a stronger emphasis on innovations and gives innovation a significant role in achieving economic growth. What does this approach imply for the development of regional innovation policies in the Nordic countries? To be able to answer this question we will compare the cross analysis undertaken against the “ideal” of the Lisbon Agenda. In the following sections the main aim is thus to discuss what policy implications the tensions discussed in the previous chapter may have for the development of regional innovation policies. These highly political issues need to be considered when the ap-

plication of the Lisbon Agenda in a Nordic regional innovation policy context is discussed.

Before discussing the policy implications the Lisbon Agenda may have for the Nordic countries it is also important to stress that there are major structural differences concerning the basic Nordic and the more general European conditions for innovation. These differences are important to bear in mind in relation to the development of regional innovation policy. In the Lisbon Agenda the preconditions can be summarised as the existence of a well-functioning market economy, which is open to structural change. The labour force is skilled, mobile and flexible. The labour force in the Nordic countries is skilled, in that sense the potential to fulfil the Lisbon objectives is promising. However, the required level of mobility and/or flexibility can be questioned. The well developed welfare system and employment rules are increasingly seen as a hindrance to mobility and flexibility among the labour force. In Denmark, the *flexsecurity* model, implying rather liberal employment rules in combination with a rather generous unemployment benefit, is one way to encourage increased mobility on the labour market. The Nordic countries thus face specific preconditions, due for instance to their sparsely populated nature. This can be seen as a “handicap” for Nordic countries and implies the existence of significant geographical and regional differences, i.e. metropolitan versus peripheral areas and areas in between these categories. Another characteristic here is that the Nordic countries, historically, have been rather homogeneous in population terms. This homogeneity may also be connected to the consensus culture in most Nordic countries. A weakness in respect of such homogeneity may be that it may be difficult to include social and cultural minorities. A heterogenic composition of and diversity within a group, i.e. regarding gender and ethnicity, have recently been revealed to, potentially, pay large dividends in respect of encouraging innovation². The gender dimension is not as yet however taken into consideration in the innovation policies of Denmark, Finland and Sweden.³ In addition, the structure of Nordic society has been rather

¹ European Commission (2006b).

² Danish Agency for Science, Technology and Innovation (2007).

³ Pettersson, K. (2007).

egalitarian and non-hierarchical as compared to the feudal heritage of continental Europe⁴. These conditions may have encouraged an independent style of thinking, the focus on finding solutions and a rather high degree of trust between actors. Finally, the European and Nordic understanding of the concept of “region” is different. Due to the

prevailing Nordic geographical circumstances regions tend to be smaller in respect of population size in the Nordic countries and the regional level has, historically, been rather powerless. The perception of the region and the power allocated to this level however differ also *between* the Nordic countries.

Role of the public and private actors

The ideals found in the Lisbon Agenda are clearly *market oriented* and to some extent based on the predominance of neo-liberal elements. The Nordic countries have a strong tradition of an extensive and interventionist welfare system and a strong public sector (see typologies for welfare systems). In the last two decades the development trend has moved towards an increased role for the market economy, i.e. privatisation and deregulation, in all Nordic countries. What role will the welfare system and public sector have in the future? Will they be diminished or will the public sector maintain its hitherto strong position? How, moreover, can this overall development be related to innovation policies?

The answer to this question in the Lisbon Agenda is that the market has a leading role to play in achieving the aims of the Lisbon Agenda. In the Lisbon Agenda it is also noted that innovation is closely linked to entrepreneurship and SME's. If innovation is to be stimulated this can only mean the increasing presence of the market in the production of goods and services produced by the public sector today. During the last two decades private companies have increasingly taken over the production of goods and serv-

ices previously produced by the public sector. The question now then is how much more of the total production of goods and services the market will be allowed to take over in the Nordic countries?

- To summarise, the message found in the Lisbon Agenda is that the public sector and public-sector actors must be prepared to leave even more assignments to private stakeholders, who can often perform such tasks more efficiently than public actors. A specific Nordic application here may be that the definition of the main objectives of the activities is political and open. But the implementation can be given to other stakeholders. This development may however be more relevant in central parts of the countries where there is competition, but may be more difficult in peripheral areas where the level of competition may be inherently weaker. A typical Nordic approach to this issue would also be to encourage innovation by different means *within* the public sector. For instance, innovation may be encouraged in the process of public procurement.

Role of the state and regions

The most important element that the Lisbon Agenda entails for innovation policy in the Nordic countries is the increased role of the regional authorities in innovation policies and in stimulating innovation. In general, the Nordic regions have traditionally been rather powerless and their role has thus far been neglected in most Nordic countries since innovation policy has been governed by the state. This aspiration will consequently imply substantial changes for the Nordic countries. A real challenge exists to define the new roles of the levels with the aim of playing each partner to its strengths. In Norway, and to

some extent in Denmark, major changes are currently taking place in respect of this issue and more changes are planned in Norway. In Sweden and Finland similar revisions are about to appear, but due to fact that existing structure are so deeply rooted it may take some time, at least in Sweden, to provide the regional level with the autonomy required.

