

# Nordic Energy Policy Cooperation

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## Executive summary

### *Key observations*

- Cooperation has been based on gradual, step-wise development starting with political commitment, evidence-based decision support derived from studies, analysis, best practises and lessons learned from bilateral cooperation.
- Nordic cooperation has allowed bridging and strengthening of national policies in a wider international context.
- Larger initiatives have been based on solid planning and analysis and often time constrained with earmarked funds.
- Governance structure are in place with modest budgets for analysis, conferences and knowledge sharing activities, taking into account existing institutions and cooperation.

### *Policy recommendations for building regional energy policy cooperation*

- High level political commitment.
- Incremental development of the cooperation based on consensus and mutual understanding. Important trust building mechanisms include exchange of experiences, working groups, seminars, educational activities and mobility schemes for energy policy officials.
- Analysis- and research-based support for decision-making regarding energy systems, planning and markets in general and cooperation in particular (seed funding needed).
- Lean administration using existing institutions but complemented by a small agile secretariat with the responsibility to support and position the cooperation in the energy sector and beyond.
- Energy research and technology cooperation with funding from each country and supported by a small secretariat. The secretariat could also be commissioned with other tasks such as secretariat support to the cooperation and its work groups, management of research based analysis and reports, industry outreach etc.

## **1. Introduction**

Nordic energy policy cooperation dates back to the very beginning of Nordic Council of Ministers in 1972. Over the years it has become an important area of cooperation in its own right with high political ambitions to develop a well-functioning, sustainable, environmentally friendly and secure energy system within and across the borders. The cooperation has led to some remarkable successes such as the liberalised Nordic electricity market and Nordic Energy Research. Other areas have resulted in numerous reports, discussions and visions but without further actions. This paper aims at analysing how the Nordic energy policy cooperation has developed since the very beginning until today. What have been the areas of cooperation and why have they changed over time? How has the cooperation been organised and what has been decisive for successful outcomes.

The analysis is primarily based on documents, policy action plans and reports from the archives at Nordic Council and the Nordic Council of Ministers. The academic literature on Nordic energy policy cooperation is to the author's best knowledge limited, except for the development of the Nordic electricity markets. Interviews with involved officials and politicians would probably have added to the analytical quality of the work but this has been outside the scope of this work.

Firstly, a short description of the energy systems in the Nordic countries is made. Then three stages of the Nordic energy policy cooperation are described, each of which setting the context for the cooperation. The first period from 1972 to 1988 is influenced by the first oil crisis and describes the building of the Nordic energy policy cooperation. The second period from 1989 to 2005 describes the cooperation being stuck between the European internal market discourse and the radical changes in Europe around the fall of the Wall and the dissolution of the Soviet Union. The third and last period from 2006 and until today has focus on the political ambitions in developing energy and climate policies beyond the national boundaries. Finally, the three stages are summarised across cooperation areas and achievements are described.

## **2. The Energy System in the Nordic Countries**

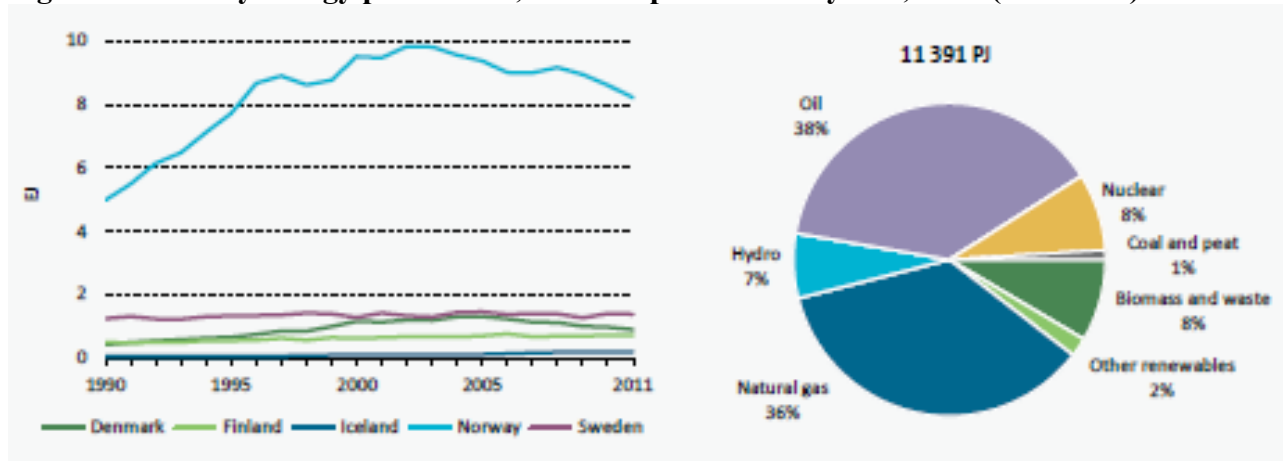
The Nordic region has a wide diversity of primary energy sources. These comprise petroleum, nuclear power and renewable energy sources such as hydropower, biomass, wind power and geothermal.<sup>1</sup>

Norwegian oil and natural gas dominate the region's primary energy supply representing 68% in 2010. Norway's oil and gas exports are third largest in the world in 2010, after Russia and Saudi Arabia. Mainly due to decrease in Norwegian petroleum production, overall Nordic energy production has declined by about 16% since its peak in 2002, but has increased by 58% since 1990.

