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A new deal for ERA. Lessons learnt from Nordic R&I cooperation?

NORDERA
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NORDERA

Preface

This report is a formal deliverable under Work Package 5 (Dissemination) of the NORDERA project (Lessons Learnt from Nordic Coordination in the Context of ERA). NORDERA is an ERA-NET Support Action coordinated by NordForsk with the Nordic Innovation Centre (NICE) and the Joint Research Centre (JRC)/Institute for Prospective Technological Studies (IPTS) as partners. By studying the Nordic region's experience with research and innovation (R&I) cooperation, the NORDERA project supports ongoing coordination of national research programmes, thereby encouraging joint programming both in the Nordic region and in the European Union. This report is the final deliverable of the NORDERA project. It is based on the two previous reports in this project: "Nordic R&I cooperation. Achievements and Challenges" and "Nordic R&D cooperation at the EU level" as well as the final conference that took place at Hotel Metropole in Brussels on 25 November 2010. The conference attracted participants with extensive knowledge about these issues from a number of institutions and countries in Europe.

I would like to thank the project group for their work on this project, and Pernille Rieker and Monica Lund in particular for organising the final seminar and writing this final report. Special thanks to the Advisory Board¹ for giving valuable feedback during the entire project period. Finally I would like to thank the European Commission for its financial support. The work that has been carried out under this project is important, and NordForsk will be following it up in various ways. For more information about the NORDERA project, and the different deliverables, please visit www.nordera.org.

Oslo, 5 December 2010



Gunnel Gustafsson

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Introduction - setting the scene

The EU Member States are struggling with debt and financial constraint, which intensifies the pressure to improve cost-effectiveness and increase synergies in research and innovation policy. In addition, Europe is facing intense global competition in science and knowledge, as new regions emerge as powerful, efficient and attractive actors in the global knowledge market. Successful, coordinated European research and innovation policy is vital to fuelling economic growth, lowering unemployment and ensuring rapid recovery.

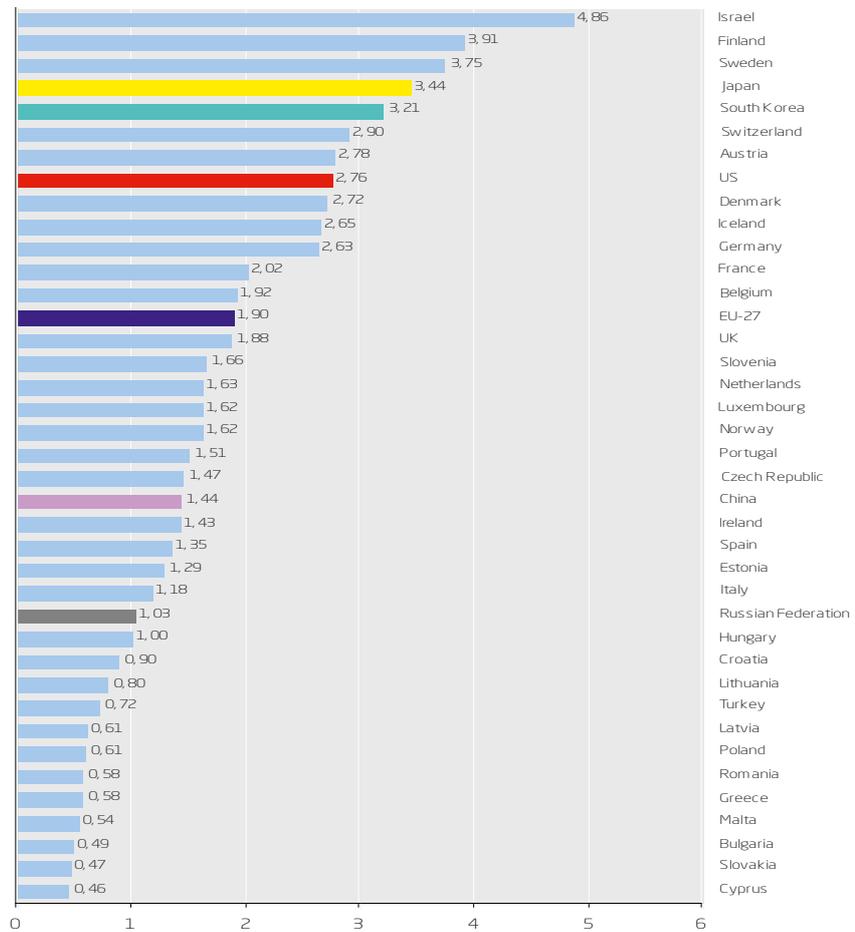
In her keynote speech at the final NORDERA conference, Anneli Pauli, Deputy Director-General of



Anneli Pauli, Deputy director of DG Research in the European Commission

DG Research at the European Commission, pointed to the fact that over 75% of global research investment takes place outside the EU and that the EU's share is decreasing due to new global players in science and technology. She argued that Europe must invest more resources more effectively to be able to compete globally. Interestingly, she pointed out that two of the Nordic countries, Finland and Sweden, scored high internationally in terms of R&D intensity (number 2 and 3, respectively). Denmark and Iceland are also among the top 10, while Norway, which is the wealthiest of the Nordic countries, invests far less in R&D.

R&D Intensity (GERD as % of GDP), 2008



Source: DG Research Data: Eurostat, OECD

The most pressing problem for European research and innovation (R&I) policy, she argued, is that third countries still see Europe as 27+1 rather than as a major partner in R&I cooperation.

How to respond to global challenges?

European R&I policy must deal with new challenges, meet new requirements and find ways to cope with the new responsibilities. The Lund Declaration from 2009 states that European research must focus on the “Grand Challenges” of our time, moving beyond rigid thematic approaches. A new deal is called for among European institutions and Member States, in which European and national instruments are well-aligned and cooperation is built on transparency and trust.



