

**Alignment at Trans-Regional
Level: Case Study No.1
The Nordic Research
Collaboration-NordForsk**



Alignment at Trans-Regional Level

Case Study No.1 - The Nordic Research Collaboration NordForsk

Dissemination level: Wider public

Prepared by: Italian Ministry of Education, University and Research (MIUR)

Contributors: INRA, UNIMAN, AIT



ABSTRACT

This case study analyses the key features, overall strengths and weaknesses of a peculiar modality of research and innovation collaboration, developed at regional level among the Nordic Countries - Denmark, Finland, Iceland, Norway and Sweden, and three autonomous areas, Faroe Islands, Greenland and the Åland Islands – via the establishment of a specific organisation: **NordForsk**. Established in 2005 under the Nordic Council of Ministers – inter-governmental body for cooperation in the Nordic Region – NordForsk promotes cooperation on research through the financing and administration of research programmes. The peculiarity of this regional initiative relies on the extended use of the “**real common pot funding mechanism**” in all its programmes and initiatives. The study examines how the specific context of the Nordic cooperation, and in particular a long tradition of **trust-based collaboration**, facilitated the establishment of a common organisation and mechanisms promoting the institutional, operational and financial alignment. The case study will in particular focus on the results attained by NordForsk in terms of **alignment of funding** thanks to the use of the real common pot.

The study underlines NordForsk key strengths and achievements. The use of the real common pot as funding mechanism been successfully developed in the joint programmes adopted and implemented by NordForsk as well as in large-scale initiatives like the Top-Level Research Initiative – TRI. The **real common pot**, consisting of Nordic Council of Ministers funding and national funding, is administered by NordForsk and allocated to highest scientific quality projects regardless of how much funding each country contributed to the pot. The main benefit of the real common pot is that it ensures that the best research is awarded funding and thus it fosters **excellence in research** and the optimal use of the available budget maximising the number of funded projects. The uniqueness of the NordForsk relies on the fact that research funding for international cooperation is allocated with such a high degree of **trust** and **flexibility**. NordForsk attained further specific benefits in terms of fostering the Nordic collaboration in research infrastructures and of developing cooperation and synergies with JPIs and with the European Research Area.

Yet, NordForsk has been confronted with: i) limited budget and difficulties in recent years to meet the target budget; ii) a complex and multilevel structure established within the realm of the Nordic Council of Ministers, where different institutions are active in the field of Nordic cooperation in R&I iii) different national processes and timelines to define priorities at national level.

ACKNOWLEDGEMENTS

The case study has been written by Gaia Brenna of the Italian Ministry of Education, University and Research. The author is grateful to Jostein K. Sundet (Senior Adviser of NordForsk) for her valuable inputs. She would also like to thank the ERA-LEARN Consortium partners for their useful suggestions on earlier drafts of this case study.

Table of contents

1. Introduction.....	4
2. Key features of NordForsk.....	4
2.1 Overview	4
2.2 Mission and activities	5
2.3 How a Nordic programme is established	6
2.4 Governance structure.....	7
3. Overall strengths of this tool, including key achievements.....	8
3.1 Financial alignment through the use of real common pot	9
3.2 Setting-up of joint programmes with real common pot: the Top-Level Research Initiative	10
3.3 Nordic collaboration in research infrastructures	12
3.4 Cross border cooperation and synergies with initiatives at EU level, in particular JPIs and ERA	13
4. Overall limitations with this tool, including difficulties encountered during implementation	13
4.1 Limited budget	14
4.2 Institutional complexity.....	14
4.3 Different national processes and timelines to define priorities	14
5. Conclusions: Suitability and key factors of success	14
REFERENCES	17
ANNEX 1. NORDFORSK STRATEGY 2015-2018.....	19
ANNEX 2. THE NORDIC CENTRE OF EXCELLENCE (NCoE).....	20

1. Introduction

This case study analyses the main features of a specific modality of research and innovation collaboration developed among Nordic countries. The Nordic region includes five countries, Denmark, Finland, Iceland, Norway and Sweden, and three autonomous areas, Faroe Islands, Greenland and the Åland Islands. Nordic countries are homogenous along certain factors, including history, language, political, cultural, social and university traditions that conditioned the propensity to cooperate on several issues, included research and innovation.

The study examines how this specific context and the peculiarities of this region favour the setting up of mechanisms promoting the alignment of national programmes and activities. NordForsk can be taken as good practice in establishing, in regions with long tradition of “trust-based cooperation”, a stable organisation providing funding for and facilitating cooperation in research and research infrastructures. It is an example of ambitious institutional cooperation, that has given rise to the adoption of joint research programmes based on common vision and strategic priorities, use of the real common pot funding mode, common evaluation and collaboration in research infrastructure. On this basis NordForsk represents a good example of institutional alignment, covering strategic, operational and funding level. While taking into consideration its complexity and multilevel modality leading to alignment, this case study will focus on NordForsk’s main achievement attained in terms of alignment of funding thanks to the use of the real common pot as funding mode applying to all its programmes and initiatives. NordForsk is in particular a good practice of alignment of funding based on long-lasting mutual trust among the Countries involved and their Research organisations, and can thus provide important lessons for public-to-public collaboration to be developed at regional level.

Following the Typology of Alignment (ERA-LEARN 2020 Task 4.1), NordForsk mainly relies on alignment at financial level as using the real common pot mechanism, while is suitable to be included also as good example in the adoption of common strategic research priorities – at strategic level - and in establishing network or alliance of research funding/performing organisations and joint project monitoring - at operational level.

Focusing on the Regional dimension, this initiative shows how common historic, cultural and political background and similarities has led to a high degree of mutual trust and can pave the way for a close collaboration in research and innovation. The formal cooperation and the instruments set up under the Nordic cooperation has proved to be one of the most ambitious comprehensive regional cooperation initiatives developed in Europe. On the other hand, the relatively narrow number of countries involved facilitates, compared to the wider European level, the introduction of strict form of collaborations based on mutual trust, in particular the establishment of common institutions and the extended use of real common-pot funding mode.

2. Key features of NordForsk

2.1 Overview

The Nordic cooperation, based on long-lasting and continual co-operation occurring between the Countries of the region, has been institutionalized at parliamentary level through the Nordic Council¹ since 1952 and further strengthened in 1971 when the Nordic Council of Ministers was established². Set up with a specific intention of maintaining the Nordic co-operation, the Nordic Council of Ministers became the forum for the Nordic governmental co-operation. It consists of, not just one but several individual councils of ministers for specific policy areas³ with the Prime Ministers having the overall responsibility for Nordic Co-operation⁴.

¹ The Nordic Council was established as a forum for Nordic parliamentary cooperation, involving members of Parliament from Denmark, Finland, Iceland, Norway and Sweden, and from the three autonomous area of the Faroe Islands, Greenland and Åland Islands. The Council has been taking initiatives and acting in an advisory and supervisory capacity on issues and matters of interest for official Nordic cooperation.