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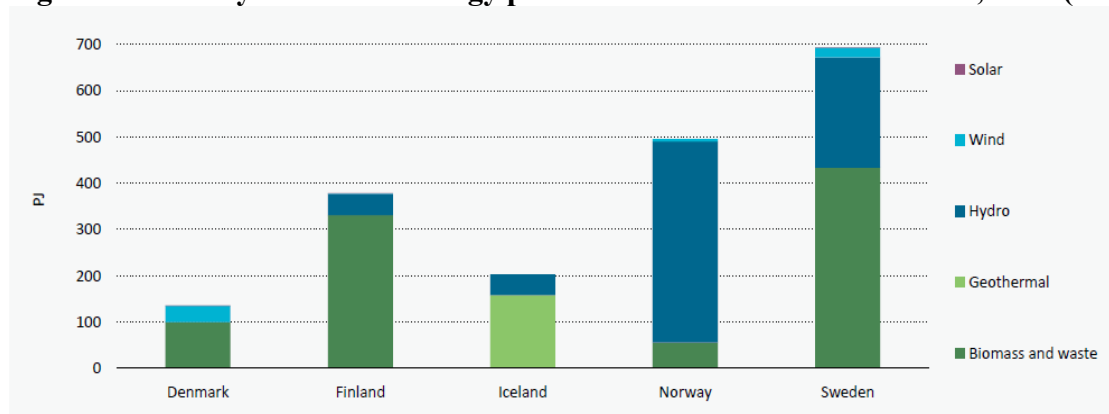
<sup>1</sup> This section is based on IEA 2013.

**Figure 1. Primary energy production; share of production by fuel, 2011 (IEA 2013)**



Renewable energy production in the Nordic countries is dominated by biomass and hydropower. Sweden is the leading producer of renewables, dominated by biomass and hydropower. Second is Norway with its abundant hydropower. Third is Finland, mainly dominated by biomass. Iceland has geothermal and hydropower, and last comes Denmark with wind power and biomass.

**Figure 2. Primary renewable energy production in the Nordic countries, 2011 (IEA 2013)**

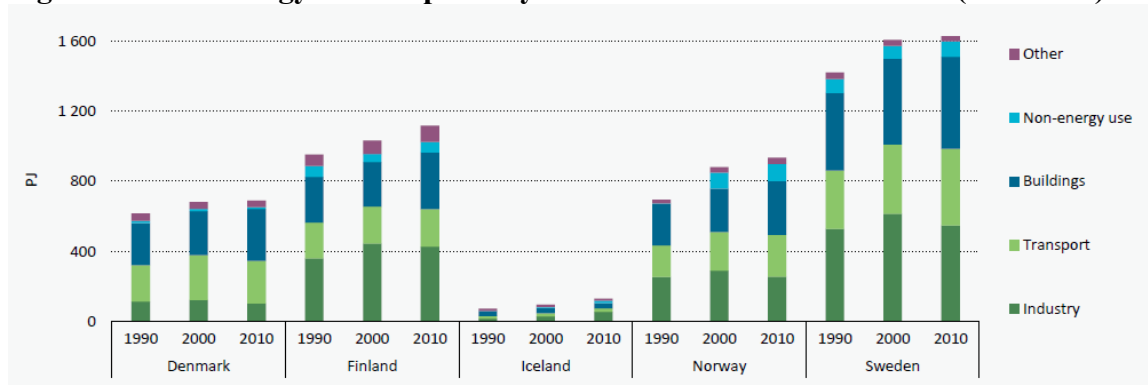


Electricity generation in the Nordic region exceeded 400 TWh in 2010. 83% of the electricity production is carbon neutral, with 63% coming from renewables. Hydropower represents about half of the generation, with more than 50% coming from Norway (118TWh) followed by Sweden (66 TWh). The share of non-hydro generation is increasing. In Denmark, there is a steady replacement of coal-fired power plants with biomass, gas and wind. The share of wind power rose from 12% in 2000 to 21% in 2011 [in 2014 it is 39.1%]. Electricity generation in Finland is dominated by coal-fired power plants and nuclear, each providing 20 TWh out of 80 TWh. Iceland has 100% renewable electricity generation, with 74% hydro and 26% geothermal. Norway has 95% hydropower and one natural gas combined cycle power plant and a relatively modest share of wind power. Sweden has the largest power generation with mainly nuclear power, hydro power and biomass fired power plants.

Energy consumption in the Nordic region has increased by 17% since 1990. The end use sectors of industry, households and transport each represents one third of total energy consumption. The largest increase in consumption is seen in the transport sector and the commercial building,

each with 30% increase over the last 20 years. Industry accounts for 40% of electricity in the region. Due to high electricity consumption by the aluminium industry, Iceland and Norway have the world's highest electricity consumption per capita. The cold climate has resulted in high rates of electricity consumption for heating, particular in Norway, Sweden and Finland.

**Figure 3. Final energy consumption by sector in the Nordic countries (IEA 2013)**



The energy intensity (energy consumption per unit of GDP) has remained above the OECD average since the mid 1980ies, mainly due to increases in industry activity and to the high concentration of energy intensive industry (e.g. metal and pulp and paper) and the petroleum industry. With the exception of Denmark, energy consumption per capita is above OECD average.

The energy sector accounts for 62% of GHG emissions in 2010 in the Nordic region, varying between 200 Mt and 250 Mt over the past decades. The transport sector has shown the largest increase in emissions. In Iceland, emissions from industrial processes have increased due to a new aluminium plant and increased capacity in others.

The Nordic region is a net exporter of energy, led by Norway's oil and gas export. In 2011, the primary energy production is close to the double of the final energy consumption. Norway's exports accounts for 82% of the Nordic exports, while oil and gas also account for the largest share of imports, primarily to meet the demand in the transport sector.

In addition to electricity trade among its participating countries, Nord Pool Spot trades with Russia, Germany, Estonia, Poland and the Netherlands. Finland has been a net importer, purchasing power from Russia and to a lesser extent from Estonia. Norway, Sweden and Denmark fluctuate, being net exporter one year and net importer another year depending on the climate.

### 3. Stages of Nordic Energy Policy Cooperation

*3.1 The stages of the Nordic energy policy cooperation are divided into three periods:*

The first period from 1972 to 1988. With the establishment of Nordic Council of Ministers in 1972 this period was characterised by the overlapping regional cooperation between the Nordic countries and the European Economic Community (EEC), which Denmark together the UK joined in 1972 while Iceland, Norway and Sweden remained in the European Free Trade Association (EFTA). The oil crisis in the 1970s brought energy policy high on the political agenda, also at Nordic level where each of the countries was forced to develop a robust national energy policy. In this period two parallel features emerged – the environmental and natural

resource concern as described in the UN Brundtland commission report and the common European market re-launched by the Delors Commission. By the end of this period, nuclear power was deeply challenged following the US Three Mile Island accident in 1979 and the Russian Chernobyl accident in 1986. The Nordic energy policy cooperation took off with the first meeting of the Nordic energy ministers in 1980 outlining a range of common activities relevant for the planning and development of the Nordic energy sector.