Gunnel Gustafsson, Director of NordForsk

In her presentation, NordForsk Director Gunnel Gustafsson described the research needed to respond to the Grand Challenges as well as the areas in which global issues are knocking at our door, such as climate change, pandemics and financial crises. She argued that the sense of urgency arising from the challenges we are facing makes international and regional collaboration a necessity. She pointed out that we can no longer afford to carry out the same tasks separately, and that if we are serious about research and innovation, we must consider a division of labour

There are fears that funding research to respond to the Grand Challenges will take resources away from basic research, but this should not be the case. Different actors have different interests, and it is important that we look closely at the institutional aspects and introduce incentives for change. According to Gustafsson, a new mindset is needed. International cooperation is essential and regional platforms, such as those in the Nordic region, may have a crucial role to play.

Europe has already made significant steps towards a more integrated, coherent policy, but further efforts and reforms are needed. According to Anneli Pauli, Europe needs to educate a greater number of outstanding researchers, reform the university sector and strive to create closer links between academia and industry. In addition, a simplification of funding instruments and better coordination and/or division of labour between the various levels of governance (Member States, sub-regions and the ERA) in Europe is also vital to achieving these goals. Europe can still gain much new insight from studying its own experience, as well as learning more from the experience of the Member States, the US and the Asian countries, as well as from other forms of regional cooperation.

The aim of the NORDERA project has been to contribute to this learning process by examining research and innovation (R&I) cooperation within the Nordic region. While the Nordic region may not immediately appear to be a representative sample, consisting as it does of five relatively small, wealthy and homogeneous countries in northwestern Europe, we believe that the region’s experience may nonetheless prove valuable for Europe at large. In this final report we focus on what the EU can gain from the Nordic experience, and reflect briefly on how lessons learnt from the Nordic region can be transferred to the much larger European context.

The Nordic region as a source of inspiration

At the final conference Gunnel Gustafsson argued that the results of Nordic regional cooperation may provide valuable input for Europe. She pointed to what she called “the Nordic model”. Many issues at the top of the European agenda for R&I development are already being addressed in the Nordic region. For example, the region has launched the Nordic Research and Innovation Area (NORIA), a Nordic equivalent to the European Research Area (ERA) that has quite similar objectives and ambitions. Nordic researchers have developed a rich network of informal transnational research communities with a high degree of continuity, mutual trust and open channels of communication. Moreover, many of these ties have been created, developed and sustained using limited financial resources, with relatively low administrative costs and burdens. Although the global ranking of European research as a whole is falling, an analysis of publication activity reveals a significant increase in the number of scientific articles published by Nordic researchers in recent years. All of the Nordic countries are included among the world’s most cited countries, ranging from Denmark in fourth place to Finland in eleventh place (Schneider, 2010). Although achieving full integration of R&I policies is difficult, the Nordic region provides some inspiring examples. Compared to other countries, Nordic R&I policies have been relatively successful in promoting the establishment of real common pots in the Nordic region, most notably the Top-Level Research Initiative (TRI). Although smaller than similar EU centre schemes, the Nordic Centres of Excellence (NCoE) scheme is also an example of the successful use of common pots.

The Nordic region – Long-standing cooperation

Before we turn to the topic of R&I, we will briefly present the main elements of Nordic cooperation. Formalised cooperation between the Nordic countries is one of the oldest, most extensive examples of regional cooperation in the world. It began as parliamentary cooperation with the establishment of the Nordic Council² by Denmark, Sweden, Finland, Norway and Iceland in 1952. It was further developed into intergovernmental cooperation built on consensus-based decision-making with the establishment of the Nordic Council of Ministers in 1971. Among the most important achievements are the establishment of a Nordic passport union in 1957, a common labour market in 1992, agreements on the right to vote and stand as candidates in local elections, and access to higher education.

The purpose of Nordic cooperation is, on the one hand, to make it attractive to live, work and do business in the Nordic region and, on the other hand, to strengthen the role of the Nordic countries internationally. Nordic cooperation may be found in many important areas, such as business development, the environment, welfare and the cultural sphere, in addition to research.



Gard Titlestad (Nordic Council of Ministers),
Gunnel Gustafsson (Director of nordforsk),
Carlo Rizzuto (former chair of ESFRI)

The Nordic countries are relatively small, wealthy welfare states with open economies and large public sectors. Their economies are characterised by relatively low unemployment, flexible labour markets and small wage differences. There is also extensive tripartite cooperation between employees, industry and the government sector. Although composed of small states, the region as a whole is economically significant. At the final conference Gard Titlestad, Head of the Department for Knowledge and Welfare at the Nordic Council of Ministers, pointed out that in terms of size, the economy of the Nordic region ranks among the top 10 economies of the world. This means that the economy of the Nordic region as a whole is larger than those of Russia, Canada, Mexico and India.

² The parliamentary cooperation involves members of the national assemblies of Denmark, Finland, Iceland, Norway and Sweden as well as from three autonomous areas: the Faroe Islands, Greenland and the Åland Islands.

Despite the many differences between the Nordic countries – different languages (there are major differences between Scandinavian and non-Scandinavian languages), different approaches to the EU and different policies in many areas – the region has achieved a great deal, largely due to the common cultural community and a high level of mutual trust among its members. In addition to more formalised cooperation under the aegis of the Nordic institutions, a large portion of the cooperative activities in the Nordic region consists of non-formalised networks and associations. It is by and large this non-formalised cooperation that forms the basis for overall Nordic cooperation. In his speech at the NORDERA conference, Titlestad underlined that the greatest strength of Nordic cooperation is bottom-up networking. He further emphasised that Nordic R&I cooperation has found a way to balance bottom-up and top-down approaches, as exemplified by the Top-level Research Initiative (TRI).