² A previous attempt at Nordic economic co-operation – the so-called Nordek – failed the year before. The establishment of the Nordic Council of Ministers was preceded by negotiations on multiple levels and a permanent committee of ministers starting working together since 1961. The guidelines for the Nordic Council and the Nordic Council of Ministers are laid down in the 1962 Helsinki Agreement.

³ The Nordic Ministers grouped for specific policy areas meet a couple of times a year. Currently there are 10 constellations of policy councils of ministers. The Presidency of the Council of Ministers rotates between the five Nordic countries and is

Alongside the setting up of specialised institutions aiming at fostering Nordic co-operation⁵, there had been the development of a wide Nordic collaboration in the area of research, even though with little coordination. The report recommending the creation of a European Research Area – ERA – to integrate the science resources of EU member States⁶, inspired the Nordic ministers of education and research, that commissioned two reports to explore the potential in combining instruments already in place and introduce the Nordic Research and Innovation Area – NORIA. The first report⁷ envisioned how the Nordic region could have achieved its goal of becoming an internationally leading research and innovation region and played an important role in the founding of NordForsk two years later. In parallel, a second report⁸ recommended to progressively reduce the financial support from the Nordic Council of Ministers to a number of research performing institutions and reinvest it in more flexible funding instruments that could promote Nordic excellence in Research. On the basis of the recommendations and findings of the abovementioned reports, the Nordic counterpart of the ERA, the Nordic Research and Innovation Area – NORIA and NordForsk were established, with the vision to make Nordic research and innovation globally leading through strengthened Nordic regional cooperation.

The research and innovation cooperation among the Nordic countries has since then structured in two different but cooperating strands: one for research and one for innovation, with two organisations established to cover the entire sphere of research and innovation at the Nordic level: NordForsk⁹ to strengthen research and Nordic Innovation for the latter. Both organisations, and the third sister organisation – the Nordic Energy Research - are co-located in the same headquarters in Oslo.

2.2 *Mission and activities*

NordForsk is an organisation under the Nordic Council of Ministers that provides funding for and facilitates Nordic cooperation on research and research infrastructures. Its mandate is in particular to facilitate, i.e. to identify and respond to, common strategic priorities for Nordic research cooperation, and thereby create Nordic added value. NordForsk's role is to function as a platform facilitating cross-border research cooperation where the national funding agencies and the university sector contribute with funding to joint Nordic research and research infrastructure programmes. Its role as a facilitator involves consultations with Nordic funding agencies and the Nordic University Association regarding priorities for joint Nordic actions and possibilities for co-funding of research and research infrastructure. Through the financing and administration of research programmes NordForsk brings together national research groups and promotes research activities of the highest scientific quality. NordForsk's key stakeholders include universities, national research councils and other research-funding bodies.

The vision is of a Nordic region that is globally leading in research and innovation, with NordForsk continuously contributing to this by promoting and financing best and most promising research.

held for a period of one year. The country holding the presidency draws up a programme which guides Nordic co-operation during the year.

⁴ In practice, responsibility is delegated to the Ministers for Nordic Co-operation and to the Nordic Committee for Co-operation, which co-ordinates the day-to-day work of the official political Nordic co-operation.

⁵ During the 1970s, the budget was increased and several Nordic research institutes were established, while in the 1980s, common programmes were conducted under collaborative agreements between national funders and the Nordic funding level.

⁶ The Report by the EU Research Commissioner Philippe Busquin was issued in 2000.

⁷ "NORIA: White paper on Nordic Research and Innovation" issued by the Finnish professor Gustav Björkstrand in 2004, has the mandate to address several issues related to the Nordic research cooperation, including organization, funding and instruments, in order to formulate specific recommendations to make the Nordic region a leading area in the field of research and innovation.

⁸ "En nordisk dimension i nationale forskningsmiljøer, Nordiske forskningsinstitutioner under nationalt ansvar", 2003. The report was led by Professor Dan Brändström and focused on funding responsibility for a number of research performing institutions largely financed by the Nordic Council of Ministers for Education and Research (MR-U).

⁹ The activities of the former Nordic Research Policy Council and the Nordic Academy for Advanced Studies (NorFA) were incorporated into NordForsk.

The goal of NordForsk is to enhance the quality, impact and cost-efficiency of Nordic research and research infrastructure collaboration. The main research priorities focus on strengthening integrated cross-sectorial research with the aim of tackling societal challenges and ensuring sustainable development and creating a critical mass in potentially excellent research areas.

To obtain its goal, NordForsk applies the following principles in all its activities:

- conducting analysis of key issues on the Nordic science policy agendas;
- requiring co-funding from at least three Nordic countries to start a large research and/or infrastructure programme;
- establishing open calls for proposals with international peer review of applications;
- conducting ex-post assessment of research and research infrastructure collaboration;
- ensuring open access;
- ensuring transparency;
- improving gender equality;
- providing support for mobility, higher education, international cooperation, research integrity and research-driven innovation in large programmes;
- promoting Nordic research cooperation in a European and international context;
- ex-post assessment of collaboration.

NordForsk activities are funded by allocations provided by the Nordic Council of Ministers and national budgets. NordForsk's budget is set in the annual budget negotiations in the Nordic Council and the Nordic Council of Ministers. The annual basic allocation that it receives from the Council of Ministers is of approximately NOK 120 million (roughly 12.6 million euros), while additional funding is provided from national sources, primarily the research councils. One third of Nordforsk activities are financed with Nordic funds and two-third with national funds.

Most of NordForsk's activities are organised under programmes for cooperation on research and research infrastructure in fields where the Nordic countries see there is added value in cooperation. The topics suitable for research activities at the Nordic level can issue from politically-based discussions and decisions, or input from a wide range of actors in the research sector and society at large on areas where more knowledge is needed. In the definition of priorities for the joint initiatives, NordForsk is usually the prime driver, while it is then agreed in the individual programmes what will be the main Nordic added values to be put emphasis on in a specific call.

2.3 How a Nordic programme is established

The programmes for cooperation on research and research infrastructure are defined and carried out on the basis of pre-defined steps, which can be summarised as follows:

a) Added value in cooperation

NordForsk launches and coordinates research programmes in fields where the Nordic countries see there is added value in cooperation. Although each Nordic country is small on its own, joint programmes and projects enable researchers to work together in larger groups, which yields better research results on the basis of a broader foundation while helping to establish lasting networks and research groups.

The first step is to identify an important topic that is suitable for research activities at the Nordic level, and which NordForsk can help to coordinate. The topics may be defined at political level or on the basis of discussions following inputs from research actors and stakeholders.

b) Preliminary study

Once a topic or field is deemed as having major potential to generate Nordic added value, a preliminary study is launched to provide recommendations for a joint Nordic research initiative. A working group comprising experts in the relevant area as well as country representatives is appointed. The working group's findings are often presented in a report or policy paper outlining opportunities and recommendations.

c) Financing

The NordForsk Board decides if and when to initiate negotiations with the national funding institutions of the five countries. During this process, more details emerge about the thematic area of the programme and the countries that will be contributing funding. A minimum of three countries must agree to participate in order for the programme to be approved. NordForsk will also contribute funding to the programme, and other organisations under the auspices of the Nordic Council of Ministers will often do so as well. The programme must also attain a minimum funding volume in order to justify its start-up and administration. The various contributions are paid out to NordForsk, **which administers the entire budget**, typically in the form of a *real common pot*.