The second period from 1989 to 2005. This was a dramatic period for the Nordic countries and the adjacent areas due to the fall of the Wall in 1989, the dissolution of the Soviet Union in 1991, the unification of Germany and the process towards the European Union (Maastricht Treaty, 1992). In 1992, the internal European market came into force and the EEC and the EFTA agreed to cooperate within the European Economic Agreement (EEA). Finland and Sweden became members of the EU in 1995, leaving Norway and Iceland as the remaining EEA countries. The outreach towards the adjacent areas around the Baltic Sea changed the Nordic outlook and opened up for closer cooperation. This was further strengthened with the three Baltic countries being members of the EU in 2004. Environmental issues and climate change were coming up on the international agenda and in 1997 the Kyoto Protocol was adopted and came into force in 2005 by the ratification of Russia. These events had strong implications for the Nordic energy policy cooperation in terms of energy markets.

The third period from 2006 to present. Two major issues dominated the political agenda – security of supply and climate change. The energy security of supply became evident in Europe in January 2007 when the Russian-Ukrainian conflict on the gas supply and the payments effectively blocked the gas supply from Russia to Europe. Parallel to these events, the international negotiation on a post-Kyoto regime addressed the urgent need to address the climate challenge at a global level. The EU responded to these challenges by launching the ambitious 20-20-20 targets by 2020. Member states were obliged to increase the share of renewables in the energy system, to reduce GHG emissions and reduce energy consumption. At the same time, the third EU energy package<sup>2</sup> paved the way for even more integration of European energy markets. In 2008 the financial crisis hit the Nordic countries and the rest of the world and the energy security of supply and climate change concerns were transformed into economic considerations of job creation, growth and competitiveness. Despite the drop in oil prices in the autumn 2014, energy security of supply, climate issues and competition remained high on the European agenda and in February 2015 the EU Commission launched the European Energy Union package with five mutually enforcing and closely interrelated dimensions on energy security, a fully integrated European energy market, energy efficiency, a decarbonised economy and research and innovation (COM (2015) 80 final).

### *3.2 Stage one: Building the Nordic energy policy cooperation, 1972-1988*

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<sup>2</sup> The first energy package in the late 1990s allowed the opening of the electricity and gas markets and a gradual introduction of competition. The second energy package in 2003/4 focused on the concepts of unbundling and third party access and defined the need for independent regulatory authorities. The third energy package in 2007 established an unbundling regime and defined the duties of national regulatory authorities. It also improved the consumer right and promoted regional solidarity and national emergency measures in times of severe disruption of gas supply (see also: <http://fsr-encyclopedia.eui.eu/eu-energy-legislation-packages/>)

The economic development relies on a well-functioning energy sector. This was the rationale for the OECD as well as a core element of the European Steel and Coal Community from the very beginning. When the Nordic Council of Ministers was established in 1972, a separate Nordic Council of Ministers as well as a Nordic committee of senior officials for industry and energy was established, also supported by similar resort ministries in several member states. With the foundation of a number of Nordic institutions such as Nordic Industrialisation Foundation (grants and loans to technical and industrial research), Nordtest (cooperation on materials research) and the Nordic Investment Bank (NIB) important financial instruments facilitated the cooperation, also in the energy sector. The latter financed a number of transmission projects in the first years and a couple of nuclear power projects in Finland with Finnish and Swedish interests.

Following the first oil crisis, the Swedish government in 1974 approached the Norwegian government to discuss Nordic cooperation on oil and gas. Norway had little interest in Nordic cooperation and continued to give concessions to multinational companies in the exploration phase and to favour its own industry during the production phase. Further attempts to give preferred exploration access to Swedish Volvo Petroleum also failed. Although a bilateral agreement on energy cooperation between Norway and Sweden was concluded, it never played a substantial role.

However, at the regional level the Nordic energy ministers were ready for closer cooperation to address a common challenge – how to plan and develop a secure and robust energy sector. The Nordic Council of energy ministers met for the first time in 1980 to agree on a common four year action plan for energy cooperation, which focused on:

- energy efficiency
- energy research
- energy planning
- oil, gas and coal
- electricity trade and infrastructure

For each topic, working groups were appointed, work programmes agreed upon and modest budgets provided. Central to the work was exchange of experience of what was going on in each country, typically organised around seminars, conferences, reports and analysis as well as educational activities and mobility schemes for national energy planners and experts. The ambition was to make the cooperation efficient and non-bureaucratic, relying primarily on the Nordic governance system and institutions to strengthen the Nordic energy policy cooperation. This mode of operation was made from the very beginning and had not changed much over the years.

The energy efficiency cooperation focused on the end-use sectors of households and industry. Typical activities were education of energy economists, exchange of experiences and assessment of energy conservation campaigns, local energy planning and industrial sector guidelines for energy efficiency and identification of best practise companies.

Nordic cooperation in energy research complemented the well-established Nordic cooperation in nuclear energy<sup>3</sup>. A contact group for energy research was established aiming at coordinating

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<sup>3</sup> Nordic contact organ for nuclear issues (Nordisk Kontaktorgan for Atomkraftfrågar - NKA) was established in 1957 by the Nordic governments to promote Nordic cooperation related to the peaceful

research and development in the Nordic countries. Activities included registration of energy research projects, catalogue of special courses in the oil and gas sectors, common review of concrete projects and financial support to researchers to meet with each other. A special committee had the assignment to make a proposal for a Nordic Energy Research Programme to strengthen the overall energy research through coordination and cooperation in areas of common interest (Nord 1985). In 1985, the ministers decided to establish the Nordic Energy Research Programme with funding directly from each government.

The Nordic cooperation in energy planning took its departure from the need of each country for better planning tools for long term planning of the energy system. Emphasis was on exchange of experiences among national officials from authorities, the development of comparable energy statistics, methodological development of energy modelling and systems analysis for each of the Nordic countries. This included price sensitivity studies and engineering studies of energy sources, energy transfer and also changing energy markets and the energy policy opportunities to influence these markets. Closer cooperation between the Nordic energy planning committee of officials and the power sector's advisory body – Nordel<sup>4</sup> - was also established on long term electricity planning.

