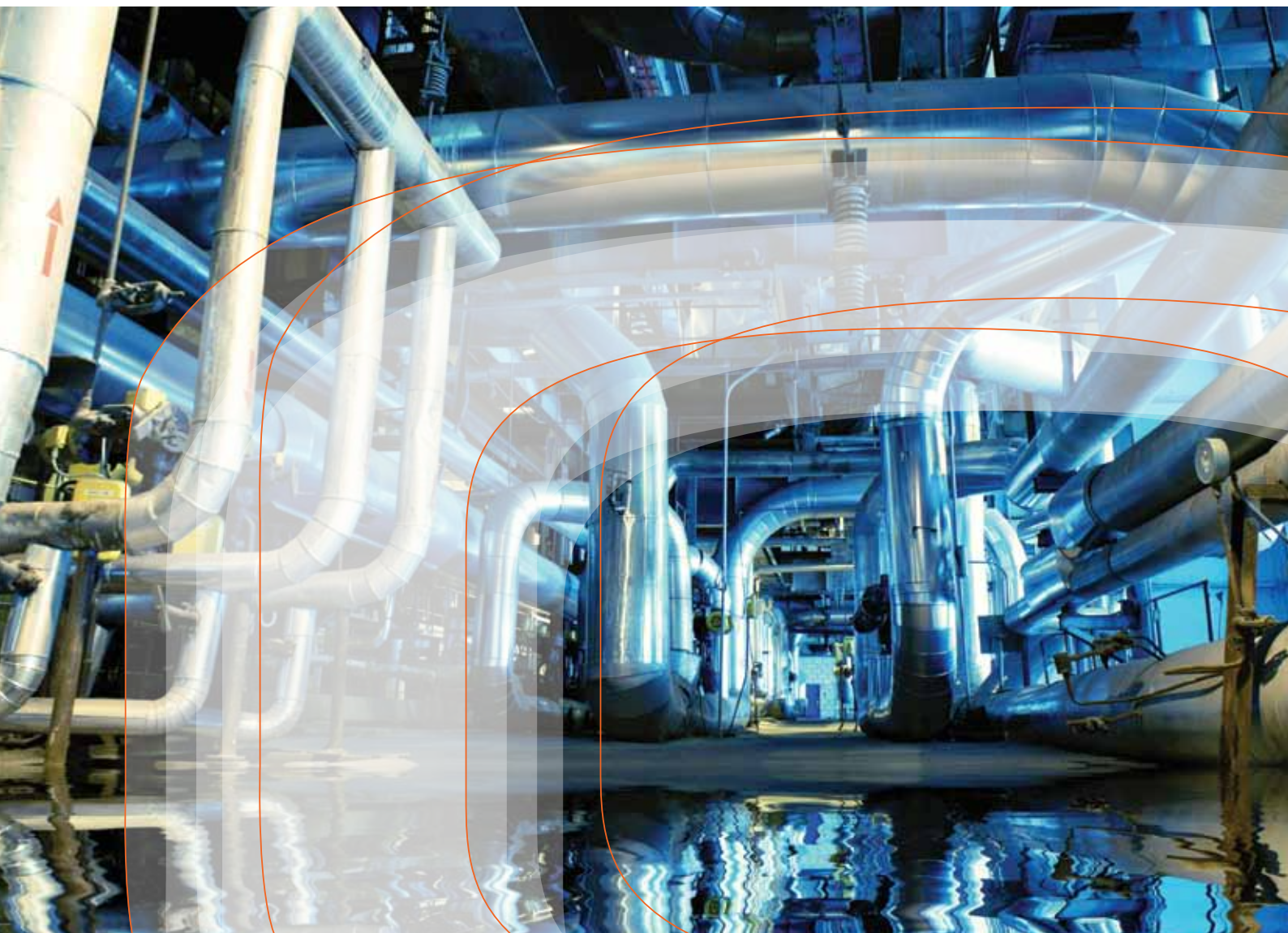




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Nordic Council of Ministers

# Action Programme for Nordic Co-operation on Energy Policy 2010–2013



## **Action Programme for Nordic Co-operation on Energy Policy 2010–2013**

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### **Nordic co-operation**

*Nordic cooperation* is one of the world's most extensive forms of regional collaboration, involving Denmark, Finland, Iceland, Norway, Sweden, and three autonomous areas: the Faroe Islands, Greenland, and Åland.