Nordic R&I cooperation

Nordic R&I cooperation is characterised by a great number of institutions and associations covering most sectors. In addition to formalised cooperation (under the Nordic Council of Ministers (NCM)), there are also numerous public and private institutions and associations that promote Nordic cooperation (NordForsk, 2009b). According to Gard Titlestad, although budgets are relatively small,³ 50% of the NCM's budget is invested in the area of knowledge and innovation. The limited financial resources available for Nordic research give rise to an ongoing discussion on how to improve effectiveness and utilise these resources optimally, as well as how to design and launch programmes in collaboration with research councils in Member States to secure matching funding.

Steps have been taken to boost the effectiveness of Nordic R&I cooperation. The establishment of the Nordic Research and Innovation Area (NORIA) was inspired by the concept of the European Research Area (ERA) launched by the European Commission in 2000 (European Commission, 2000).⁴ The NORIA concept sets out a forward-looking vision for the development of an internal market for research and innovation in the Nordic region (Björkstrand, 2004). To complement the NORIA initiative, the Nordic business sector established the Nordic Innovation Policy programme (NCM 2004). The NORIA concept highlights the link between the EU and the Nordic region and emphasises that Nordic research cooperation is to be aligned with and become an integral component of the ERA. At the NORDERA conference, Titlestad made it clear that the NORIA is a true part of the ERA and has a leading educational role in Europe, promoting free movement of knowledge. The NORIA initiative is designed to promote further development of the Nordic region into a leading area for R&I, thereby enabling the region to wield greater influence in relation to future Framework Programmes and EU R&I policy in general, as well as making it a more attractive partner for international research cooperation. In the field of R&I, the initiative represents increased confidence in Nordic cooperation as a supplement to EU-level cooperation. Two institutions – the Nordic Innovation Centre (NICe) and NordForsk – have been established partly as a result of the NORIA process and partly as a result of focusing Nordic activities in specific policy sectors (the research/education sector and the business sector).

Although such efforts to expand formalised Nordic R&I cooperation are crucial to strengthening Nordic R&I cooperation as a whole, it is interesting to note that Nordic researchers cooperate even when no specific funding has been allocated for that purpose. There are many examples of non-formalised R&I cooperation between researchers, groups of researchers, companies and institutions within numerous

3 The funding allocated via the Nordic Council of Ministers' budget amounts to around EUR 20 million a year. In addition, there are various co-funded programmes, such as the TRI, that receive additional funding directly from Member States.

4 For instance, the NORIA objectives are very similar to those referred to in the ERA green paper. They call for the establishment of more Nordic Centres of Excellence (NCoE), increased researcher mobility within the Nordic region, better coordination between the Nordic research councils, increased research-related networking and more efficient use of common infrastructures.

disciplines and branches of industry in the Nordic region which have been nurtured over a long period of time. This indicates that researchers find it both important and fruitful to cooperate on a wide range of topics, regardless of limited funding prospects. One good indicator of non-formalised research cooperation is the large number of Scandinavian scientific journals, which are often linked to some kind of association. In a mapping study, the Norwegian Institute for Studies in Innovation, Research and Education (NIFU STEP) identified no fewer than 163 Scandinavian journals within a variety of academic disciplines (NIFU STEP, 2010).

Nordic R&I Cooperation and the Realisation of the ERA

Let us now turn to the relationship between Nordic R&I cooperation and European R&I cooperation. It is important to stress that Nordic R&I cooperation is not a substitute for cooperation at the European level. Rather, it has the potential to reinforce the Nordic countries' position *within* the framework of European cooperation, thereby bolstering the ERA as well.

However, the focus of Nordic R&I cooperation is first and foremost on research and innovation at the *Nordic* level to create Nordic added value. According to Dan Andree (2009), the main goal of instruments at the Nordic level is generally to strengthen the Nordic region, which entails activities to promote Nordic cooperation. Nevertheless, Andree argues, Nordic instruments will in general have much more impact on the implementation of the ERA than most national instruments.

There are several examples of Nordic instruments and programmes that have the potential to make the Nordic region stronger, more attractive and more visible internationally (NordForsk, 2009b). This carries importance beyond the borders of the Nordic countries, as enhanced Nordic R&I cooperation may in turn strengthen the ERA, as well as promote broader international R&I cooperation.

In 2008 the European Commission launched the “2020 Vision for ERA” stating that by 2020 all players will fully benefit from the “fifth freedom” across the ERA: free movement of researchers, knowledge and technology. According to this vision, the ERA will provide attractive conditions and effective, rational governance for carrying out research and investing in R&D intensive sectors in Europe by 2020. The Nordic Research and Innovation Area (NORIA) was established to make the Nordic region a leader in R&I, thus mirroring the objectives of the ERA to a large extent.

Nordic strengths in R&I

In addition to actively participating in the ERA, the Nordic region has produced positive results in terms of joint initiatives, use of joint funding models, and achieving excellence, mobility and researcher satisfaction. This is particularly interesting when we take into account the limited budgets available for these kinds of cooperation.

1. *Pooling of resources and joint R&I initiatives.* According to Gard Titlestad, joint initiatives of a certain scale are necessary for solving the Grand Challenges. All of the countries in Europe need to cooperate, and the Nordic region may serve as a solid building block for such cooperation. The Nordic region has had notable success in creating joint Nordic R&I initiatives using common pots in recent years. In fact, the formalised Nordic cooperation in itself may be viewed as a common pot with no fair return. There are several examples of co-funded programmes that use the common pot model (NordForsk, 2009b).