Once NordForsk and the participating countries have reached an agreement, a programme committee is appointed with members from all the programme's funding bodies. The committee serves for the duration of the programme period and assists NordForsk in designing and implementing the programme and programme content and in following up programme activities. This is important for ensuring that the **programme is adequately aligned with national priorities** and is well coordinated with national initiatives.

d) Funding announcements

Funding under Nordic research programmes is always announced in **open calls for proposals** so that all relevant researchers have the opportunity to apply. Project proposals must normally involve the **participation of researchers from at least three Nordic countries to be eligible for funding**. Applications are evaluated following the **peer review process**. The programme committee then prepares a recommendation based on the set of projects judged as best able to achieve the programme objectives. The NordForsk Board takes the final decision regarding which projects to award funding.

e) The research activities start

Normally a Nordic research programme has a timeframe of at least five years. Projects work independently and with other projects to generate new knowledge. At the same time, new forms of cooperation and networks among researchers in the Nordic countries are established, often leading to additional results in the long term. The programmes also train new researchers, who then have access to the entire Nordic region for educational and work opportunities.

f) Results

Nordic research programmes lead to the development and dissemination of new knowledge, methods, tools and research infrastructure (including databases and registries). New cooperation between researchers and research groups across national borders is launched. Research findings, innovations and applications of new knowledge bring benefits to the Nordic region as a whole.

2.4 Governance structure

NordForsk governance is structured around the NordForsk Board, the Director and the National Research Councils. The **NordForsk Board** is appointed by the Nordic Council of Ministers and has the overall responsibility for the operations of NordForsk. It has full responsibility for NordForsk's actions and takes yearly strategic decisions on how to spend the funds provided by the Nordic Council of Ministers. The Board is also in charge of drawing up plans for how to develop NordForsk further in the future. It is responsible for the organisation's strategy, economy and personnel policy - within the framework set by the Nordic Council of Ministers.

It is composed of high-level representatives from the research funding agencies in Denmark, Finland, Iceland, Norway and Sweden, a representative for Nordic University Cooperation (NUS), and observers from the Nordic Council of Ministers and from the Faroe Islands, Greenland and the Åland Islands. There are five members from the research councils and one from the Nordic University Association. The **chairmanship** of the NordForsk Board

circulates among the board members¹⁰. The secretariat is a common infrastructure dealing with all the aspects of a joint call launched within a programme. From the operational point of view a joint structure and common secretariat greatly simplify the administrative process and avoid long discussions on how to finance the implementation costs of the call for proposals.

3. Overall strengths of this tool, including key achievements

Since its inception in 2005, NordForsk has attained several achievements and the Nordic research collaboration facilitated by NordForsk has been considered an example to be followed by other regions. The Nordic collaboration facilitated by NordForsk has become visible and relevant and has made NordForsk a key player in Nordic collaboration, while enhancing the reputation of the Nordics as a globally leading research and knowledge region.

NordForsk promotes cross-border cooperation through the launch and management of **joint Nordic research programmes**. NordForsk's programmes are characterised by Nordic added value, multidisciplinary, response to the Grand Challenges, identification of shared priorities through consultative processes, joint funding with a real common pot. At operational level, these programmes include the open competition and international peer review process and ex-post evaluation. During the 2010–2014 period, **interdisciplinary programmes** were launched in the following areas: climate; health and welfare; societal security; education for tomorrow; responsible development of the Arctic; and eScience. In addition, new initiatives were developed in the following areas: green growth/bioeconomy; neutron/materials science; Nordic languages, including communication and language culture in the Nordic region; and gender research with particular focus on conditions within the research community.

Of particular value of the Nordic cooperation in research and innovation is the ability to build, via the established structures and in a short period of time, **common-pot funded research collaboration** based on national priorities.

These initiatives incorporate a considerable amount of national co-funding and are open to researchers from all of the Nordic countries. The strong networks and **deep trust** among the key actors that this generates creates significant potential for future cooperation.

The peculiar element of this regional initiative can be summarised by the concept of **trust**. This trust is linked to the fact that in the Nordic region there is a Nordic cultural community, similar prioritisation and a sort of common identity. Moreover, Nordic countries are similar with regard to academic levels and standards and this facilitates the process towards creating joint programmes or common pot schemes.

A specific programme directly inspired by the ERANET scheme, has been developed and funded by NordForsk. The **NORIA-net programme**¹¹ consists of a network of Nordic national research funders and managers, engaged in coordination activities aimed at joint actions in research funding and research policy. Aiming at creating coordination activities leading to sustainable collaboration and investments, it has as ultimate goal to establish enduring funding instruments and funding mechanisms coordinated and funded by NordForsk and the national research councils together. The results of a NORIA-net can either be directed towards the development of a common research policy of a given area, with possible joint Nordic initiatives in research policy and research funding, or the setting up of specific programmes¹² and call for proposals¹³.

Further specific results attained by NordForsk relates to researcher mobility, that is strongly encouraged. **Cross-border access to and portability of grants** is indeed an integral component of all NordForsk programmes.

¹⁰ The representatives of the National Research Councils are detailed on www.nordforsk.org/en/about-nordforsk/organisation.

¹¹ The NORIA-net programme was launched in 2007.

¹² Examples where NORIA-nets led to the development of co-funded programmes are "The Sustainable Freight and Logistics in a Nordic Context" and "A Nordic-Baltic Research and Innovation Programme on Living Labs".

¹³ More details on NORIA-nets projects are available at www.nordforsk.org/en/funding/funding-schemes/noria-net/@@fof_projects.

Finally, NordForsk has been very active in promoting **Open Access**. In 2013, the NordForsk Board adopted Open Access guidelines for publications. NordForsk places priority on implementation of Open Access to publications, data, software and educational resources.

3.1 Financial alignment through the use of real common pot

NordForsk’s unique feature is that it facilitates Nordic cooperation using the **real common pot with no fair return** as funding mode applied in all its programmes and initiatives.

NordForsk’s budget includes Nordic Council of Ministers and national funding. The Nordic and national funding is consolidated in a "common pot" under each NordForsk research programme.

NordForsk’s common pot budget is usually made of two parts: one part, equivalent to one-third of the funding (so called glue-money) is the funding from the Nordic Council of Ministers; the second part, corresponding to two-thirds, is allocated at the national level, through national funding agencies/research councils. The contribution to a programme by a country is determined by the fraction of the GDP for that country. In practical terms, the GDP’s are summed up and a Country’s fraction will be $[GPD(\text{Country})/GDP(\text{Nordic Countries})] * 2/3 * \text{total programme budget}$. The various contributions are paid out to NordForsk, which is in charge of administering the entire budget.