Following the oil crisis, the Nordic energy ministers wanted to explore cooperation activities in the oil, coal and gas sector to complement existing international contingency plans. But through a number of explorative studies on the oil refinery sector and the trade of coal it soon became clear that there was little common ground for cooperation except within areas related to safety and environmental issues.

The gas sector was different. An information group with participation from state companies and ministries exchanged information and experiences and commissioned over the years a number of studies to explore cooperation – economic aspects of liquid natural gas (LNG), prospects for coupling the Ekofisk in the North Sea with the Danish and Swedish gas systems as well as the extension of the Swedish gas system to Norway. Conferences were organised on contractual affairs in the offshore industry, offshore insurance issues and oil and gas exploration in the Arctic.

By end of the 1980s, Norway had become one of the main gas exporters to the European market, but had no domestic market for gas. Finland had built up a gas market entirely based on imports of gas from the Soviet Union. Denmark developed a gas market based on its own resources and exported about 25% of its gas production to Sweden. Sweden had a gas market only in the south, based on Danish supplies. In 1988 a Nordic gas conference was held to discuss a common infrastructure, research and development, planning and storage. Concrete cooperation should be based on commercial conditions, including the Nordic Gas-technology Center (NGC). The initiative was supported by the Nordic energy ministers, who once more expressed their expectation to the role of natural gas in the Nordic energy system (Nordisk Råd 1989). But by 1990, Swedish energy policy remained complicated with its moratorium on

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utilisation of nuclear energy. NKA was also the forum for discussions of topics of common interest within international organisations such as IAEA and OECD's NEA.

<sup>4</sup> In 1962, Nordel was established by the power companies in Denmark, Sweden, Norway and Finland. Over the years, Nordel proved to be a very powerful advisory body to the Nordic governments as well as to its member organisations.

nuclear power, the status of the hydropower and bio fuel preference. This forced Swedegas to drop its project of introducing gas in central Sweden. Three major gas companies (Statoil, Neste and Stoseb Gas) continued in 1991-1992 to analyse the possibilities of importing gas from Norway, but they finally concluded that the market was not large enough, neither in Stockholm nor in Finland (Agfors 1995).

Stronger Nordic energy policy cooperation was not just a question of political engagement but also implied closer contact between the authorities and the power producers on the longer term planning across the borders and assessment of concrete transmission lines. The power sector had cooperated across the borders since the first transmission cable was established across the Oresund Belt between Denmark and Sweden back in 1915. After World War II several cables were built across the border to assure sufficient and reliable power in the region and in addition to deliver power to its constituents, utilities were also alert to utilise their capacity irrespective of the border. These cross border power supply contracts between national utilities became the seed of a Nordic power stock market (Bäckman 2011).

By 1986, 17 connections facilitated a comprehensive cooperation on optimised use of the production system and better security of supply. In the action plan 1986-1988, the energy ministers continued the work initiated in the first years and started to consider the Nordic region as a home market for energy. They commissioned studies on how to overcome technical barriers for the flow of energy equipment products and how to promote Nordic industry on export markets. The cross-border nature of environmental problems in the energy system was also a concern, including local pollution and CO<sub>2</sub> emissions.

In summary, the first period of Nordic energy policy cooperation started out as an integrated part of the economic cooperation between the Nordic countries. But following the oil crisis, the countries were ready for closer cooperation on how to tackle energy efficiency, research, planning and the very important oil, gas and coal sector. To a lesser extent, political attention was on facilitating the cross-border power exchange, which was mostly addressed by the power companies themselves and their advisory body - Nordel. The cooperation was organised around committees and working groups which by means of studies, analysis and conferences provided decision support for politicians and other decision makers on what to cooperate about and what to let go. In the oil and gas sector, it gradually became clear that it was difficult to find common ground, but all could agree on exploring the prospects for cooperation through further analysis and exchange of information. In the research area, there was solid ground for strengthening the cooperation, which led to the establishment of the Nordic Energy Research Programme in 1985 with direct national contributions.

### *3.3 Stage two: Stuck between internal markets and the new European landscape, 1989-2005*

In the years 1989-1992 the Nordic energy policy cooperation took its departure from the ambition to develop a home market for energy. Also it took notice of the Brundtland Commission report "Our common future" and the need for a sustainable use of energy sources. The Nordic cooperation could no longer take place isolated from the development in other countries. The objectives for the cooperation were to assure a reliable energy supply, to increase energy savings, and to address safety and environmental aspects through energy technologies. In the Nordic Council session in 1992 it was obvious that there was an urgent need to reconsider the Nordic energy policy cooperation in light of the dramatic development in the adjacent areas - the Baltic countries, East European countries and Russia.



In these years, energy and economy were again merged into one Council of Ministers. Working groups were terminated (energy efficiency, markets and environment) and only the working groups on energy research and information continued together with *ad hoc* groups on power and gas markets, energy related environmental issues and international cooperation. Only areas of strict Nordic added value were to be prioritised. During these times of prioritisation, it seemed that the strategic action plans were replaced by annual work plans until 2002.

The prioritised areas started out with four and were later narrowed down to three core areas (electricity market, climate issues and regional cooperation):

- Nordic energy market (oil and gas markets, electricity market)
- Research and development
- Energy and environment
- Energy efficiency

Regarding energy markets, the energy ministers did not put emphasis on the Nordic electricity market in the 1989-1992 action plan, but continued their attention to develop and improve energy planning taking into consideration environment aspects. The oil and gas markets remained an area for further exploration of cooperation. Working groups with representatives from authorities and industry analysed prospects for Nordic cooperation, ranging from prospects for increased procurement in the North Sea, development of oil and energy markets in the Nordic region, integration of the Nordic gas net and consequences for infrastructure and security of supply. One working group explicitly focused on oil and gas in the West Nordic area covering Greenland, the Faroe Islands and Iceland. No substantial political decisions followed these explorative attempts.