The Top-level Research Initiative (TRI) on climate, energy and the environment is the most recent, most ambitious example of such an initiative. With a budget of DKK 400 million (EUR 54 million) over a five-year period, it is the largest joint Nordic research programme and represents a significant

step forward in advancing Nordic R&I collaboration.⁵ The programme is jointly administered by NordForsk, the Nordic Innovation Centre and Nordic Energy Research. It is interesting to note that the Nordic countries have managed to establish a costly, comprehensive, large-scale programme on climate, energy and the environment in a rather short period of time. The TRI is also the only Nordic programme that conforms somewhat to the EU definition of “joint programming”⁶.

Another programme or instrument that has the potential to contribute to strengthening the Nordic region is the Nordic Centres of Excellence scheme. A *Nordic Centre of Excellence* (NCoE) is a network of existing, outstanding national research groups and units that form a virtual centre with common objectives and management and a joint research plan. National sources are expected to provide basic funding for the NCoEs, with Nordic support as a supplement to such funding. The NCoE Programme is an effective means of bringing the *crème de la crème* of Nordic research into the European research arena, and Nordic researchers may find that their experience with Nordic research cooperation is a significant advantage when competing against or collaborating with other European research units within the ERA.

One of the main conclusions of the NORDERA project is that it appears to be easier for Nordic funding agencies to enter into joint funding and common pot agreements than it is for their European counterparts. A look at the joint calls under the ERA-NET scheme reveals that the real common pot model is used relatively little. It is, however, interesting to note that the ERA-NETS with intense Nordic participation use a real common pot more often than the networks with no Nordic participation {IPTS/JRC, 2009 #1299}. This may be due to the fact that the Nordic countries are relatively homogeneous, have shared views on key challenges, and have a long history of cooperation based on mutual trust and recognition. For example, under the ERA-NET scheme, the SAFE-FOODERA project, which has participants from 24 countries and a total budget of EUR 3.7 million, launched two calls that used a combination of a common pot and a distributed pot. The Nordic countries contributed funding for half of the common pot for each call, while the other countries provided the other half.

2. *Excellence in research.* It is notoriously difficult to determine excellence in research. However, there are indications that the Nordic countries are performing rather well. Nordic researchers score high on international citation indexes and in terms of the number of scientific publications (Schneider, 2010). In addition, the NCoE Programme is strengthening already strong research groups, and most of the centres have attracted attention far beyond the boundaries of the Nordic region.

Research has also shown that the Nordic countries are active participants in European networks. A study on Nordic participation in the EU Framework Programmes (FP6 and FP7) commissioned by NordForsk {NordForsk, 2009 #1298} revealed that the Nordic countries have been actively and extensively involved in FP6 and in FP7 to date. Taking into account the relative size of the Nordic countries and their RTD bases, the study found that Nordic performance has been excellent. The Nordic countries are among the most successful when general scale factors such as GDP and population are used. Overall Nordic success rates have been above the FP6 and FP7 averages {NordForsk, 2009 #1298}. Nordic researchers have taken part in almost one-third of the projects and account for almost 10% of total EU funding allocations. It is also interesting to note that Nordic researchers have taken an active, often central role, in their FP projects. Nordic coordinator rates are above the overall averages for FP6 and FP7 (NordForsk, 2009a).

5 In 2007 the Nordic prime ministers decided to establish a new globalisation agenda for Nordic research collaboration. As a result, some 14 globalisation projects are now being implemented. One key example is the TRI.

6 Joint Programming is a new process combining a strategic framework, a bottom-up approach and high-level commitment from Member States. It builds on the experience gained from existing schemes coordinating national programmes. The overall aim of Joint Programming is to pool national research efforts in order to make better use of Europe's precious public R&D resources and to tackle common European challenges more effectively in a few key areas.

Not only are each and every one of the Nordic countries actively involved in the FPs, there is a high level of Nordic collaboration under the FPs as well. The study shows that almost one-half of the FP6 and FP7 projects with Nordic participation involve Nordic collaboration. Norway and Iceland collaborate most frequently, followed by Finland and Sweden. The Nordic participants' most important partners are generally Germany, the UK and France, although Sweden, Finland, Denmark and Norway all rank among the top 10 partner countries of their Nordic counterparts. Almost one-half of the Nordic participants in FP6 and FP7 projects have actively sought out Nordic partners.

The number of participants from Nordic funding agencies taking part in Joint Initiatives is also high. According to NORDERA Report No. 2, the Nordic agencies participate in the majority of such EU initiatives {IPTS/JRC, 2009 #1299}, and their participation in the ERA-NET scheme⁷ is higher than the Member State average.

3. *Mobility.* We lack adequate data to ascertain whether the mobility of researchers within the Nordic region (internal, outgoing and incoming) has changed over the past 10 years. Nevertheless, it may be assumed that the existence of a common labour market and cultural community facilitates mobility within the Nordic region. In addition, the linguistic barriers between several of the countries are small, reducing transaction costs and simplifying cooperation. Few researchers engaged in Nordic cooperation report difficulties with mobility.
4. *Researcher satisfaction.* Nordic researchers seem relatively content with the manner in which Nordic programmes are administered. They report that it is easier to take part in Nordic-funded projects than in EU projects. In general, Nordic R&I cooperation is characterised by a low level of bureaucracy and hierarchy, particularly in comparison with the EU. The Nordic R&I system takes more of a bottom-up approach than the EU system. This is not surprising, as Nordic cooperation involves fewer countries, and these all share a number of similarities. Nordic researchers therefore find that they have a greater chance of getting their applications approved, spend less time on reporting and experience less conflict between partners for Nordic projects. However, while the administrative costs of Nordic projects are lower, there is also less funding available. As Nordic research funding is generally allocated to networking activities and not directly to research as such, it may also be less appealing.

Areas with potential for further development

There are certain areas in which the Nordic region has a potential for further development. These are mainly related to the development of Nordic research infrastructure, the integration of research and innovation, and institutional coherence.