*Nordic cooperation* has firm traditions in politics, the economy, and culture. It plays an important role in European and international collaboration, and aims at creating a strong Nordic community in a strong Europe.

*Nordic cooperation* seeks to safeguard Nordic and regional interests and principles in the global community. Common Nordic values help the region solidify its position as one of the world's most innovative and competitive.

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## Preface

Recent Nordic energy co-operation has been based on the action plan for 2006–2009, which focuses on the Nordic electricity market, renewable energy and energy efficiency, energy in sparsely populated areas and the Nordic Region in a global perspective.

Participants in Nordic energy co-operation agree that the work has yielded significant results, especially in relation to the Nordic electricity market. Solid progress has also been made by the four working groups set up by the Committee of Senior Officials to look at the Nordic electricity market, renewable energy, energy efficiency, and energy in sparsely populated areas. The working groups' activities are being evaluated, and the results will determine whether their mandates are renewed.

The programme presented here prioritises the electricity market, renewable energy, energy efficiency, energy in sparsely populated areas and international co-operation. It also focuses on research and technological development. Progress in this field has great importance for energy consumption and extending the use of renewable energy.

In light of current international developments, climate issues will also be given greater emphasis. It is worth mentioning in this context that the transport sector accounts for around a quarter of all greenhouse gases emitted as a result of energy consumption.

The transport perspective has not previously been on the Nordic energy co-operation agenda. In drawing up the new action programme, it was felt that it was right to assess the opportunities for energy efficiency in the transport sector and for replacing fossil fuels with more environmentally friendly forms of energy. This harmonises with both the Icelandic programme for the Presidency of the Nordic Council of Ministers 2009 and the increased focus in general on this section of the energy sector.

The Nordic Region is able to present many positive results in the energy sector, both in terms of renewable energy and technical solutions and methods. It is now necessary to disseminate information about new solutions to the rest of the world. In this context, we can speak with one voice – Nordic solutions can help to reduce emissions of greenhouse gases and promote sustainable development and use of resources. Nordic Energy Research will play a central role in disseminating knowledge and skills in a globalised world.

The action programme was drawn up by the Nordic Committee of Senior Officials for the sector. The national representatives on the committee are Helga Barðadóttir, chairperson, Iceland; Vivi Yeng-Kow, Denmark; Hannu Lipponen, Finland; Johan Vetlesen, Norway; and Christina Oettinger-Biberg from Sweden. Anne Sofie Bender from the Nordic Council of Ministers Secretariat assisted the Committee.

I hope that Nordic energy co-operation will continue to prove fruitful, provide new solutions, and increase knowledge of renewable, environmentally-friendly energy and energy efficiency in as many areas as possible – not just for generating electricity and heating homes, but also within shipping and land transport.

I expect that the new programme will lead the way for Nordic energy co-operation over the next four years, and form the basis for co-operation and information exchange between all participants – politicians, officials and citizens alike.

On behalf of the Nordic energy ministers



Katrín Júlíusdóttir  
Minister of Industry





# 1. Introduction

Nordic energy co-operation has a clear objective: to contribute to stable and secure energy supplies, sustainable growth and welfare for the citizens of the Region. It shall also serve as a tool for promoting Nordic positions of strength in the energy sector in the global arena.

The Action Programme for 2010–2013 builds on the previous Action Plan<sup>1</sup>. The challenges related to the climate and secure supplies in the energy sector are increasingly complex and global in nature. The global economic crisis that broke out in 2008 has also created serious new challenges for both the Nordic Region and the international community.