Once a programme attains the participation of at least three countries and its set up is agreed, NordForsk Board negotiates with the countries what budget will be targeted. The target is to have the 1/3-2/3 partitioning between NordForsk and the national research councils to be fulfilled. While NordForsk meets this target with 1/3 of the funding, the funding agencies have to work internally in their countries to reserve the needed funding. As a result, how this process will be carried out in the countries involved and with which timelines may differ. When the programme is started up the pledges are given by each country.

The main benefits of using the real common pot rely on fostering excellence in research, by allocating funding to the research projects deemed to be of highest scientific quality after peer-review assessment, regardless of how much funding each Nordic country has contributed to the pot until the budget has been used up. This allows the optimal use of the available budget maximising the number of projects to be funded. The use of real common pot is fundamental to help the coordination of larger national investments and create Nordic synergies.

It is unique to Nordic countries that research funding for international cooperation is allocated with such a high degree of **trust** and **flexibility**. In comparing the way Nordic countries are making an extensive use of real common pot and the difficulties of other EU initiatives to widely adopt the real common pot can be motivated by the deep trust existing among Nordic countries, as well as similarities in priorities, traditions and culture.

A drawback is that this funding model is dependent on existing, significant national research investments. The partitioning 1/3-2/3 hasn’t been kept to the target in most recent years, but NordForsk ambition is to meet it soon. Nevertheless, over the years, NordForsk has succeeded in increasing the budget share allocated by the national research funding agencies, primarily in the Nordic countries. In 2016 the national co-funding was approximately 96 million NOK (around 10 million euros). In addition, there are in-kind contributions from the higher education institutions hosting the programmes.

Figure 1. Distribution of Funding NordForsk activities

NordForsk website. Facts and Figures

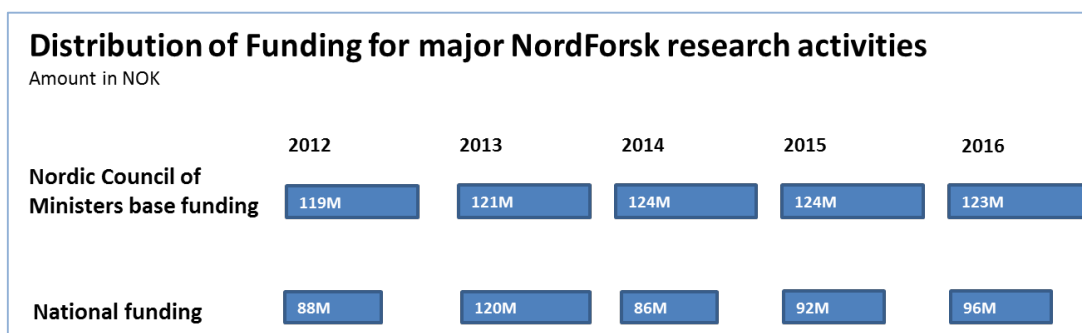
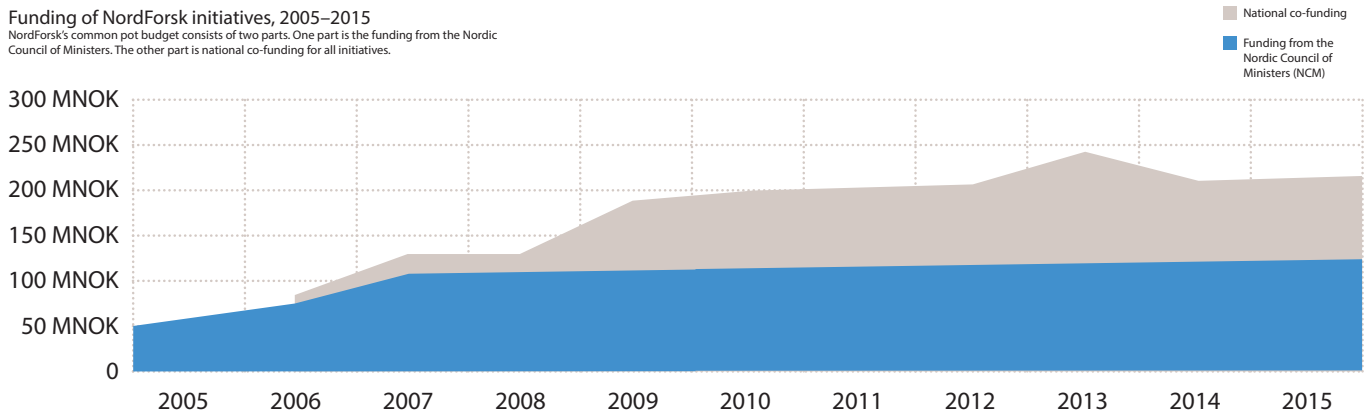


Figure 2. Funding of NordForsk Initiatives via common pot budget in 2005-2015

NordForsk 10 years, 2005-2015, NordForsk Magazine



The instrument of the Nordic Centres of Excellence (NCoEs), representing one of NordForsk funding instrument, is a good example of co-funded programmes where the national research funding agencies agree to put a certain amount of money in a common pot and to issue joint calls. In NCoE research groups compete for relatively sizeable allocations within the framework of a common-pot budget. The first NCoEs¹⁴ with funding from NordForsk had a total budget of 170 million (18 million euros) for a five-year period. The evaluation of these first programmes under the NCoE scheme showed that this model is effective and yields high-quality research results¹⁵. The report also indicates that the abovementioned scheme is beneficial for already-established groups of researchers with a strong position in their fields.

3.2 Setting-up of joint programmes with real common pot: the Top-Level Research Initiative

NordForsk set up and administered a number of **joint programming with a real common pot**¹⁶, one of which is considered as a model for Nordic Collaboration: the Top Level Research Initiative on climate, energy and environment (TRI). The TRI, detached from the usual process of Nordic cooperation and consultation, was initiated as top-down initiative, by the Nordic prime ministers as part of a globalization agenda for Nordic collaboration¹⁷. The TRI, established in 2008 with a budget of 450 million NOK over five years, became the largest joint Nordic research and innovation initiative to date and represents a significant development of the Nordic research and innovation collaboration. The TRI has had the effect of focusing and structuring Nordic research **cooperation to a larger extent** and it has demonstrated a practical form of governance for such a more focused effort.

TRI primary objective is to involve the very best agencies and institutions in the Nordic region and to stimulate research and innovation at the highest level in order to make a Nordic contribution towards solving the global climate change challenge.

¹⁴ After a decision taken by the NordForsk Board in 2006, two jointly funded programmes were established: the Nordic Centre of Excellence (NCoE) Programme on Welfare Research and the Nordic Centre of Excellence Programme on Food, Nutrition and Health.

¹⁵ The Technopolis final evaluation, led by Peter Stern, was published in 2014.