From mid-1995 onwards, the political focus changed substantially towards the Nordic electricity markets. The Nordic energy ministers met at the Louisiana Museum in 1995 and agreed on liberalising the Nordic electricity markets. An *ad hoc* group of senior officials was established and assigned with the tasks to analyse the future of Nordel, to assess the need for Nordic actions to develop the Nordic electricity market and to analyse the development in the European Community and the Baltic Sea region and its implications for the Nordic electricity markets. The Nordic activities took notice of the ongoing EU activities, which resulted in the EU directives of 1996 and 1998 outlining the common rules for the internal market in electricity and natural gas and pushing for generation and transmission unbundling. The further development was highly influenced by the bilateral electricity market between Norway and Sweden which created a common electricity market, Nord Pool spot in 1996. Shortly after Finland (1996) and Denmark (West Denmark in 1999 and East Denmark in 2000) joined (Bredesen and Nielsen 2013). This wholesale market for electricity became a role model for the development of cross boundary electricity markets, which implied supply reliability, competition and efficiency.

The 2002-2005 action plan intensified the cooperation on the electricity market, highlighting the further cooperation between the transmission system operators (TSOs), the regional need for developing and strengthening the transborder transmission grid, assessment of net tariffs and analysis of market based mechanisms to stimulate sustainable power production.

Research and development was regarded as a key to the overall development of the energy system, the energy markets and the efficient use of energy resources. With the establishment of the Nordic Energy Research Programme in 1985, continued focus was on strengthening the basic competences in the university and research institute sector, supporting national energy

research programmes and contributing to the efficient use of scarce public financial resources. The programme was funded directly by the national energy and technology agencies complemented by a modest support for administration from the Nordic Council of Ministers' budget. A number of Nordic research colleges were established with delegated responsibility for seminars, PhD mobility scheme and research projects within their area. Over the years, the programme was developed according to four year research strategies, reflecting also the Nordic energy ministers' priorities for energy cooperation. Accordingly, priorities changed over the years from oil technology, oil geology and coal technology to electricity markets and the impact of climate change on the energy system. Efficiency (district heating) and renewable technologies were prioritised throughout these years. From 1998 and onwards, additional 10% funding was earmarked to strengthen the research cooperation with the three Baltic countries and North West Russia. The governance structure of academic colleges supported by a small secretariat under the guidance of a committee of senior officials was challenged in an external evaluation, which criticised the programme for being closed and opaque. In order to professionalise the cooperation, the programme was transformed into a Nordic institution in 1999 with similar governance structures as other Nordic funding institutions with a board, a director and a secretariat.

Energy and the environment took its departure from the Brundtland Commission's recommendations to facilitate a transition from fossil fuels to renewable energy and to improve energy efficiency in order to minimise negative environmental impacts and costly investment in new capacity. In 1995, the Nordic Council of Ministers announced that Nordic strategies for the energy related environmental problems were needed and an ad hoc task force was made to address energy related climate issues. In the action plan 2002-2005, climate was one of three core policy areas closely linked to the other core area, international cooperation in the Baltic Sea Region and the adjacent areas. Further issues included the importance of the Kyoto Protocol yet to be ratified, the need to reduce industrial CO<sub>2</sub> emissions, the prospects for CO<sub>2</sub> capture as a means to minimise the impacts of CO<sub>2</sub> emissions and Nordic research cooperation regarding climate issues.

In energy efficiency the work continued on the economical use of energy in industrial sectors, transportation and the service sector. Activities included education, information and consultancy, labelling of energy efficient equipment and cooperation in savings.

During these years, Nordic energy policy cooperation started to put increasing focus on international issues. Activities included information sharing and exchange on the Energy Charter Treaty<sup>5</sup> and the additional protocol on energy efficiency. A number of studies were commissioned to analyse the prospects for Nordic activities in the Baltic Sea region related to the mechanisms of the Kyoto Protocol<sup>6</sup>. Especially in the action plan 2002-2005, emphasis was

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<sup>5</sup> Energy Charter Treaty dates back to the early 1990ies and is an international agreement which establishes a multilateral framework for cross-border co-operations in the energy sector (<http://www.energycharter.org/>)

<sup>6</sup> The Kyoto Protocol was adopted in Japan in 1997. The Protocol is based on the principle of common but differentiated responsibilities: it puts the obligation to reduce current emissions on developed countries on the basis that they are historically responsible for the current levels of greenhouse gases in the atmosphere. The first commitment period was 2008-2012 and it came into force with the ratification by Russia in 2005.

put on making a framework agreement for a Testing Ground in the Baltic Sea region. This was anchored in the Bergen declaration made by the Nordic prime ministers and the commitments made by their colleagues from the Baltic Sea region and the EU Commission in Stavanger in 1998. Further, efforts were made to create a special Nordic investment facility for climate related projects through Nordic Environment Finance Cooperation (NEFCO). Much attention was on the general energy policy situation in Eastern Europe and the Baltic countries. The ambition was to develop the electricity markets in the region and to promote energy saving, energy efficiency and renewable energy. Likewise the Nordic cooperation should strive to extend the gas grid to the whole Nordic region and to couple the gas consumers with both Russian and Norwegian suppliers.

In summary, this period of the Nordic energy policy cooperation was characterised by the developments in the energy markets, environmental concern and the geopolitical changes. As for the energy markets, cooperation on gas infrastructure and markets remained on an explorative stage and was complemented by seeking common ground in the international activities around the Energy Charter Treaty. Cooperation on the electricity markets took a huge step forward when the Nordic energy ministers in 1995 agreed to liberalise the Nordic electricity markets. As for the Nordic energy research, the cooperation developed steadily guided by strategic action plans reflecting the political energy priorities. A decisive step was taken when the programme was transformed into a Nordic institution in 1999. During this period the Nordic energy policy cooperation increasingly got alert to the environmental challenges related to the energy system, not least sustainable energy sources and climate change.