The UN Climate Panel's (IPCC) fourth report estimates that 67% of the world's greenhouse gas emissions (GHG) are caused by energy production and consumption. The International Energy Agency (IEA) predicts that the level of global energy consumption will soar in the future, leading to an increase in GHG emissions of at least 50%, unless serious measures are taken to reverse the trend. Energy is a significant part of the climate problem, but can also be seen as part of the solution.

Transport accounts for a large proportion of GHG emissions, and the sector is still almost completely dependent on oil. There is therefore an urgent need to develop climate-friendly fuels and energy-efficient transport solutions. The Arctic Region is particularly vulnerable and is already feeling the impact of climate change.

The Nordic countries play an active role in the fight to reduce GHG emissions. Under the auspices of the Climate Convention, or as members of the EU, they have made a commitment to reducing greenhouse gas emissions. EU members shall meet the EU's 20-20-20 target for 2020<sup>i</sup> by increasing

the use of renewable energy and promoting energy efficiency without compromising secure supplies, growth or competitiveness.

In the period 2010–2013, Nordic energy co-operation shall target specific challenges linked to climate-friendly energy systems in the Arctic and sparsely populated areas in the Nordic Region. It will also focus on the development of environmentally friendly transport, energy efficiency, renewable energy and efficient energy markets. The fight against climate change and efforts to achieve sustainable growth and increased security of supply also provide new opportunities for a more long-term green growth strategy. The development of new energy-efficient technologies will be a key driver in job creation, competitiveness and export opportunities. With the launch of the Top-Level Research Initiative<sup>ii</sup>, the Nordic governments have indicated their desire for joint, focused efforts to support the development of new technologies, including through closer co-operation between authorities, research and innovation communities, and businesses.

The Nordic prime ministers' globalisation initiative<sup>iii</sup> has created the framework for Nordic energy co-operation, as reflected in the Energy Action Programme 2010–2013.

The international dimension has always played a key role in Nordic energy co-operation. The Nordic countries shall play an active and constructive part in political processes within the EU and other international forums. Co-operation shall also increase the countries' influence on EU legislation and aid its implementation at national level. This involves, among other things, continuing the work on harmonisation of energy markets and working together on technology and knowledge-transfer, both within the Region and with the adjacent areas.

<sup>1</sup> The Action Plan for Nordic Energy Co-operation 2006–2009

The Nordic Region has made good progress on harmonising its electricity markets. Its high levels of security of supply, energy efficiency and ability to integrate renewable energy into energy production constitute a good basis for continued co-operation on energy.

Therefore, over the next four years, the Nordic countries will work intensively to:

- enhance the harmonisation of the Nordic electricity market
- increase the proportion of renewable energy in energy systems
- ensure the efficient use of energy resources
- contribute to the development of innovative energy technologies
- improve the efficiency of the transport sector and develop green fuels.

## 2. From a joint electricity market to an open one

The Nordic electricity market has made good progress towards harmonisation. The many years of close co-operation are primarily due to the significant benefits of generating and sharing power using a range of methods – i.e. hydro-electric, nuclear and thermal. At the same time, there has also been continued strong political support for Nordic co-operation on the electricity market and a positive climate of co-operation between stakeholders.

The Nordic electricity market has evolved from four distinct national markets in 1995 to a single joint Nordic market. The values and ideas stipulated in the 1995 Louisiana Declaration on a free and open market with efficient trade with neighbouring countries still form the foundation of the harmonisation work.

### *2.1 Objective*

The goal of the Nordic work in this area is to build a borderless Nordic market that trades with the outside world in an efficient manner. The Nordic electricity market shall be further developed into an effective and efficient borderless Nordic market with harmonised rules for all stakeholders, including both businesses and consumers. This shall ensure good and fair competition for the benefit of customers, as well as secure supplies and the efficient utilisation of energy and resources.