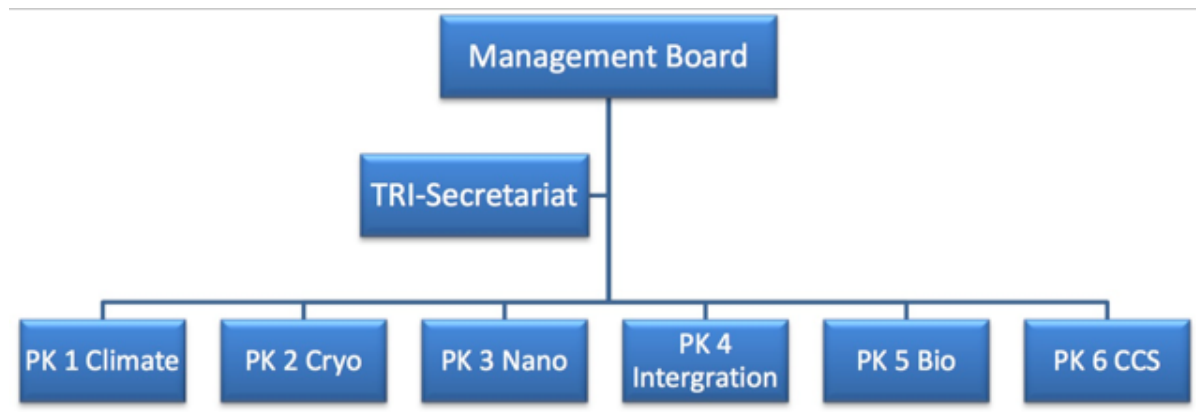
¹⁶ Examples of joint programmes with real common pot are Transport and Logistic, LivingLabs, Nordunet3, Nordbib.

¹⁷ The Nordic prime ministers, presented at their summer meeting in 2007, a proposal (then referred as the Globalization Initiative) calling for joint Nordic activities in research and innovation, including suggestions for joint programming of research, opening national investments funds for cross-border Nordic projects, strengthening innovation infrastructures both within Nordic and coordinating Nordic research on energy and environment. The prime Ministers suggested that the Ministers responsible for Nordic cooperation define a new budget of approximately 8 million euros and established a task force for rearrange existing cooperation budgets. In December 2007 a steering committee was appointed to develop a proposal for the first TRI.

As first example of a top-down shared Nordic programme, the TRI is a complex organization with representation of all five countries, the Nordic Council of Ministers, three Nordic organisations (NordForsk, Nordic Energy Research and Nordic Innovation) and a number of stakeholders¹⁸. The programme is co-funded by the five Nordic countries, with budgetary funding divided in proportion to their GDP. On top of this, the Nordic Council of Ministers, the Nordic organizations NordForsk, Nordic Energy Research and Nordic Innovation, all contribute to the financing of the Initiative and its management¹⁹.

Figure 3. Organisation of TRI

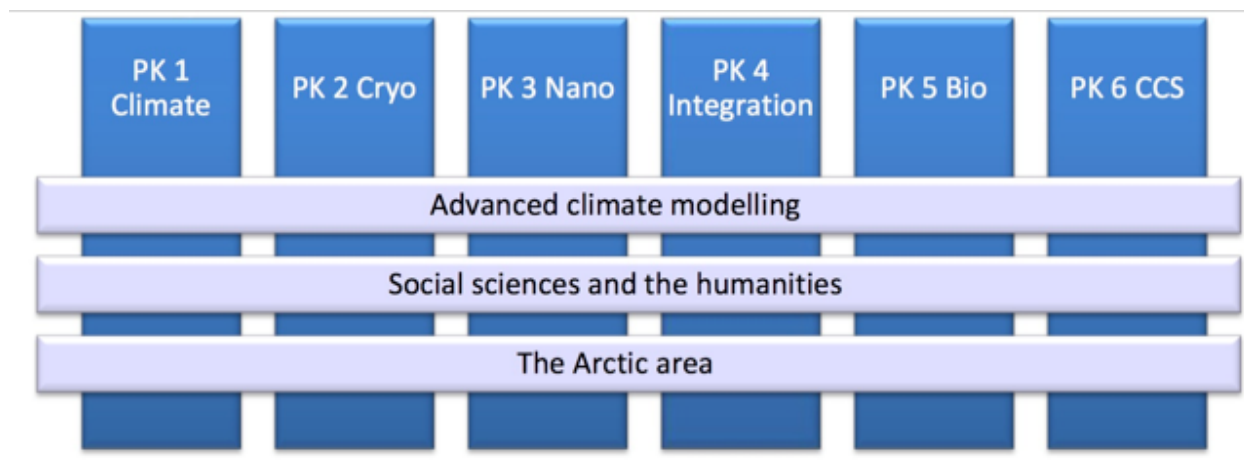
Interim Evaluation of the Top-Level Research Initiative, DAMVAD



The TRI goals are: (i) be a central part of Nordic research and innovation efforts in the field of climate, energy and environment and create the preconditions for increased cooperation between the countries, the Nordic institutions and national agencies; (ii) be a cross- institutional Nordic research programme for investments in the abovementioned field; (iii) contribute to developing framework conditions in the Nordic countries for cooperation between top research and innovation communities; (iv) contribute to increased coordination and professional leadership of Nordic research and innovation efforts; (v) ensure efficient and strategic application of resources by identifying areas in which Nordic initiatives have major potential and by stimulating the development of new initiatives through pilot projects and programmes; (vi) act as a platform for further international cooperation. A major importance is attached to a close partnership with business and industry so as to ensure the market uptake and application of research results.

Figure 4. Thematic priorities of TRI

Interim Evaluation of the Top-Level Research Initiative, DAMVAD



¹⁸ Observers from the Faroe Islands, Greenland, Aland islands are in the Management Board.

¹⁹ The three Nordic institutions of Nordforsk, Nordic Innovation and Nordic Energy Research act as the Secretariat for the initiative, contributing their combined competencies in the fields of research, innovation, technology and energy.

The TRI is organized as a **real common pot**, which implies that none of the financially contributing partners is guaranteed an equal share of the research grants²⁰.

The TRI programme, representing a political and organizational experiment, has proved to be a significant contributor to the Nordic research collaboration. As first cross-institutional Nordic research and innovation programme, the TRI has been a model and an example of feasibility for multilaterally funded research collaboration in a broader international context. The TRI represents a precedent-setting Nordic cooperative model with clear top-down mandate of the five prime ministers of the Nordic Countries. The TRI has contributed, from the organizational point of view, to building the trust and coordination required for a real common pot large initiative among the Nordic countries. The TRI has in particular contributed to developing Nordic research communities and has thus developed good framework conditions in the Nordic countries for top-research cooperation.

These significant results paved the way for further attempts to build similar programmes, at regional and EU level. In terms of results attained by the initiative, TRI has in general led to **substantial scientific results** and played a central role in Nordic research efforts in the specific field of interest. In particular, TRI main achievements can be summarized as follows²¹:

- The number of scientific publications increased significantly from 2010 to 2013 and so did the number of high quality publications²²;
- Cross-country research collaborations and interdisciplinarity have largely been achieved as 66% of TRI scientific publications have international co-authors and 70% of TRI publications are interdisciplinary;
- TRI funded projects have contributed to the establishment of new Nordic research communities, to identifying new collaboration partners and build new connections, also beyond the TRI project²³;
- The initiative successfully identified and coordinated Nordic research in the field of energy, climate and environment²⁴.