1. *Potential for more Nordic research infrastructures.* There are a number of examples of joint Nordic research infrastructures, such as the NORDUnet, the Nordic Data Grid Facility and the Nordic Optical Telescope. It is also interesting to note that two major European research infrastructure projects (the European Spallation Source and EISCAT) are located in the region. Nevertheless, there have been few coordinated research infrastructure initiatives launched or implemented under the Nordic umbrella, due in part to the fact that these require very large-scale investments.

In spite of few examples, there is a high level of political willingness to join forces within this area. The added value for small countries that cooperate more closely in this area is obvious. Localising important research infrastructures in the Nordic region could also make the region more attractive

⁷ The objective of the ERA-NET scheme is to step up cooperation and coordination of research activities carried out at the national or regional level in the Member States and Associated Countries through the networking of research activities conducted at the national or regional level and the mutual opening up of national and regional research programmes.

to international and European researchers. It is worth mentioning that there are some important initiatives underway, such as the e-Science initiative.

2. *Integration of research and innovation.* Although successful integration is a goal of Nordic cooperation and a key element of the NORIA concept, the Nordic region is still struggling to find effective, rational models for integrating R&I policies. Several ongoing Nordic projects are seeking to promote knowledge-sharing between academia and industry. Interestingly, all of the main Nordic institutions (NordForsk, Nordic Energy Research and the Nordic Innovation Centre) are funding projects of this kind. Nevertheless, it has proven difficult to integrate research and innovation successfully. As discussed above, this is in part due to differences in approaches to – and mindsets regarding – research and innovation. Another issue is that R&I activities are administered by different institutions under the Nordic Council of Ministers and implemented by different agencies. Organisation at the Nordic level reflects the situation in the Nordic countries. Each Nordic country has different agencies for research and innovation. The key challenge is to increase the sharing of knowledge between agencies and join forces when it comes to research and research-based innovation. NordForsk and the Nordic Innovation Centre (NICe) have been housed on the same premises in Oslo in an attempt to link research and innovation more closely. R&I integration is also complicated by the fact that the concept of innovation is broad and can be interpreted in many ways. NORDERA Report No. 1 concluded that the differences in understanding of the concept of innovation among actors in the Nordic countries, both within and between the countries, comprise a major challenge. It is necessary to establish a common language and understanding of innovation among the key players. Innovation may be user-driven, employee-driven, idea-driven or research-driven – making it problematic to calibrate an appropriate interface between research and innovation. One way of looking at the interface is to focus on research-based innovation, which includes all forms of innovation that incorporate research as a component of the process of creating value for the market and society at large.

With regard to the integration of research and innovation, it may be argued that the European Commission has taken the lead with the launch of a new innovation strategy – the Innovation Union. At the NORDERA conference, Anneli Pauli presented the thinking behind this strategy. The idea rests upon a broad concept of innovation that includes the entire cycle of innovation, from research to market and market to research, and involves all actors and all regions in the innovation cycle. She also emphasised that this thinking will be reflected in the administrative structure. As from 1 January 2011, “DG Research” will be called “DG Research and Innovation”.

3. *Institutional complexity and small budgets.* Despite initiatives to boost the efficiency of Nordic R&I cooperation and achievements in research governance, there are still many actors involved in the distribution of the small-scale Nordic R&I budgets. There are also challenges regarding coordination of national matching funds. Although there are several examples of the successful use of common pots and co-funded programmes, the linguistic, legal and administrative differences between the countries sometimes makes the coordination process overly complex and administratively costly. In addition, it has not been ascertained whether strengthening Nordic cooperation actually promotes excellence in research. If Nordic cooperation is carried out at the expense of other kinds of valuable European or international research cooperation, it may even hinder excellence. When budgets are limited, the selection of priority areas for funding becomes a crucial task. It may, however, be difficult to achieve consensus, especially when there are competing views regarding the most appropriate approach to research funding – top-down or bottom-up – or different interpretations of innovation. To date, no agreement has been reached on how to best operationalise the concept of “Nordic added value” in the field of regional R&I cooperation.

Key Lessons from Nordic experience

Based on the project findings and the NORDERA conference held at Hotel Metropole in Brussels on 25 November 2010, we will now highlight the key lessons that may be drawn from Nordic experience. A draft version of this final report was used as point of departure for the discussion at the conference both in plenary sessions and in working groups focusing on topics related to funding models, research infrastructure, excellence, mobility and the relationship between research and innovation.

Excellence in research and motivation for cross-border collaboration

All of the Nordic countries are actively involved in cross-border R&I collaboration. Firstly, according to a report by the Technopolis group, Nordic researchers primarily pursue collaboration to create networks and gain knowledge benefits. Attractive programmes attract researchers. Participation in EU schemes is generally not commercially motivated at the researcher level. Secondly, the Technopolis group found that Nordic researchers tend to seek out other Nordic partners for EU projects. The researchers usually cite cultural factors, geographic proximity, expertise and shared (often Nordic) interests as their primary motives for doing so. Thirdly, the participation rates of Nordic researchers could be improved, and the Nordic countries need to enhance participation in joint initiatives at the programme level. According to the Technopolis group, one explanation for low participation rates may be that awareness of new EU initiatives is limited. This could probably be remedied by notifying potential participants about existing opportunities, as well as by providing advice and support to facilitate involvement (NordForsk 2010a). Although Nordic researchers are actively involved in cross-border collaboration, it is difficult to ascertain whether physical and long-term mobility has increased or not. This is due to the lack of statistics, but also to the fact that there are many different forms of mobility (physical and electronic mobility as well as long and short-term mobility) in a globalised world. It is also uncertain whether physical mobility is actually an important factor for ensuring excellence in research.