### *2.2 Development of a borderless Nordic electricity market*

The move towards a borderless Nordic electricity market continues, which means that a clear, holistic Nordic approach is necessary. This development depends upon an improved investment climate, which entails further harmonisation of the framework conditions for market operators and transmission companies. The integration of even more renewable energy, partly as a result of the EU directive on this issue throws up new challenges for the market and the power companies. It is particularly important to address the challenges of balancing electricity supplies from various wind-power sources.

This may demand additional investment in the grid and the development of new ways of integrating renewables into the electricity market.

In 2008, the Nordic energy ministers agreed an action plan for co-operation in the electricity market. Follow-up on this will constitute the framework for co-operation on electricity in 2010–2013. The national regulators and power companies will play a major role in the work to implement the plan. In order to achieve the overall goal of creating an efficient electricity market with guaranteed supplies across the whole Nordic Region, all of the elements of the action plan must be implemented and afforded equal importance.

A mapping exercise shall be conducted of the national processes for investments in the grid, in order to equip Nordic governments, regulators and power companies with a Nordic perspective and a mandate to streamline and intensify the process of developing a borderless electricity market in the Region. The feasibility of more equitable cost-sharing for initiatives undertaken in one country that provide benefits in another shall also be evaluated.

The national power companies' work on grid planning shall be enhanced. The companies shall propose investments that are socio-economically viable for the whole Nordic Region. Investments in increased transmission capacity have already been agreed, and must be made as soon as possible.

Taking into account the improvements required in the handling of bottlenecks in the electricity grid and in transmission links, the national power companies have been asked to begin the process of dividing the Nordic market into several potential areas for bids/tenders and prices by 2010.

Work shall continue to further harmonise the national framework conditions for those companies responsible for maintaining balance, improve the conditions for trade without borders and create a joint end-user market.



### *2.3 Closer co-operation with the Nordic Region's neighbours*

It is important to strengthen the Nordic perspective with regard to the development of legislation for a European electricity market.

In order to be able to achieve the EU's targets on climate and energy, the electricity grid and renewable-energy targets must be considered as a whole, taking into account not only the individual Nordic countries, but the Region's neighbours too. Harmonisation of the regulatory framework for the trade and exchange of electricity shall be promoted, which will provide operators and consumers with improved opportunities to actively participate in the market. Increased cross-border trade will help to guarantee supplies and improve resource utilisation. Strong regional development characterised by efficient planning and decision-making is therefore crucial.

The Nordic electricity market shall be a model and a source of inspiration, and should actively seek to influence the EU agenda. Close co-operation with the neighbouring countries in the EU, with a view to further harmonisation of framework conditions for market stakeholders and transmission companies, is an important part of the work.

#### **Action points**

Maintain the momentum of the action plan agreed by the Nordic energy ministers at their meeting in 2008.

Ensure that the Nordic power companies co-ordinate their work on coping with an increased proportion of electricity from renewable sources, based on a technical, operational perspective.





## 3. Renewable energy

Increasing the integration of renewable supplies into energy systems is central to Nordic co-operation in this area. A major expansion in the use of renewable energy shall contribute to economic growth, increase security of supplies and support the work being done by the countries to address climate change.

The Nordic countries have been pioneers in the development and use of sustainable energy technologies. However, there is a strong need to accelerate the development of methods and technologies that directly address climate change. Integrating large proportions of renewable energy requires increased co-operation and the development of new system solutions.

Transport accounts for a significant proportion of greenhouse gases in the Nordic countries. Nordic initiatives to reduce the use of fossil fuels in this sector can make a big difference.

Global demand for environmentally friendly energy technologies and solutions is increasing. More joint marketing of Nordic solutions can help create the basis for Nordic competitiveness and a strong market position.

The Nordic Region is rich in renewable energy resources, and its energy systems have a long tradition of efficient use of water, bio-energy, wind and geothermal energy. The Nordic countries still have significant potential to increase their use of renewable energy resources, but new technologies and solutions are required in order to ensure their continued and effective use. The Nordic countries are well placed to be global leaders in developing solutions based on a high degree of utilisation of renewable energy, which can greatly contribute to the Region's competitiveness and growth.