- If the regions are considered to have an important role to play in appreciating regional needs this level must receive an increased and formal level of competence to initiate regional innovation policies. But from a Nordic perspective the role of the state and of national instruments remains important for innovation policy

⁴ When comparing the extent of autonomy in the workplace in EU27 by country Denmark, Sweden, Norway and Finland occupy the four of the top five positions. Source: European Foundation for the Improvement of Living and Working Conditions (2007).

due to the limited critical mass available. Here, a specific Nordic application can be that the key decisions are made by the state, while the detailed decisions related to the specific regional conditions are made by the regions. In addition, the role of the state may be to ensure that sub-optimisation is avoided. Moreover, the national level may coordinate, coach, finance and make demands (i.e. sustainability and diversity) and

formulate the good questions. This role can be summarised as “*trigga det bästa och hindra det värsta*”. It is important, moreover, that sufficient space is made for initiatives coming from the regional and local levels. A challenge here remains the need to develop a policy system that enables bottom-up processes to meet top-down policy. Here a regionally differentiated approach may be applied.

Role of regional innovation policy

In the Lisbon Agenda the *definition of innovation* is vague and is used synonymously with entrepreneurship and SMEs. This approach is also seen in the policies of the Nordic countries. There is a trend here that innovation is moving away from predominantly being used as a technical concept to instead be seen in the context of a much broader definition. This development is also evident in the demand to include innovation in more policy sectors than simply research and development policy. This development is also encouraged in the Lisbon Agenda. Due to the “ubiquitous nature” of innovation policy, innovation is encouraged by the EU Commission to be included in different policy areas, i.e. innovation (research and development), competition, trade, employment, regional and environmental policies etc.⁵

- From a Nordic perspective a broad innovation approach, including and addressing many segments of society, i.e. women, the young, immigrants, high and low tech, the production of services and goods etc, may be considered in order to make use of all available resources. This approach is a necessity in order to maintain and increase the hard won international competitiveness of the Nordic countries. The application of a broad innovation approach in the Nordic countries implies that innovation must be included in many policy fields, i.e. regional policy. Here coordination is needed in order to avoid sub-optimisation and competition.

Regional policy has become an important means for the governments of the EU Member States to stimulate innovations. This is, for instance, seen in the Structural Fund programme for the period 2007-2013. However, state aid and subsidies are not allowed if this *distorts the open competitive market*. From this viewpoint the traditional regional policy tools that have been used in the Nordic countries are quite problematic. Traditional regional policy has been seen from a liberal economy perspective as a means of distorting the logic of the market since weaker

regions received state subsidies and tax relief. But again, from a traditional regional policy perspective the new wave of regional innovation policies with an emphasis on only a few globally competitive centres (and sectors) can be interpreted as a similar distortion of the competitive situation.

The adoption of a more liberal policy framework is based on the overall idea that the locomotives of the economy (globally competitive “Centres of Expertise”) will consequently benefit regions and the whole country. However, from the viewpoint of the “regional innovation policy” framework, which has been very eagerly followed in the Nordic countries, the adoption of practical policy tools has thus far met obstacles. For example, the EU Structural Funds have traditionally been directed towards the traditional regional policy aims of regional equity and cohesion. For the period 2007-2013 they have however received an important additional role to promote innovation and research and development.

- In the Nordic countries differentiated solutions regarding regional innovation policy are necessary due to the existence of regional differences. The regions must take their own conditions as a point of departure and focus on profile, specialisation and their own *niche* and strengths in order to make use of the regional differences and resources existing in the Nordic countries. Such a decentralisation will increase the tolerance for differences concerning i.e. the implementation procedures of innovation policies and regional and local needs. The focus here will be on increased competitiveness and not on territorial equalisation. Here it may also be necessary to more actively develop specific instruments for the less developed regions as an alternative to the increasing use of competitive calls. From a policy point of view it is also important to support ‘*coopetition*’, implying co-operation in combination with competition between regions. Here also increased cooperation between the advanced and less developed regions may be encouraged by policy measures.

⁵ COM (2003).

Instruments and knowledge gaps

The Nordic countries already have elements of the Lisbon Agenda in place in their innovation policies. But the strict application of the Lisbon ideal would imply new approaches for the future organisation of the innovation policy, and to some extent of the whole nature of society, in the Nordic countries. But some of the tensions found in the policies addressing innovation in the Nordic countries are unique to them and need to be taken into consideration in order to develop a workable 'Nordic application' of the Lisbon Agenda.