Riitta Mustonen, Vice president of the Academy of Finland

Discussion in the working group: Mobility promotes excellence

In the working group on Excellence and Mobility, Riitta Mustonen, Vice President of the Academy of Finland, stated in her introduction that there are no borders in research and that young scientists can only develop through mobility and international cooperation. However, she also emphasised that there are different types of mobility and that, in the age of globalisation and new technology, mobility is no longer restricted to physical or long-term mobility. While other forms of mobility may have increased, physical mobility has decreased in recent years. In her view, physical mobility is still important because it is a means of transporting and sharing multicultural knowledge that is essential for the development of young scientists. One way of encouraging this type of mobility is through the development of high-quality joint research infrastructures that attract researchers of different nationalities. She mentioned the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany, as one interesting example, and we would also like to add the European Spallation Source (ESS) in Lund, Sweden, as another.

During the discussion, questions were raised as to whether all types of mobility actually promote excellence. It was emphasised that open access and free movement of data are more important than physical and long-term mobility. There seems to be general consensus that international cooperation at the researcher level is necessary for generating excellence in research. One discussion participant encouraged the development of tailored instruments to motivate young researchers to participate in international research conferences rather than focusing on facilitating permanent mobility.

In his introduction, Martin Hynes, Director of the Irish Research Council for Science Engineering and Technology, focused on the importance of promoting mobility between academia and industry. Such mobility will promote both innovation (new patents) and excellence in research (more high-quality publications). He stated that cultural conflicts and communication problems are often the

main challenges for cooperation and mobility between academia and industry. He further argued that Ireland has good experience in developing this type of cooperation on the basis of cluster models. Finally, it was argued that we still do not have a clear answer to a fundamental question, namely whether regional cooperation at the agency/funding level actually helps to generate excellence in research. Can regional and sub-regional cooperation, with all of its conditions and restrictions, actually pose an obstacle excellence in some cases?

Common pot and funding models

Why have the Nordic countries managed to overcome some of the obstacles that often hinder common pot activities elsewhere? Why have the Nordic countries succeeded in creating a joint programme that uses a common pot (the TRI) in such a short period of time? One explanation may be that the programme was launched by the prime ministers of the Nordic countries, bestowing massive political weight on the process and giving the national funding agencies less room to withdraw. Moreover, the programme was built from scratch, and it may be easier to establish new programmes rather than to merge existing programmes and initiatives. Another key factor is that the Nordic funding model is based on voluntary participation. The model calls for two-thirds national funding and one-third Nordic-level funding. The national research councils have the freedom to decide whether to participate in a co-funded programme, and normally choose to invest in a joint action when there is obvious Nordic added value to be gained.

As mentioned earlier, Nordic R&I collaboration takes place within a strong institutionalised framework built on long traditions and mutual trust, which encourages participation in joint actions and use of common pots. During the interviews conducted in connection with the first NORDERA report, more or less every respondent mentioned the word “trust” – both when describing Nordic R&I cooperation as a whole and when explaining Nordic achievements in the context of joint programming. Such trust is of course linked to the fact that there is a Nordic cultural community and a certain common identity. Interviewees also emphasised that the Nordic countries have similar academic levels and standards, which facilitates the creation of joint programmes and common pots (NordForsk, 2010b).

Discussion in the working group: Trust and flexibility counts

In her introduction, Lena Gustafsson, Vice-Chancellor of Umeå University, emphasised that the Nordic countries cannot isolate themselves from the rest of the world and must act as an integral part of Europe. She presented the common pot funding model as used in the TRI, and argued that the use such a funding model has a structuring power. She pointed to the importance of political will as a driving force for achieving results in joint programming and encouraging the use of a large-scale common pot.

Giorgio Clarotti of DG Research presented the background and guidelines for the joint programming process facilitated by the European Commission. He also elaborated on the advantages and disadvantages of different funding models such as virtual common pot, real common pot, and balanced and mixed common pot models. He further argued that successful joint programming is dependent on effective and viable mechanisms that can be applied uniformly by all participants.

Mark Boden, JRC Action Leader for “ERA policy mixes, joint programming and foresight” at the Knowledge for Growth Unit at the IPTS, summed up the discussion by pointing to trust, cultural proximity, flexibility and good governance as possible reasons for Nordic success with joint funding and common pot, and he mentioned the TRI as a good example of this. He referred to the second NORDERA report, which reveals that the common pot model is used relatively little



Carlo Rizzuto, Ivar Kristiansen, Mark Boden, JRC Action Leader for “ERA policy mixes, joint programming and foresight” within the Knowledge for Growth Unit at the IPTS, Riitta Mustonen.

under the ERA-NET scheme. However, the report also shows that the ERA-NETS with intense Nordic participation have used a real common pot slightly more often than the networks with no Nordic participation.

Developing common research infrastructure

Cooperation in the area of infrastructure is of significance to the Nordic countries for several reasons. Firstly, small countries have economic incentives to cooperate in this area, as important research infrastructure requires large-scale investments. Secondly, such infrastructure will enhance the Nordic countries' position as a dynamic, attractive research partner for the wider international research community. Finally, a high degree of coordination of research infrastructure policy is vital if the Nordic countries are to have an impact on the ESFRI⁸ process. Against this background, the Nordic countries have taken initial steps to intensify cooperation on research infrastructure. During the past three years, expert groups have been appointed and workshops and conferences have been held to address the issue at the Nordic level, and a policy brief has been produced (NordForsk, 2008b). Networks and research programmes have also been established to strengthen Nordic cooperation on infrastructure. The NordForsk policy brief from 2008 provides an overview of current research infrastructure policies in the Nordic region and Europe, and evaluates the scope of increased Nordic coordination. The report concluded that efforts to realise closer Nordic cooperation are well underway, but that there is considerable room for improvement of coordination and joint activities (NordForsk, 2008b).