### 3.1 Objective

The Nordic countries shall work to promote renewable energy via joint efforts to improve the preconditions and competitive situation for renewable energy. The countries must strive to co-ordinate initiatives and tools to the extent to which it is beneficial. Nordic exchanges of experience about tools, support systems, planning, implementation and integration are key to the co-operation. The Nordic countries shall work to create favourable conditions for technological development and innovation in this area.

The Nordic countries shall co-operate to ensure the smooth integration of renewable energies into the energy systems. This shall be achieved through better co-ordination of decisions, planning and tools related to the development of renewable energy and the electricity market.

Opportunities for joint, multi-sectoral initiatives will be evaluated with a view to promoting sustainable transport. Co-operation between authorities, research and innovation environments and businesses shall be established, developed and strengthened.

### 3.2 Implementing the EU directive on renewable energy

The Nordic countries shall collectively continue to investigate the opportunities for and implications of closer co-operation on the implementation of the EU directive on renewable energy. The countries shall examine how the mechanisms proposed by the EU can contribute to their work in this area. This will form the basis for the development of strategies and joint Nordic initiatives.

Conditions shall be created for exchanges of information and experience between the Nordic countries, with a view to implementing the directive within national legislation. The Nordic countries shall play an active role in dialogue with the European Commission on the implementation of the Directive, in order to ensure that Nordic points of view make an impact.

The Nordic Region has positive experience with the sustainable use of bio-energy, and can therefore make a significant contribution to the ongoing EU-level discussions on sustainability and the development of criteria. It is important to ensure that international sustainability criteria do not negatively affect the Nordic bio-energy sector's competitiveness.

### *3.3 Wind power in energy systems*

If the Nordic countries are to reach the targets for renewable energy, it is essential to further develop wind power. Opportunities for development in this area are typically limited by processes related to planning and approvals. The countries must therefore work to harmonise and facilitate these processes.

The Nordic electricity market is a model for regional co-operation in a global perspective. The Nordic countries shall strive to ensure that the Region is at the forefront of the development of solutions for integrating wind power into energy systems. The large-scale integration of wind power will require initiatives designed to ensure security of supply, as well as efficient power balancing, grid expansion and reinforcement. This will ensure greater harmonisation when planning energy systems, including of grids and wind-power integration.

Nordic co-operation and exchanges of experience about local planning shall be enhanced in order to improve the conditions for wind-power expansion in the Region. The Nordic countries shall also co-operate on the conditions for offshore wind power, which means that the co-operation established under the NordVind project must be strengthened.

### *3.4 Geo-thermal energy*

Energy from the Earth falls into two categories – conventional and non-conventional geothermal. Conventional geothermal includes relatively hot reservoirs in upper parts of the Earth's crust, from which water can be extracted to produce electricity and heat. These are primarily found in countries with high volcanic activity, e.g. Iceland, but similar areas are found in other Nordic countries. Unconventional geothermal involves driving water down into the ground in order to exchange thermal energy. By using a heat pump at a depth where the temperature is usually around the annual average, the Earth constitutes a source of energy that can be used for heating and hot water in residential areas, but also for cooling offices and other buildings.

The Nordic countries aim to be at the forefront of the exploitation of non-conventional geothermal heating and cooling of buildings, and will carefully monitor technological developments in this area, with a view to cost-effectiveness in identifying and tapping conventional geothermal systems.

### *3.5 Renewable energy in the transport systems*

The transport sector's energy consumption is still growing. Efforts to adapt the sector to the needs of the environment are critical for achieving climate- and energy-policy objectives. By utilising Nordic energy expertise to develop more efficient transport solutions, the Region can become more competitive in several core sectors, including road transport, shipping and the fisheries industry. The Nordic countries have previously collaborated on developing concepts that have served as models for other regions. The preconditions are in place for jointly developing technologies, concepts and strategies that can increase the share of renewable energy in the Nordic transport sector. This requires the Nordic countries to establish closer multi-sectoral co-operation in this area in order to establish a basis for further joint initiatives.