### *3.4 Stage Three: Political focus on energy and climate policy, 2006-present )*

The Nordic energy policy cooperation as described in the action plan 2006-2009 was deeply founded in the Nordic energy ministers' vision from 2004: "The Nordic Energy Cooperation will play a strong and active role in the development of Nordic and European energy policies". Broadly defined priority areas outlined the work and continued to do so in the following action plans, though also leaving room for smaller preferences by the responsible drafting member state:

- Energy markets
- Development of sustainable energy systems (renewable energy, energy efficiency, climate and sustainable energy in sparsely populated areas)
- Energy research and technology development
- International cooperation (impact on the EU agenda and regional cooperation).

The overall objective for the cooperation on energy markets was to secure the best possible frameworks for the development of the Nordic markets.

As for the electricity market, the ambition was to create a borderless Nordic market with effective external trade. As laid out in the Nordic energy ministers' resolutions in 2004 and 2005, the Nordic electricity market should become a well-functioning regional market, which was characterised by multiple players, a high degree of security of supply, competition, sustainability, transparency and flexible consumption. The focus was to improve the framework conditions for the markets which included harmonisation, development of the transmission grid, mechanisms to assure necessary investments in production capacity and infrastructure. Congestion management and transfer capacity of the transmission network and

cooperation with EU and non-EU neighbours in developing frameworks for external trade were also high on the agenda.

Nordic cooperation was further intensified by the adoption of a Nordic action plan for cooperation in the electricity market in 2008. Again focus was on congestion management and grid investment, but also common end-user market and the development of the European electricity sector (NCM Electricity Market Group 2009). In the action plan 2010-2014 attention was on maintaining momentum of this specific action plan, including national grid plans, feasibility of cost sharing initiatives and assessment of potential areas for bids and prices by 2010. Likewise, the integration of large share of wind power and other renewables in the system was mentioned, putting demand on additional grid investments as well as developing new ways of integrating renewables.

The 2014-2017 action plan took the electricity market cooperation a step further. In addition to the Nordic whole sale market, the Nordic energy ministers had decided to create a common Nordic end-user electricity market. Although a detailed roadmap for harmonising the end-user market was made by the cooperating body of the Nordic supervisory authorities (NordReg), it was recognised that the development in the Nordic countries did not always follow the same rate and was not always identical. Since the Nordic electricity market was well advanced compared to the rest of the EU, the ambition was to jointly monitor that the new regulatory framework of the third EU energy package did not counteract the well-functioning Nordic market. Following the EU 20-20-20 targets by 2020, rapid expansion of renewable electricity had changed the conditions for electricity production in EU. Several countries had decided to introduce capacity markets to balance the system in times of high consumption, entailing the risk to reduce the electricity trade across the borders and distorting the competition. The need for grid reinforcement in each country also depended on the reinforcement in other countries. The Nordic energy ministers answer to this was to make grid investments that were socio-economical profitable in a Nordic perspective. This meant that if cost benefits were unevenly distributed between countries, the system managers were to negotiate on sharing. The first step of this rather ambitious action was to agree on methods for assessing the socio-economic benefits of transborder transmission capacity. Cooperation on grid planning and the preparation of a Nordic development plan seemed to be more straight-forward. Due to higher share of renewables in the system, storage was mentioned as an important means, particularly in isolated or sparsely populated areas far from the central transmission grids.

Regarding the gas market, the energy ministers were, at the beginning of this period, still exploring possible Nordic synergies and cooperation, also taking notice of the development of the natural gas markets in the EU and in the Baltic Sea region. It was at this time that the Russian Northstream gas pipeline<sup>7</sup> from Viborg to Europe was planned, including environmental impact assessments of the waters where the pipeline would be located.

Within sustainable energy systems, renewable energy was considered an area where the Nordic countries were ahead of the EU, but with significant differences in resources, technologies, policies and mechanisms. A number of studies were commissioned in the action plan 2006-2009, including a comparative study on Nordic framework conditions for renewable energy and a study on the expansion of the Swedish-Norwegian green certificate market to a Nordic

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<sup>7</sup>The construction started in 2005 and was officially inaugurated in 2011 by the presidents from Russia, Germany and France.

green electricity market. Attention was also on technological developments, faster market introduction and deployment and the Nordic region as a testing ground for promising renewable energy technologies. In the 2010-2013 action plan, specific technologies were mentioned, including wind power, geothermal energy and prospects for developing more efficient transport solutions. Action points included exploration of possible cooperation on matters related to the EU directives on renewable, promotion of integration of renewable energy in the system, very much related to the Nordic competences and cooperation in wind power and planning issues. A special initiative to increase the use of renewable energy in the transport sector was foreseen. In the following action plan, prioritised issues were exchange of experiences and views on the implementation of the EU directive on renewable energy and new initiatives from the EU Commission. Framework conditions for renewable energy were again addressed, but following the explorative work made so far, it was recognised that each country would choose its support system in accordance with its own conditions and policies, something which might influence new investments in the Nordic electricity sector. Nordic cooperation was subject to finding common ground.

Energy efficiency continued to be one of the cornerstones of a sustainable energy system in the Nordic countries. As previously, knowledge sharing was central, including reports on market-oriented incentives and price signals to increase energy efficiency. The 2010-2013 action plan was more specific in terms of the three end use sectors – housing, transport and industry. Special focus was on the prospects for influencing international negotiation on product labelling and standardisation. The following action plan was concerned about the implementation of the EU directive on energy efficiency adopted in 2012, including also the Ecodesign directive. Nordic actions in this field seemed to be limited to pre-studies of possible areas of cooperation, similar to for example the three year Nordic programme for market supervision, Nordsyn, for energy design and energy labelling.

Nordic cooperation on climate issues was in the 2006-2009 action plan primarily focused on analysing the prospects for taking initiatives to open up the EU quota trading system to other non-EU players and to analyse the need to further develop the Testing Ground agreement with the other Baltic Sea countries. In the following action plans climate was considered an integral part of a sustainable energy policy and hence embedded in actions on renewable energy and energy efficiency. Nordic cooperation related to the development of the post Kyoto regime was included in the international cooperation, mainly in terms of preparing meetings and ad hoc activities related to specific events.