3.3 **Nordic collaboration in research infrastructures**

One of the main goal of NordForsk is to enhance the research infrastructure collaboration, as a mean of enhancing research quality and impact. Excellent research infrastructures typically require large investments and a cooperation on this will thus be beneficial in terms of use, access and investment. The Nordic countries are moving towards a closer cooperation in relation to research infrastructures, and have developed specific initiatives funded under NordForsk:

- **Joint use of Research Infrastructure Programme**, aiming at optimizing joint Nordic use of research infrastructures, increase the interaction between existing sets of infrastructures and share best practices. A call for Joint Nordic Use of Research Infrastructures was launched as a new funding instrument. After the launch of a first call, 19 infrastructures projects, including participants from all Nordic countries and from Russia and the Baltic states, received NordForsk funding²⁵;
- **NORIA-net on the Nordic Research Infrastructure Network (NRIN)**, a tool for expanding the network of Nordic cooperation on research infrastructures policies. The main objective of the network is to identify barriers and obstacles at a structural and organisational level for the development of Nordic Research

²⁰ The funding instruments employed in the TRI include: Nordic Centres of Excellence; Nordic Networks; Integrated Projects; User-driven competence centres; Studies.

²¹ Final Report from the Ongoing Evaluation of the Top-Level Research Initiative, commissioned by TRI to Damvad, 2014.

²² The number of high quality TRI publications was measured on the Norwegian authority list, showing a share of 31% publications remarkably higher than the expected average of 20%. The Norwegian authority list, scientific journals are divided in two levels: "normal" level 1 and "high level" 2 (international, leading scientific journals).

²³ In the survey conducted by Damvad, 60% of TRI projects participants find that the TRI has largely contributed to the formation of new ties, while the 80% indicates that they have extended the collaboration beyond the TRI project. See "Final Report from the Ongoing Evaluation of the Top-Level Research Initiative", 2014.

²⁴ Nordic countries are currently discussing at political level if and how to continue the TRI and in what form.

²⁵ The call was launched in 2007.

infrastructure cooperation and to make proposals to overcome such obstacles, thus strengthening the overall Nordic collaboration on research infrastructures;

- Hosting the **Nordic e-Infrastructure Collaboration (NeIC)**, an organisation that facilitates the development and operation of high-quality e-infrastructure solutions in area of Joint Nordic interest²⁶.

3.4 Cross border cooperation and synergies with initiatives at EU level, in particular JPIs and ERA

NordForsk, while focusing on achieving added value through Nordic cooperation, has moved towards a wider European perspective. On the basis of this perspective, cooperation with JPIs and with the European Research Area has been developing.

In introducing, inspired by the ERA, the **Nordic Research and Innovation Area – NORIA**, Nordforsk has the ambition to promote a globally leading Nordic research and innovation by strengthening regional cooperation. ERA priorities played an important role when NORIA was set up, and the aims of NORIA are to a large degree similar to those of the ERA. The ERA Green Paper²⁷ emphasizes six areas that need to be strengthened in order to stimulate R&D cooperation in the European region: (i) providing common priorities and joint programming; (ii) developing common research infrastructure; (iii) stimulating increased mobility of researchers; (iv) encouraging excellence in research; (v) contributing to knowledge-sharing; and securing a broader international cooperation. In line with this priorities and strategy, a close collaboration with the ERA was established through a Memorandum of Understanding between NordForsk and the European Commission, signed in 2012. With this MoU, NordForsk agreed in particular to develop actions related to ERA priorities, as defined in the ERA Communication 2012²⁸, within its remit. The areas addressed by the MoU included career opportunities for researchers and researcher mobility, gender equality, cooperation on research and research infrastructures, and Open Access to data and publications with a focus on Nordic eScience.

NordForsk further develop its ties with European initiatives by collaborating with the **European Joint Programming Initiative JPI Climate**, thus actuating a new type of cross-border cooperation with joint programming initiatives. Having a similar focus with the JPI Climate, the Top-Level Research Initiative experiences can be considered as a joint contribution from the Nordic countries to the JPI. As part of the aim of the TRI to establish platforms of international collaboration, NordForsk has thus closely followed the development of JPI Climate and has a role of observer within the JPI Climate Governing Board. In 2013–2014, NordForsk administered JPI Climate's first joint call for transnational collaborative research projects, in cooperation with the French National Research Agency.

4. Overall limitations with this tool, including difficulties encountered during implementation

The Nordic cooperation in Research and Innovation, and the instruments set up within the realm of NordForsk are valuable experience with **successful real common-pot arrangements** and **alignment of funding**.

The main obstacles encountered in attaining the ambitious goal of making the Nordic region a leading region within research and innovation are linked to the complexity of the Nordic R&I framework created under the auspices of the Nordic Council of Ministers - in which NordForsk is one of the main actors - and the relatively limited budget allocated to Nordic cooperation compared to research funding allocated at national level.

²⁶ The NeIC was launched in 2003 in response to a decision by the research funding agencies in the Nordic countries to contribute to a distributed computing infrastructure for analysing and storing data generated by experiments at the Large Hadron Collider at CERN. It was then established as an organizational unit under NordForsk in 2012. In 2013, the Nordic countries signed a 10-year agreement on joint development of advanced IT services for research. This demonstrates a significant commitment to developing services within a wider range of scientific fields in a sustainable manner. Research infrastructure provided by the NeIC is of crucial importance to the Nordic eScience Globalisation Initiative (NeGI), which is a large-scale Nordic research and educational programme that also supports training in e-Science tools and methods. The thematic areas of the NeGI encompass climate research and health/social preconditions for health. More information are available at neic.norforsk.org/about.

²⁷ Green Paper, The European Research Area: New Perspectives, COM(2007) 161.

²⁸ ERA Communication "A reinforced European Research Area Partnership for Excellence and Growth", adopted by the European Commission on 17th July 2012.

4.1 Limited budget

NordForsk has supported the increase of the volume and quality of research cooperation. This had been achieved in part through the allocation, via real common-pot, of substantial sums by the research funding agencies in the five Nordic countries – in addition to funding provided by the Nordic Council of Ministers (glue money, corresponding to 1/3 of NordForsk budget) – and in part as a result of the competition for relatively large funding amounts, which has led to higher-quality new knowledge, as for instance in climate change in the case of TRI initiative. Nevertheless, compared to national level, the budget allocated was relatively limited. The amount of resources allocated was partially influenced by the global financial crisis for 2007. This was particularly evident with the TRI, which originally envisioned budget was consistently reduced. However, performance indicators – such as the better success of Nordic research groups in performing in EU H2020, rate of high profile journals publishing and attractiveness of top researchers from abroad²⁹ - shows that the payback gained from the Nordic cooperation is very high and the expectations of reaching excellence in research, creating a critical mass and increase networking among researchers have been reached and exceeded.