### *3.6 Information about Nordic solutions*

The Nordic countries have long been at the forefront of the development and implementation of sustainable energy technologies and solutions. This leading role, combined with expectations that the Nordic countries will set the tone for the environmental technology and climate-neutral solutions of the future, has generated considerable international interest in Nordic progress in this area. It also means that there is a good basis for joint marketing of Nordic solutions market, which can contribute to the Region's international competitiveness. The Nordic countries shall continue work together on developing platforms such as "Nordic Energy Solutions", the online showcase for renewable energy.

#### **Action points**

Explore the options for co-operation on matters related to the implementation of the EU directive on renewable energies and the application of the EU's flexible mechanisms in a Nordic perspective.

Continue and intensify activities aimed at promoting the integration of renewables into the energy system.

Continue and intensify activities aimed at strengthening Nordic competences and co-operation on wind power, including continuing and deepening co-operation on local-authority planning in this area.

Launch initiatives that contribute to increasing the use of renewable energy in the transport sector.



## 4. Energy efficiency

Energy savings and efficient usage are the cornerstones of a sustainable energy system. As well as reducing the energy sector's environmental impact, energy savings and efficiency improvements also help to reduce household and business costs and improve the security of supplies.

Households, companies and transport alike should use energy efficiently at every stage, from extraction and production to final consumption.

Energy efficiency is one of the Nordic Region's positions of strength, but there remains considerable scope for greater cost-effectiveness and efficiency improvements.

### 4.1 Objective

The aim of the Nordic co-operation is to improve cost-effective energy savings and efficiency in all areas. This must be done without any negative impact upon individuals and businesses. The development and organisation of cost-effective, market-based savings and energy-efficient technologies shall direct focus to achieving cost benefits for citizens, businesses and Nordic society as a whole.

### 4.2 Energy efficiency in the construction and housing sector

The major potential for energy savings in the construction and housing sector shall be exploited to a greater degree. The current pace of development in climate-neutral construction and the energy-efficient renovation of older buildings is slow. However, the EU directive on energy declarations for buildings highlights the importance of reducing energy consumption.

It is important to boost demand for more energy-efficient solutions by providing financial incentive structures, disseminating information about energy-efficient materials, and facilitating access to the market for new and innovative solutions. In addition to supporting visionary spearhead projects, the public sector must be actively used as a role model for this development.

### 4.3 Energy efficiency in the transport sector

Fuel consumption in the transport sector shall be reduced, particularly by focusing on eco-driving, sailing and energy-efficient transport systems, as well as by influencing attitudes.

This area requires a multi-sectoral approach, and this is welcomed by the energy ministers. Where necessary, co-operation will be sought with relevant sectors.

### 4.4 Energy efficiency in industry

Overall energy consumption in the Nordic business and industry sector is high enough to justify government regulation on efficient energy use.

The EU's quota-trading system forces large companies to address their energy consumption to a certain extent. Although that group accounts for the bulk of industrial energy use, there is also considerable potential for improving energy efficiency in small and medium-sized enterprises. The Nordic countries have traditionally been good at decoupling increased growth from increased energy consumption, and this shall be maintained by motivating businesses to adopt energy-efficient measures and by stimulating the development and use of climate-friendly environment and energy technology.

If the Nordic Region is to retain its leading position in this area, it is important to identify best practice, share experiences and develop compatible regulations for companies operating across national borders.

### 4.5 Use of energy-efficient products

Nordic households use more and more energy-consuming products on a daily basis. Counteracting this requires co-operation at Nordic level. International regulation will be needed in this area to make sure that the level of ambitions remains high for standards, labelling and energy-conscious design. In order to steer global development in a sustainable direction, there is a need to co-ordinate efforts in interna-



tional forums. The focus will be on the joint development of a basis for international negotiations and dialogue in this area, as well as on providing the necessary knowledge to influence developments.