Nordic cooperation on sustainable energy in sparsely populated areas addressed two issues. On the one hand, analysis of mechanisms to improve energy efficiency in the often fossil energy dominated systems, and on the other hand the set-up of pilot projects and demonstration of new technologies. Outreach to the northern Canada and northern Russia was given attention. These priorities prevailed in the subsequent action plans, though within the framework of the North Atlantic Area and with more focus on small-scale plants, stand-alone systems and storage.

Cooperation on energy research further developed in this period through Nordic Energy Research, which was regarded a European role model for aligning national research programmes and operating a true common pot for Nordic projects (Jørgensen 2007). It operated with a mission to add Nordic value to national energy research programmes by funding Nordic energy research projects of common interest. It coordinated and participated in several EU ERA-net projects together with other EU partners, commissioned policy studies on energy technology aspects and provided secretariat support to several of the work groups of the

committee of senior energy officials, e.g. the Nordic Electricity Market group. As a pendant to the European research area the ambition was to develop a Nordic knowledge area in energy technologies and systems and at the same time position Nordic initiatives in the wider European and international context. Among other things, this included cooperation with the International Energy Agency (IEA) on a regional study, the Nordic Energy Technology Perspective, which involved IEA officials, Nordic research groups and Nordic Energy Research. Together with other Nordic institutions, Nordic Energy Research was involved in the implementation of the Nordic Top Level Research initiative – a five year and 400MDKK Nordic research and innovation programme aiming at solving the global climate crisis and to strengthen the leading knowledge role of the Nordic region.

International cooperation played an important role in this period, with a clear message that Nordic energy policy cooperation strived to be at the forefront of the energy policy in general and in EU energy policy in particular. Typical actions included alignment of viewpoints and preparations of meetings in the European Council of energy ministers, something which was of importance to the EEA countries Norway and Iceland. Cooperation was oriented towards further regional cooperation with adjacent areas. In the years to come, the technical and economic integration between the Nordic and the Baltic electricity markets was further developed, with Estonia, Latvia and Lithuania being part-owners of Nord Pool Spot. The cooperation with North West Russia aimed at creating partnerships for technological development and continuing the dialogue about key energy and climate issues and knowledge sharing, building on the long history and energy dependence between the Nordic countries and Russia. Finally, all partners came together in the Baltic Sea Region Energy Cooperation (BASREC), which was foreseen to be the arena for implementing the EU's northern dimension and the EU-Russia dialogue. In the action plan 2009-2013 the international cooperation was influenced by the EU 20-20-20 by 2020 plan for Europe and the third energy package. Priority was given to the EU-EEA cooperation and the exchanges and informal consultations prior to Council meetings. Nordic-Russia cooperation continued, very much supported by the Nordic Council of Ministers' offices in Kaliningrad and St. Petersburg and the Nordic financial institutions (NEFCO and NIB).

In summary, the period demonstrated two Nordic successes – the Nordic electricity market and the Nordic cooperation in energy research, both developed to a level far beyond the knowledge sharing, exchange of experience, best practise and learning and to a position as a role model for regional cooperation in energy. In light of the European response to both the climate and energy security of supply challenges, the Nordic cooperation continued to prioritise those areas that added value to the energy sector. By means of high political commitment, the necessary frameworks for the Nordic electricity market were developed step by step and country by country in a pragmatic opening up for cooperation of the willing. As for the research cooperation this was rather due to the allocation of relatively little but constant funding, which also allowed for the establishment of an institution that could take responsibility for commissioned reports and initiatives at Nordic level. While the power market and research advanced, other areas of the Nordic cooperation remained on the level of knowledge sharing. This was the case for renewables where the testing ground in the Baltic Sea region never took off and where also the numerous studies on national support schemes for renewables revealed substantial differences in national policies, technologies and markets. The wider regional cooperation was further consolidated in the context of the Baltic Sea region and the North Atlantic region. But most importantly, the Nordic energy policy cooperation was increasingly an integral part of European energy policy development. It was part of the EU Northern dimension in the EU-Russia dialogue. It was at the forefront of the EU 2020 targets in terms

of ambitious national policies, the knowledge sharing of those policies (e.g. support mechanisms) and demonstrated achievements in the Nordic electricity market and research cooperation.

#### **4. Discussion**

The Nordic energy policy cooperation was born as an integral part of Nordic Council of Ministers from the very beginning. It became an area of cooperation in its own right in the wake of the oil crisis in the 1970s forcing the countries to develop long term energy policies while also optimise the supply, production and consumption of the current energy system.

The *governance structure* followed the ordinary Nordic structures, rules and mode of operation with a Nordic Council of energy ministers supported by a committee of senior officials from each of the member states, which again would make permanent or ad hoc work groups for prioritised areas of cooperation. The chairmanship of the council rotated annually and so did the chairmanship of the committee of senior officials. Budgets were relatively modest and used for smaller initiatives such as studies and analysis, conferences and time constrained initiatives to explore prospects for further cooperation or outreach. The cooperation was lean in the sense that it should rely on existing structures and institutions. However, with the establishment of Nordic Energy Research Programme in 1985 and the consolidation of the cooperation in Nordic Energy Research in 1999, the cooperation benefitted from having an institution that exclusively could focus on Nordic energy policy issues. This option was actively utilised in the last period where the work often was delegated to Nordic Energy Research, which to some extent became a knowledge centre for Nordic energy [technology] policy cooperation.

*Energy security* triggered the Nordic energy policy cooperation with the pressing need to develop a long term energy policy and also to assure the necessary competence building of national experts in the field. Linkages were established between the governments and the advisory body of the power sector on long term planning. In the 1990's the energy security experience was handed over to the adjacent areas (the Baltic countries and North West Russia), which at that time also had to develop their energy policies with high security, diversity and efficiency. In the last period, it became increasingly clear that Nordic energy policy was an integral part of the EU energy cooperation. On the one hand, the EU would set the overall agenda, but on the other hand the Nordic countries strived to align positions to better influence the EU policy.

The cooperation on *energy markets* developed from a wish to make the important oil and gas sector an area of cooperation to finally recognise that national conditions, policies, technologies and markets were not ready for Nordic cooperation. Many Nordic studies, conferences and explorative actions paved the way for that recognition. In the power market, the sector itself had initiated cooperation long before the policy took over and once the Ministers agreed on making a Nordic electricity market, the development took off guided by a detailed action plan. Therefore the Nordic countries were well prepared for influencing and benefitting the EU energy packages.