In this concluding section we will return to the question of whether it is possible or not to define a set of realistic objectives and support schemes which are essential for creating a regional innovation policy that addresses Nordic regions in general and regions outside the Nordic metropolitan areas in particular while also trying to give some examples of instruments that could be used in future regional innovation policies addressing various types of regions.

A prerequisite for developing realistic objectives and support schemes for regional innovation policies is the structure of the *business community and educational level* in the Nordic regions. From data and maps presented in the chapter on the "Nordic Innovation Scene" it is clear that significant regional differences remain within the Nordic countries. Data displaying, for instance, specialisation in high-tech manufacturing and/or research and experimental development in the natural science and engineering in Nordic labour markets (see figure 10) shows that the metropolitan regions in the Nordic countries are i.e. strong in both science and high technology. The further away you move from these centres the less the focus is on high-tech manufacturing and/or research and experimental development in natural science and engineering. This pattern is also seen regarding educational levels. Although not explicitly addressed in this study, this question also includes a gender dimension. Highly educated women tend to live in the centres rather than in the peripheries.⁶ We can only speculate what consequences this demographic challenge has had and will continue to have for innovation endeavours.

Another important condition for defining realistic objectives and support schemes for regional innovation policies is the level of *regional capacity and competence*. Do the regions that are the main beneficiaries of the national regional innovation policy possess the formal competence and also the capacity to work with the tools offered? The level of competence is first and foremost influenced by the formal governmental system applicable while regional capacity is influenced by the regional conditions concerning i.e. higher education institutions, dominant business sec-

tors such as traditional manufacturing industry, tourism, mobilisation of networks, etc.

Another important circumstance is the transferring of policies from one level to another. The implementation of the Structural Funds programme during the 2007-2013 period can be seen as actions towards the implementation of the Lisbon objectives defined at the EU-level, transferred to the regional level via the national level. But little is known about how national policies are transferred to, and interpreted at, the regional level. More knowledge about this issue is necessary in order to enable a more regionally differentiated innovation policy connected to specific regional conditions to emerge. The regional structure, regional capacity and the regional competence level are closely connected to the *enabling mechanisms or support schemes* the national regional innovation policies are expected to develop and offer in the future. Some regions are strong enough to handle the work on innovation on their own. What, however, about those regions that are not?

To summarise, the following knowledge gaps, of importance for the future development of regional innovation policies can be defined. The goal of filling each of these gaps would benefit by having a Nordic and European exchange of experience and by instilling a comparative approach to such questions.

- More knowledge and a systematic approach for investigating the transfer and interpretation of national policies to the regional level is needed. More knowledge is needed in order to make the instruments work and to be able to develop a new generation of public management systems⁷. In this process, *real time evaluation* is a tool at hand for improving the dialogue between the central and regional level. *Nutek* in Sweden is currently beginning a real time evaluation of the implementation of the regional Structural Fund programmes in Sweden in order to investigate different actions in various regional settings. Here different ways to coordinate the policy fields addressing innovations and also peripheral areas, i.e. rural policies, could also be investigated and developed further.
- Whether more sophisticated enabling mechanisms, aiming at i.e. mobilising actors, are needed in order to support less developed region in their work with innovation, better knowledge of the role of special measures, such as coaching, counselling and supervising, which are of special interest for the less developed regions, may be needed. *Vinnova's Vinnväxt* programme has, for instance, an emphasis on, and resources allocated to, the process the development of innovation

6 Rauhut, D. et al (2008).

7 Steineke, J. M. & Hedin, S. (forthcoming).

Tools for regional innovation policy

In the European Commission Working Document *Innovative strategies and actions. Results from 15 years of Regional Experimentation* a need for new tools in innovation policies is stressed. *Experimentation* is considered to be a vital element in policies and in the Structural Fund programme period 2007-2013. "The organisation of innovation systems is a long-term effort which is supported by successive experimentations." Above all this will imply that there will be a parallel system consisting of a regulation system and a system for experiments. Governance will be the concept that unites them. A *broad partnership* can be used to define what should be done to promote innovation. The partnership idea is already rooted in the Nordic countries. It is also obvious that a broad innovation approach is emerging. To be a success, *long-term policies* are used and the policies encouraged a "common vision of innovation as a factor for regional development across all activities: economic, social and cultural". Another tool presented is *real time evaluation*, which stands in contrast to i.e. *ex-ante* evaluation and can be defined as a "key to success" for developing regional innovation policies. The evaluation "should make it possible to modify actions underway or even to redirect the strategy in order to maximise its regional impact". This approach has been used by Norway in the Social Sciences since the 1950s and is also emerging in Sweden (i.e. the *Vinnväxt*-programme) and Finland, but is new in the Southern parts of Europe. There are also a number of other tools and instruments of varying character which can be used in innovation policies in the Nordic countries. Below are some examples:

- The 'call' system / project selection method, built on a "competition" between proposals, i.e. *Vinnova's Vinnväxt* programme
- Establishment of new institutions and agencies and reorganisations of i.e. ministries and agencies, i.e. the ones recently undertaken in Norway resulting in Innovation Norway and the *Norwegian Research Council*, both characterised by a broad approach to innovation.
- The European Innovation Scoreboard, which summarises data on innovation performance in each Member State.
- The Trend Chart's database of innovation policy measures, identifies nearly 700 innovation support schemes around Europe. It describes each scheme's target group, objectives and mechanisms, and provides an account of its successes and problems.
- Regions peer reviewing other regions, DG Regio has funding available for this, but that is not used to any greater extent.
- The *Innovating Regions in Europe network* brings together around 235 member regions from the EU Member States, as well as from Iceland, Israel, Norway, Switzerland and Turkey. The regions are mainly represented in the network by a regional authority or a regional development agency. Approximately 150 of the IRE member regions have either developed, or are developing, a regional innovation strategy, with support from the European Commission. Representatives from additional regions are partners in regional innovation policy impact assessment and benchmarking projects.
- PRO INNO Europe is an initiative of DG Enterprise and Industry which aims to become the focal point for innovation policy analysis, learning and development in Europe, with a view to learning from the best and contributing to the development of new and better innovation policies. The INNO Learning Platform project aims to promote trans-national collaboration in the field of innovation policy and practice. The main objectives are to animate and promote transnational cooperation activities, to facilitate the exchange of experiences and trans-national policy learning activities by selecting good practice solutions on designing, implementing and evaluating innovation policy measures at the national and sub-national levels, and to promote their adaptability and transferability to other European countries and regions. The INNO-Nets aim to stimulate trans-national co-operation among different national or sub-national innovation programmes and focus on cluster policy cooperation, support for knowledge-based SMEs and start-ups, transnational knowledge valorisation, the links between industry and research as well as promoting innovation in services. The European Cluster Alliance is an umbrella initiative built upon 4 ongoing cluster policy INNO-Nets and works on sharing experiences and knowledge about cluster policy development in Europe.

systems implies, including *real time evaluation*.

- More knowledge about *experimentation* as a method for developing policies is needed, especially if more differentiated policies concerning innovation are to be developed in the Nordic countries in order to better adapt to regional differences. The government at the various levels should take direct action in the experimental process and act as a learning organisation. Here the network *Innovating Regions*, the project INNO Learning Platform and European Trend Chart's database could all be useful tools.
- Furthermore, more knowledge is required in respect of the regional structure and its connection to, and influence on, innovation performance and potential, particularly in the public sector. The broader defini-

tion of the concept of 'innovation' asked for from the European Union will also influence the *future measurement of innovation*. In addition, a more sophisticated territorial approach, implying the inclusion of the regional level in the measurement must be developed if this level is given an increased role in the development of innovation policies. This work can be performed by the Nordic countries in cooperation with the European Innovation Scoreboard.

- Finally, more knowledge is needed on the relationship between the regional growth policy now applied in the Nordic countries and the regional cohesion policy promoted by European Union. What tensions can be defined between these approaches and how do they interact?

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Regionally Differentiated Innovation Policy in the Nordic Countries – Applying the Lisbon strategy

Nordregio Report 2008:2

This report provides an analysis of the Nordic innovation policies of relevance for regional innovation systems. The central question addressed is how national policy makers can best apply the broad Lisbon strategy goals to the specific creation of regional innovation policies adapted to the Nordic context.

Meeting the ideals and goals of the Lisbon Agenda may imply significant changes in the Nordic countries. Specifically, if innovation is to be stimulated in the public sector this demands an increased role for the market in the production of goods and services produced by the public sector.

The data available tends to highlight the fact that the metropolitan areas dominate in terms of innovation performance and potential across the Nordic countries. Regional differences must thus be considered in the context of the development of innovation policy instruments, while more sophisticated enabling instruments will undoubtedly also be needed.

In the EU context the regions are viewed as being the actors best able to appreciate local and regional needs and thus best placed to develop innovation policies. Historically, the state has controlled innovation policy in the Nordic countries. The regional level may therefore need to be granted formal competence for the development of regional innovation policies.

The EU commission has asked for the application of a broad view of innovation. Innovation policy in the Nordic countries has traditionally however been concerned, predominantly, with research and development policies, though all of the Nordic countries are currently in the course of adopting a broader approach to innovation. By its very nature this broader approach ensures that a wider and ever expanding range of policy fields address the notion of innovation. Better coordination between the various policy fields addressing innovation may thus be needed in order to avoid competing or overlapping measures at the national and regional levels.



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