Discussion in the working group: The importance of Bottom-up approaches

Carlo Rizzuto, former chair of ESFRI, emphasised the importance of top-quality research infrastructure. He compared research infrastructure at the international level with Olympic stadiums – as arenas for the best scientists to produce the best results. He argued that if we want to attract the best researchers, we have to develop new technologies, measures etc. He presented the vision of ESFRI, which is to provide Europe with the highest calibre infrastructure needed in any scientific environment and in all fields of research. He argued that the main obstacles for implementing the ESFRI Roadmap are the pooling of financial resources at the European level, in particular for covering operational costs.



Lars Börjesson, Professor at Chalmers University

Hervé Péro, Head of Unit on Research Infrastructure in DG Research, presented an overview of EU actions on the ESFRI Roadmap. He also pointed out challenges for implementing the roadmap. The major obstacles, in his view, are the financial constraints and coordination problems between participating states. He saw a great need for professional management and best practices.

The panel rapporteur, Professor Lars Börjesson of Chalmers University, summed up the discussion by stating that the Nordic region is stronger in this area than is often assumed.

He mentioned several achievements in terms of both Nordic and European installations located in the Nordic region. He also argued that there is great potential for further developing cooperation on research infrastructure. He acknowledged the importance of improving coordination at the Nordic level, as the countries are small and have little impact individually. He therefore raised the question of whether there is a need to establish a Nordic roadmap for research infrastructure. He believes that trust, a bottom-up approach, open access and the existence of important data registries, including biobanks, will facilitate closer cooperation on infrastructure in the Nordic region.

Towards a better integration of research and innovation

The NORIA concept is rooted in the willingness to enhance research-based innovation. One aim of launching the NORIA initiative was to strengthen cooperation between research and research-oriented innovation.

8 European Strategy Forum on Research Infrastructure

The initiative recognises that a lot of the basic research being conducted may become very important for industry and employment in the very near future. It also points out that there is a clear interface between applied research and basic research and that both sides share overlapping areas of strategic interest.

It has proven difficult to integrate research and innovation policy successfully in the Nordic region. As discussed above, this is due in part to differences in approaches and mindsets among the players on the R&I scene. It appears that the lack of cooperation is a direct consequence of segmentation, which is evident not only within the Nordic Council of Ministers, where research and innovation are the responsibility of two different institutions, but also at the national level, where R&I agencies report to different ministries. More profoundly, there are two very different innovation cultures at play. Only a small portion of innovation activity is closely linked to research activity; for the most part there is a wide gap between the two.

Although the Nordic countries are struggling to integrate research and innovation, there are some success stories, most notably the Top-level Research Initiative (TRI).

Discussion in the working group: The Nordic region as a stepping stone?

Marja Makarow, Chief Executive of the European Science Foundation, argued that researchers can contribute constructively to meeting societal and political demands. However, this will require a reform of the university sector, as it is, in general, designed primarily for teaching and education. Ground-breaking innovation must be developed on a wide-scale. Institutions such as NordForsk and the Nordic Innovation Centre and the German/Austrian DAC are essential tools/instruments in this context, as they are based on mutual trust and may serve as a stepping stone to something larger.



Carlo Rizzuto, Gunnel Gustafsson Ivar H. Kristensen, Director of Nordic Innovation Centre.

Isi Saragossi, Director of DG ENTR, focused on policy issues, the EU approach and relations between the Nordic region and the EU. He argued that lessons may be learnt from small-scale Nordic cooperation in this area. Pooling of funding for research is difficult, but it has been done at the Nordic level. In his view, the Nordic member states could be drivers for the development of new instruments linking research and innovation at the EU level.

Ivar H. Kristensen, Managing Director of the Nordic Innovation Centre, argued that a broad approach to innovation is needed.

Innovation is not only research-based; companies engage in innovation activities every day using existing knowledge. All types of innovation are needed to deal with the financial crisis and increase competitiveness. He argued that a common understanding of innovation needs to be established and that different approaches need to be used to develop effective solutions for utilising our knowledge and resources. However, he pointed out that in terms of global competition, it is more important to find methods and instruments to increase cooperation between researchers and boost industrial innovation based on mutual understanding and recognition of the different approaches to innovation than to establish a single “scientific” definition of innovation.

During the discussion, it was argued that innovation is multidimensional and that the linking of research and innovation has to be seen in relation to value propositions. It was pointed out that while there are many similarities between the Nordic countries, the individual national research and innovation policies are still very different. Linking research and innovation is one of the many challenges being met in different ways in the Nordic countries. Finally, it was argued that no region has greater potential for close cooperation between the spheres of research and innovation than the Nordic region, but that there are few good examples of this thus far.

Executive summary

Based on our project findings and discussions in the final seminar it may be argued that intensifying cross-border collaboration and pooling resources into joint R&I actions are crucial to meeting the demands of globalisation and solving the grand societal challenges of our time. To this end, the Nordic Research and Innovation Area (NORIA), a Nordic equivalent to the European Research Area (ERA), has been established with similar objectives and ambitions. In the NORDERA project we have examined whether the EU has anything to gain from the Nordic region's experience with R&I. We also briefly reflect on how to transfer lessons from the Nordic region to the much larger European context.

Formalised cooperation between the Nordic countries is one of the oldest, most extensive examples of regional cooperation in the world. Nordic cooperation may be found in many important areas, such as business development, the environment, welfare and the cultural sphere, in addition to research. The Nordic countries are relatively small, wealthy welfare states with open economies and large public sectors. Nordic collaboration has resulted in significant achievements, including a passport union and a common Nordic labour market, which facilitate a high degree of mobility within the region.