A number of EU directives in this area have greatly raised the level of ambition for standardisation and labelling.

A prerequisite for successful labelling and the imposition of requirements for energy-efficient products is that the standards are international and are introduced on an equal footing in the various countries. A collaborative Nordic-level study of the consequences of these types of rules would be valuable.

#### ***4.6 Co-generation of heating and power (CHP)***

The Nordic countries already have in place the necessary basis for the co-generation of heat, so expansion is feasible. Based on principles of decentralisation and flexibility, co-generation provides major savings in gross energy consumption, and improves both energy efficiency and security of supply.

So far, the expansion of co-generation has been based on a wide range of different solutions that have been important in developing new technologies. In order to achieve greater energy efficiency, the existing co-generation plants must also be subject to continued modernisation.

The Nordic countries will work together on expansion opportunities and technological developments related to CHP (e.g. mini- and micro CHP and fuel-cell technology), via experience exchanges and co-operation with business and industry in this sector. Expansion and technology development related to CHP will also contribute to Nordic export potential and the Region's competitiveness.

#### **Action points**

Reduce energy consumption in existing and new buildings.

Contribute to the development of incentive structures for energy efficiency in industry and transport.

Contribute to the development and expansion of the Nordic heating and CHP sector.





## 5. Sparsely populated areas

There are very specific issues associated with sustainable and renewable energy in sparsely populated areas. Energy supplies to widely dispersed communities – and within the Nordic Region as a whole – must be financially viable, environmentally friendly and, as far as possible, based on renewable energy sources. Not all small communities provide a viable basis for the use of renewable energy sources, either for their own local supply needs or as part of a continuous, decentralised supply.

As these are predominantly coastal communities with poor access to transmission networks, the focus must be on small-scale and island plants capable of guaranteeing sufficient energy for heat, electricity and other purposes. In other words, the systems must be adapted to suit small communities, their resources and their expertise.

Energy supply in small, widely dispersed communities is predominantly based on fossil fuels. The transition to renewable energy therefore poses particular challenges concerning security of supplies, storage, distribution and consumption.

### *5.1 Objective*

The aim of the Nordic energy co-operation in sparsely populated areas is to ensure environmentally sound and efficient energy systems in parts of the Region that are not linked to a continuous distribution grid, or that only have weak and vulnerable access to a wider transmission network.

### *5.2 Small-scale plants and standalone systems*

An often harsh climate, combined with remote locations, places great demands on robustness, security of supply and/or back-up systems, as well as on development of intelligent methods for remote troubleshooting and servicing. Reliability can sometimes be a matter of survival.

Small, widely dispersed communities can be pioneers for future multi-energy societies, but there must be transparency

surrounding the use of many different sources and forms. This applies both to the general energy supply and back-up systems.

North Atlantic co-operation supports both training and learning, which are prerequisites for innovation and the new technologies needed for the multi-energy societies of the future.

Joint feasibility studies, demonstrations and pilot projects, as well as solid embedding in the open co-operation across borders, organisations and institutions, shall accelerate progress towards appropriate solutions for small, isolated communities.

### *5.3 Energy storage*

Sea, air and land transport, as well as the fisheries industry and other businesses in isolated communities, rely upon sources of energy that can be stored in tanks and storage containers. The development of both known and new storage technologies is of great strategic importance for energy supply in sparsely populated areas, including the general supply to local communities that only have limited access to local renewable sources.

Most of the energy to these isolated communities is transported in the form of energy sources (e.g. gas or fuel mixtures), or in energy carriers such as batteries. Stationary energy storage is therefore hugely significant and has considerable potential in terms of reducing dependence on fossil fuels.