4.2 Institutional complexity

The Nordic collaboration in research & innovation developed gradually and at different levels, thus generating a complex structure. One of the first actions taken in the context of implementing the NORIA concept was to reduce the levels of institutional complexity within the structure of the Nordic Council of Ministers. As a result, NordForsk and NeIC were established and a number of institutions directly funded by the Nordic Council of Ministers reduced. Nevertheless, a number of other institutions active within the field of Nordic cooperation remains. The current institutional structure under two pillars – research and innovation - organised under the abovementioned two different institutions with no common governance, still shows some problems in term of coordination, thus reducing the efficiency of the institutional structure and the effectiveness of the limited resources. Focusing on NordForsk, it has not been easy for the organisation to find its role in the complex Nordic research landscape and challenges related to the complexity of the institutional framework persist. The institutions involved are complex and highly diverse, and improvements should be made to implement greater coordination. .

4.3 Different national processes and timelines to define priorities

The foundation for the Nordic R&I cooperation is the existence in all the Nordic countries of a strong political will to cooperate. Despite this positive attitude towards Nordic cooperation, there are still challenges involved in **coordinating the national policies** in concrete cases and coming up with Nordic solutions.

While the Nordic countries have many similarities, there are also important differences between them that may have consequences for Nordic cooperation. National processes to define priorities are slightly different between Nordic countries and so are the timelines for defining them, the number of organisations involved and the binding conditions. First, the **contextual frames for the R&I cooperation**, overarching R&I policies and institutional setups are very different in the five countries. The research and innovation systems of the five countries are structured differently and there are variations in the numbers of actors involved and how they are related to each other. The degree to which innovation and research policy is seen as an integral part of the R&D system varies, as does whether a single institution or different institutions are in charge of both research and innovation.

5. Conclusions: Suitability and key factors of success

The most important achievement of NordForsk concerns the use of the real common pot as a rule in all its programmes and initiatives, fostering the alignment of funding. This mechanism was successfully developed in joint programmes as well as large-scale initiatives like the Top-Level Research Initiative. The true common pot

²⁹ The number of high-quality TRI publications was measured by the Norwegian authority list, showing that these publications are ranked in a share of 31%, remarkably higher than the average of 20%. Data also show that 66% of all Nordic scientific publications are co-authored with international authors. TRI-funded projects (66% of all participants) have contributed to the establishment of new Nordic research communities, while the great majority of these projects (80% of the participants) continued beyond the TRI projects. See the Final Report from the Ongoing Evaluation of the Top-Level Research Initiative, DAMVAD.

approach, compared to other funding modes, is the optimal option to fund excellent research and best projects while ensuring full spending of the allocated budget. The mutual trust among the countries involved seems to be a pre-requisite for an extended and effective use of this instrument, especially when large joint programmes are concerned.

Focusing on the regional perspective, cooperation among countries having similar background is fundamental to create a critical mass to reach best results in research and innovation and meet common challenges, especially grand challenges. The real common pot mode has bounding conditions that make it easier to adopt it in regional, bi-lateral or tri-lateral cooperation.

The establishment of common and joint structures to adopt and manage joint programmes and initiatives has proved to be fundamental for an effective and efficient long-lasting regional cooperation in R&I.

Key factors of success:

1) At strategic level:

- Have a clear **political willingness and explicit political commitment** to develop a durable cooperation and join forces in research activities favour the participation in large-scale research programmes and initiatives via the establishment of a joint organisation as well as the commitment of national funds necessary for the real common pot..
- Jointly develop **common long-term strategic research priorities and vision** as well as clear ambition with regard to the **added value** of the transnational/regional collaboration ensures that these priorities are shared by all the countries involved and foster the involvement of countries in the programmes and initiatives adopted within this collaboration.
- Setting up of a joint organisation/structure in charge of boosting the cooperation and of administering the specific programmes and initiatives adopted facilitates and accelerates the decisions and simplify the management of the programmes/initiatives.

2) At financial level:

- Ensure the creation of **trust** before the initiative is started favours the extended use of the real common pot as funding mechanism. A pre-existing collaboration and the mutual trust among the countries/research organisations involved make it easier to enter into initiatives and programmes having real common pot arrangement and maximise its benefits. A long history of collaboration built on common identity and trust also ensures the consensus and the establishment of large-scale programmes in relatively short period of time.
- Clearly define the procedure and modalities for determining the real common pot budget amount and ensure **relevant amount of money** to be allocated. This aspect is fundamental to meet the targeted budget and ensure a more efficient distribution of the common pot. The definition of criteria for defining the common budget share among the organisation budget and countries contribution simplify the negotiations while cutting the required timelines.
- Concentrate the budget in a limited number of initiatives, programmes or instruments where the added value is visible. This aspect ensures a more efficient use of available funding and maximises the benefits and the impact of the cooperation.

3) At operational level:

- Define and set up a **centralised management** of the programme. The setting up of bodies in charge of the definition and management of the programmes/initiatives facilitates their adoption and allows a more efficient management.

- Set up a common secretariat in the organization, as common infrastructure that handles all aspects of the call for proposals, including the definition of **common procedures** for the call preparation, proposal evaluation and monitoring. The administration of the call by a centralized secretariat, reduces the discussion on how to finance the implementation costs and simplify its management.

REFERENCES

Literature

DAMVAD, Advisory report to the TRI, Developed by Damvad for the Top-Level Research Initiative, May 2012. Available at:

<http://www.toppforskningsinitiativet.org/en/om-toppforskningsinitiativet/evalueringer>

DAMVAD, Final Report from the Ongoing Evaluation of the Top-Level Research Initiative, October 2014. . Available at:

<http://www.toppforskningsinitiativet.org/en/om-toppforskningsinitiativet/evalueringer>

DAMVAD, Interim Evaluation of the Top-Level Research Initiative, October 2011. Available at:

<http://www.toppforskningsinitiativet.org/en/om-toppforskningsinitiativet/evalueringer>

European Commission, Green Paper “The European Research Area: New Perspectives”, COM(2007) 161 final. Available at:

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2007:0161:FIN>

European Commission, Norded – NordForsk, Memorandum of Understanding between the European Commission and NordForsk. Available at:

https://www.nordforsk.org/files/Memorandum_of_Understanding%20between%20the%20European%20Commission%20and%20NordForsk.pdf

Joint Nordic Focus on Research Infrastructures – Looking for the Future, Stockholm 27-28 November 2013, Conference report. Available at:

<http://www.vr.se/NordicInfra2013>

Norden - NordForsk, Enhancing the Effectiveness of Nordic Research Cooperation, Nordic participation in the EU Frameworks Programmes – Best practices and lessons learned. Policy Brief 1, April 2011. Available at:

https://www.nordforsk.org/en/publications/publications_container/policy-brief-1-2011-enhancing-the-effectiveness-of-nordic-research-cooperation

Norden - NordForsk, Enhancing Nordic Research Infrastructure Cooperation, Policy Paper 3, 2012. Available at:

https://www.nordforsk.org/en/publications/publications_container/policy-paper-3-2012-enhancing-nordic-research-infrastructure-cooperation