*Energy efficiency* remained a priority area since the very beginning – the best energy is the one that we do not use. But just as no single country had solved this problem satisfactory, neither had the Nordic cooperation. Knowledge sharing, campaigns and labelling and standardisation were good but far from sufficient to address this challenge.

*Technologies* underwent an interesting development. In the beginning, technology development and research were an integral part of finding long term solutions of a sustainable energy system. But at that time little consideration was made on how actually to bring them to the market. In the second period technologies did not play a larger role, at least at the policy making level, except when discussing the implementation of the Kyoto mechanisms in the adjacent areas. Nowadays, energy technology policy is regarded an integral part of energy policy and so also at Nordic level, combining the technology push with the market pull of new energy technologies. This was furthermore strengthened institutionally by Nordic Energy Research financing research projects and also delivering policy support to the Nordic energy policy cooperation.

*Environment and climate* also underwent a development, but unlike technologies, it became more and more embedded in the other policy areas such as agriculture, transport etc. Energy was part of the problem of climate change and at the same time one of the solutions to mitigate the emissions. Recent development had highlighted that in times of crisis (financial, economic and energy), security of supply had precedence over the longer term climate challenge.

**Table 1: Overview of Nordic energy policy cooperation**

	<b>First period 1972-1988</b>	<b>Second period 1989-2005</b>	<b>Third period 2006-present</b>
<b>Governance</b>	Nordic Council of Ministers of energy Committee of senior officials Permanent or ad hoc work groups Nordic Energy Research		
<b>Security</b>	Long term planning	Outreach to the adjacent areas	Alignment of policies in the wider EU context
<b>Energy markets</b>	Knowledge sharing on oil and gas	Action on liberalised electricity market Knowledge sharing on oil and gas	Nordic action plan for electricity market
<b>Efficiency</b>	Knowledge sharing	Knowledge sharing	Knowledge sharing, especially around implementation of EU directives
<b>Technologies</b>	Research (fossil, renewables and nuclear) Nordic Energy Research Programme	Consolidation of research cooperation	Knowledge sharing on support mechanisms Market pull and tech push initiatives
<b>Environment</b>	Increasing awareness	Baltic Sea Region as testing ground for climate mechanisms Post-Kyoto negotiations	Embedded in other activities

In *conclusion*, Nordic energy policy cooperation has been on a long journey and has far from reached its end. The cooperation has provided deep insight into each country's energy system, policies, technologies and markets at multiple levels and has been complemented by an



uncountable number of studies, reports, conferences and networks. The cooperation has acted as a support for policy and decision making at national (and international) level. Last but not least the Nordic cooperation has delivered concrete actions and policies for the energy markets and for the development of new energy technologies not only for the Nordic countries but also in a wider European context. As the former general secretary Halldor Asgrimsson often pointed out: The Nordic cooperation is a tool for regional cooperation, which can inspire and be used by other regions in the world<sup>8</sup>.

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<sup>8</sup> See for example the interview recently published in relation with the obituary by the General secretary Dagfinn Høybråten Available at <http://www.norden.org/da/aktuelt/nyheder/tidligere-generalsekretaer-halldor-asgrimsson-er-doed>

## Bibliography

Agfors, A. (1995) 'The missing link: Attempts at establishing a Nordic gas grid' in *Nordic Energy Systems. Historical Perspectives and Current Issues*, ed. A. Kaijser and M. Hedin, Science History Publications USA, pp 223-236

Bächman, A (2011), *The Nordic electricity system as common-pool resource*. Uppsala University, Department of Economic History. Available at: <http://www.diva-portal.org/smash/get/diva2:437865/FULLTEXT01.pdf>

Bredesen, H.-A. and Nilsen, T. (2013) *Power to the People. The first 20 years of Nordic power-market integration*, Bookwell Ltd.

IEA (2013), *Nordic Energy Technology Perspectives*, Paris. Available at: <http://www.nordicenergy.org/project/nordic-energy-technology-perspectives/>

Jørgensen, B.H. (2007) Transnationalt energiforskningsamarbejde – hvor går grænsen? In Den organiserede forvaltning. Politik, viden og værdier. Ed. H. Foss Hansen, H. Forlaget Politiske Studier, København.

Kaijser, A. and Hedin, M. (1995), *Nordic Energy Systems. Historical Perspectives and Current Issues*. Science History Publications, USA

Nord (1985), Oplæg til Nordisk Energiforskningsamarbejde, 11 januar 1985.

Nordisk Råd 34. session (1986), Energisamarbejde 1981-1985 status.

Nordisk Råd 34. session (1986), Ministerrådsforslag om en plan för nordiskt samarbete på energiområdet 1986-1988.

Nordisk Råd 37. session (1989), Ministerrådsforslag om en plan för nordiskt samarbete på energiområdet 1989-1992.

Nordisk Råd 53. session (2001), Ministerrådsforslag om the framtida nordiska energipolitiska samarbetet 2002-2005. Available at: : <http://www.norden.org/da/nordisk-raad/sager-og-dokumenter/b-207-naer>

Nordic Council of Ministers (2005), Action Plan for Nordic Energy Cooperation 2006-2009. Available at: <http://norden.diva-portal.org/smash/record.jsf?pid=diva2%3A701449&dswid=2604>

Nordic Council of Ministers (2009), Action Plan for Nordic Energy Cooperation 2010-2013. Available at: <http://www.nordicenergy.org/publication/handlingsprogram-for-det-nordiske-energipolitiska-samarbejde-2010-2013/>

Nordic Council of Ministers (2014), Action Programme for Nordic Cooperation on Energy Policy 2014-2017. Available at: <http://norden.diva-portal.org/smash/get/diva2:723164/FULLTEXT02.pdf>

Tønnesen, Ø. (2002) 'Nordisk Råd 1952-2002' in *50 år Nordisk Råd 1952-2002 Til nordisk nytte?* Nordisk Råd, København.