Nordic R&I collaboration takes place within a strong institutionalised framework built on long traditions and mutual trust but with relatively limited budgets. Nordic researchers score high on international citation indexes and in terms of the number of scientific publications. The Nordic countries are also actively involved in European networks under the EU Framework Programmes. The Nordic region's many R&I achievements are due, to a large extent, to the existence of a common cultural community and a high degree of mutual trust. The numerous examples of non-formalised research and innovation cooperation also indicate that Nordic researchers find it both important and fruitful to cooperate on a wide range of topics, regardless of limited funding prospects.

Thanks to long-standing R&I cooperation, the Nordic region provides an excellent arena for experimenting with *joint R&I initiatives and funding models*. Recent examples include the Nordic Globalisation Cooperation initiative launched in 2007, of which the Top-level Research Initiative (TRI) on climate, energy and the environment established in 2008 is one concrete result. The TRI is the most comprehensive Nordic R&I programme, and the only one that resembles "joint programming" as defined by the EU.

Under the TRI, funding is channelled via a common pot. An important conclusion of the NORDERA project is that Nordic cooperation has had notable success in the use of common pots and that it appears to be easier for Nordic funding agencies to enter into joint funding and common pot agreements than it is for their European counterparts. The Nordic Centres of Excellence (NCoE) scheme is another example of a successful, co-funded programme that uses a common pot. Most of the NCoEs have attracted attention far beyond the boundaries of the Nordic region.

It is, however, not always easy for the Nordic countries to join forces, even though there is a strong political will to do so and obvious added value to be gained. Co-funding of – and cooperation on – research infrastructure is such an example. Still, the Nordic countries have great potential for further developing cooperation on infrastructure and many interesting initiatives have been taken in that direction.

There is also a clear need to improve integration of research and innovation to deal with future challenges. Like the EU, the Nordic countries have also had difficulties integrating research and innovation policies. Still, they have managed to do so in the TRI and each Nordic institution has instruments for this purpose.

The aim of the NORDERA project has been to pinpoint lessons learnt from Nordic coordination in the context of the ERA. This report summarises the main findings from the various deliverables throughout the entire project period. We are probably still a few steps away from implementing a new deal in Europe based on Nordic R&I experience. Nevertheless, the NORDERA project has started a vital debate on important issues concerning the ways in which a strong Nordic R&I region can help to make the ERA even stronger.

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A NEW DEAL FOR ERA.

Lessons learnt from Nordic R&I cooperation?

25th of November 2010 .Hotel Metropole: 31, place de Brouckère, Brussels

Chair: Quentin Cooper, Freelance

CONFERENCE PROGRAM:

- 09:00 - 09:30: Registration and Coffee
- 09:30 - 09:35: Welcome (Gunnel Gustafsson, Director of NordForsk)
- 09:35 - 10:05: R&I cooperation - the ERA context
(Anneli Pauli, Deputy Director-General, DG Research)
- 10:05 - 10:35: R&I cooperation - the Nordic region as a model
(Gard Titlestad, Head of Department of Knowledge and Welfare, Nordic Council of Ministers)
- 10:35 - 10:55: Coffee break
- 10:55 - 11:35: Lessons learnt from the Nordic R&I coordination in the context of ERA (Gunnel Gustafsson)
- 11:35 - 12:00: Questions & Answers
- 12:00 - 13:30: Lunch
- 13:30 - 15:00: Working groups (see below)
- 15:00 - 15:15: Coffee break
- 15:15 - 16:30: Panel debate (Key note speakers and Panel rapporteurs from the working groups)

PARALLEL WORKING GROUPS:

1. Funding models

MODERATOR: Dan André, Special Advisor, Swedish Ministry of Education.
INTRODUCTORY SPEAKER: Lena Gustafsson, Rector at the University of Umeå and Giorgio Clarotti, DG Research.
PANEL RAPPORTEUR: Mark Boden, JRC Action Leader for "ERA policy mixes, joint programming and foresight" within the Knowledge for Growth Unit at the IPTS.

- Successful joint programmes with real common pot – what does it take?
- What can we learn from the Nordic experiences?

2. Research Infrastructure

MODERATOR: Hans Müller Pedersen, Deputy Director General at the Danish agency for Science, Technology and Innovation.
INTRODUCTORY SPEAKER: Carlo Rizzuto, President of ESFRI and Lars Börjesson, Professor at Chalmers University and Hervé Péro, Head of Unit, Research Infrastructures, DG Research.
PANEL RAPPORTEUR: Lars Börjesson.

- Political willingness, national and regional roadmaps, but few joint actions – why?
- How will the financial crisis affect future activities?
- What can we learn from the Nordic experiences?

3. Excellence and mobility

MODERATOR: Martin Hynes, Director of the Irish Research Council for Science Engineering and Technology.
INTRODUCTORY SPEAKERS: Riitta Mustonen, Vice president of the Academy of Finland, Martin Hynes.
PANEL RAPPORTEUR: Riitta Mustonen

- Is it necessarily a causal relationship between regional/international R&I cooperation and excellence?
- How can the effects of mobility be measured? Is there a correlation between mobility and excellence?
- How to achieve better mobility between the research community and industry?
- What can we learn from the Nordic experiences with regards to excellence and mobility?

4. The relationship between research and innovation

MODERATOR: Fredrik Melander, Senior Advisor, Department of Knowledge and Welfare, Nordic Council of Ministers Nordic Council of Ministers.
INTRODUCTORY SPEAKERS: Marja Makarow, Chief Executive of European Science Foundation and Isi Saragossi, Director for Directorate C - European Research Area: Knowledge-based economy, DG ENTR .
PANEL RAPPORTEUR: Ivar H. Kristensen, Director of Nordic Innovation Centre

- How to implement the knowledge triangle?
- How to ensure that innovation policy takes societal challenges into account?
- What can we learn from the Nordic cooperation?

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