Norden - NordForsk, Final Report on the Achievements under the Memorandum of Understanding between the European Commission and NordForsk, Policy paper 1-2014. Available at:

<https://www.nordforsk.org/en/publications/collections/by-type-or-series/policy-papers>

Norden - NordForsk, NordForsk 10 years, 2005-2015, NordForsk Magazine. Available at:

<https://www.nordforsk.org/en/publications/collections/by-type-or-series/nordforsk-magazine>

Norden - NordForsk, NordForsk Strategy 2015-2018, Oslo February 2015. Available at:

<https://www.nordforsk.org/en/about-nordforsk/purpose-and-priorities/strategy-2015-2018>

Norden - NordForsk, Nordic contributions to the development of the ERA, Policy Brief 2, April 2011. Available at:

https://www.nordforsk.org/en/publications/publications_container/policy-brief-2-2011-nordic-contributions-to-the-development-of-the-era/view

Norden, Nordisk Ministerråd, Building Nordic Strength Through More Open R&D Funding, The next Step in Noria. Available at:

<http://www.modelonordico.com/downloads/buildingnordic.pdf>

Norden - NordForsk, Rethinking Nordic Added Value in Research, Policy Brief 3, April 2011. Available at:

https://www.nordforsk.org/en/publications/publications_container/policy-brief-3-2011-rethinking-nordic-added-value-in-research/view

Nordera, A new deal for ERA. Lessons learnt from Nordic R&I cooperation?, Report 3. Oslo, November 2010. Available at:

https://www.nordforsk.org/en/publications/publications_container/noria-report-1-nordic-r-i-cooperation-achievements-and-challenges-en

Nordera, Nordic R&D collaboration at EU level, Report 2. Seville, September 2010. Available at:

https://www.nordforsk.org/en/publications/publications_container/noria-report-1-nordic-r-i-cooperation-achievements-and-challenges-en

Nordera, Nordic R&I cooperation: Achievements and Challenges, Report 1. Oslo, March 2010. Available at:

https://www.nordforsk.org/en/publications/publications_container/noria-report-1-nordic-r-i-cooperation-achievements-and-challenges-en

Presentations

Gustafsson, G. Presentation "*Lessons learned from Nordic JPIs*" at the ERA-LEARN 2020 Workshop of Practical Implementation of Alignment i: Learning from Good Practice. Available at:

<https://www.era-learn.eu/events/workshop-on-the-practical-implementation-of-alignment-learning-from-good-practice>

Consulted websites

NordForsk: <https://www.nordforsk.org/en>

Top-Level Research Initiative: <http://www.toppforskningsinitiativet.org/en>

Swedish research Council, Vetenskapsradet: <http://www.vr.se>

Interview

Jostein K. Sundet, Senior Adviser NordForsk

ANNEX 1. NORDFORSK STRATEGY 2015-2018³⁰

Reports focusing on NordForsk achievements underlined that, while recognising tremendous potential in Nordic research cooperation, it should focus on a few core funding instruments - the Nordic Centre of Excellence (which incorporates mobility of researchers, researcher training, international cooperation and research-driven innovation), thematic programmes and the joint establishment and use of research infrastructures - in field where Nordic research collaboration is expected to result in added value through achievement of critical mass.

The strategic priorities for 2015-18, following these recommendations, focus on achieving critical mass in areas of future potential, fostering Nordic and international cooperation on research infrastructures and reaching Nordic added value. The increased ambition with regard to Nordic added value envisioned the launch an participation in large-scale, interdisciplinary research programmes and increased volume and higher quality in research. In details, the priorities are:

Nordic cross-border research cooperation

- Strengthening integrated cross-sectorial research with the aim of tackling societal challenges and ensuring sustainable development
- Creating critical mass in potentially excellent research areas

Nordic research infrastructure cooperation

- Increasing cross-border access to and joint use of existing research infrastructures in the Nordic region and globally
- Supporting the establishment of new Nordic research infrastructures

Impact of Nordic research and research infrastructure cooperation

- Providing Nordic policy-makers and users with new evidence-informed/tested knowledge
- Improving knowledge about new results of Nordic research and research infrastructure cooperation on the science and society arenas by increased visibility.

³⁰ NordForsk Strategy 2015-2018, available at www.nordforsk.org.

ANNEX 2. THE NORDIC CENTRE OF EXCELLENCE (NCoE)

Nordic Centres of Excellence are established to strengthen cooperation between outstanding researchers, research groups and research institutions within areas of priority for the Nordic countries.

Main features of a Nordic Centre of Excellence

A Nordic Centre of Excellence is a multi-site or single-site environment with a joint research agenda, joint management, coordinated researcher training, common communication activities and collaboration on research infrastructure. Nordic Centres of Excellence are to comprise Nordic researchers at the forefront of their fields, and may include participants from non-Nordic research environments who are needed to fulfil the goals of the centre.

Nordic Centres of Excellence facilitate more efficient use of resources by bringing together people, funding and infrastructure in collaborative entities, thereby enhancing the coordination of research efforts. They promote international researcher mobility, true interdisciplinary research, and the joint use and establishment of research infrastructure. The centres incorporate a targeted international strategy and provide joint access to the best research environments in the Nordic region, thus increasing the region's attractiveness and strengthening Nordic ties to and impact on relevant European research initiatives. Through coordination of researcher education, the centres build competence, establish long-term networks and expand the career opportunities of younger researchers.

The NCoE promote both the development and use of research-based knowledge. The joint communication and dissemination activities and coordinated data management conducted at the centres increase the likelihood that the research results will be used both in the scientific communities and by society as a whole. Collaboration with public service providers and industry is encouraged within the framework of a Nordic Centre of Excellence.

Status as a Nordic Centre of Excellence and funding are granted for a five-year period. Funding is granted for Nordic research cooperation as specified in the proposal. The amount of funding allocated by NordForsk depends on the centre's thematic area, size and budgeted activities; however, in order for a Nordic Centre of Excellence to function properly, the funding amount should normally not be less than NOK 20 million. NordForsk may award additional grants in connection with needs arising from new ideas and partnerships during the funding period.

Nordic Centres of Excellence are selected via call for proposals.

Proposals must be relevant to the call, must be of excellent scientific quality, and must describe how added value will be created through the cooperation.

To be eligible to submit a proposal under this call, applicants must fulfil the following criteria:

- The Leader of the Nordic Centre of Excellence must be an established senior researcher based at a research institution in a Nordic co-funding country. NordForsk will enter into a contract with this institution, which is responsible for the administration of the Nordic Centre of Excellence. The grant will be disbursed to this institution.
- A Nordic Centre of Excellence must have institutional commitment from at least three Nordic countries.
- Partners from countries that do not participate in the common-pot funding of the respective programme must document their own contribution (cash and in-kind) to the Nordic Centre of Excellence.
- Proposals must include a statement on research ethics.
- Proposals must include a description of gender aspects of the research and organisation of the NCoE.³⁴