### *5.4 The sea as a future energy source*

The sea plays an important role in many of the Nordic Region's small, isolated communities. The sea itself represents a renewable energy source, as wind, currents and waves all have huge energy potential. The challenge is to stimulate utilisation of the sea's energy potential using these coastal



communities as pilot areas for testing new methods and technologies.

The sea enables sparsely populated areas to be linked together via cost-effective and environment- and climate-friendly energy systems that will strengthen the important cross-border energy co-operation between research institutions, companies, public authorities, local communities and consumers.

The sea is particularly important for the West Nordic area, as it enables energy co-operation with neighbouring regions in the North Atlantic, including eastern Canada and Scotland.

### Action points

Contribute to the development of intelligent and sustainable energy systems in sparsely populated areas.

Strengthen innovation in the use of local renewable energy resources, including the sea.

Ensure exchanges of experience and learning in the North Atlantic area.

Strengthen innovation in energy-storage technologies.



## 6. Research and technology development

Research and knowledge development related to effective, sustainable and clean energy technologies are high-priorities for all Nordic countries. Co-operation across borders is increasingly important in the face of globalisation, especially for small, open economies like those in the Nordic Region.

Forward-looking energy policies depend upon new energy technologies and solutions, which require support at all stages, from research and development to testing, demonstration and commercial launch. An intelligent combination of technology development and market incentives is essential for ensuring a sustainable energy supply, combating climate change and generating economic growth.

### 6.1 Objective

The Nordic Region shall strengthen its position by developing internationally competitive skills and knowledge environments for efficient, sustainable and clean energy technologies and systems.

Nordic co-operation shall build on national initiatives in technology development and contribute to the effective overall use of resources. The research shall focus on areas where Nordic synergies can be created, and where they can contribute to critical mass, increased impact and greater visibility in knowledge development and dissemination.

The primary focus in this work will be on the Nordic Region in a European context. The secondary focus will be on co-operation with relevant countries with whom the Nordic Region shares a common interest in developing efficient, sustainable and clean energy technologies.

Co-operation on research and development shall underpin national and Nordic energy policy and provide decision-makers with access to significant and topical research results. This co-operation shall make it possible for the Nordic countries to adopt co-ordinated or joint positions, both in international forums and in dialogue with key international partners.

The co-operation must, through continuous dialogue between research, the energy sector and society as a whole, act as a catalyst for creating conditions that ensure that Nordic energy research and technology development are capable of attracting and retaining the necessary competences and investment.

### 6.2 New and cleaner technology and solutions

The co-operation shall create good pre-conditions for the development of efficient, sustainable and clean energy technologies and solutions. It includes the whole chain, from energy production, distribution and storage to consumption in homes, industry and transport.

The co-operation shall be based on Nordic strengths and competences, especially in wind power, solar power, bio-energy, sea power, system solutions and intelligent infrastructure solutions. In order to combat climate change in the period during which fossil fuels will be phased out, there is a need to develop cleaner combustion technology and more effective carbon-capture and -storage systems (CCS).

Joint Nordic efforts shall also include research on and development of energy technologies and system solutions that can help to increase Nordic competitiveness. This will allow the Nordic Region to contribute to promoting the spread of sustainable energy systems throughout the world.

The focus of research co-operation shall not only be on the further development and effectiveness of known technologies, but also on the development of brand-new solutions. Moreover, basic research in the fields of ICT, biotechnology and materials is essential to the development of efficient, sustainable and clean energy technologies and systems solutions.

### 6.3 Co-ordination

Closer co-ordination between ongoing and planned initiatives under national and Nordic auspices shall create opportunities to generate synergies and optimise the use of

resources. Nordic initiatives shall help relevant stakeholders from the energy sector, industry, research and public authorities to get involved at an early stage, which will improve opportunities for closer collaboration and joint knowledge development.

### 6.3.1 Nordic Energy Research

Nordic Energy Research is an acknowledged and valued player in Nordic research and technology co-operation. The institution shall continue to develop the Nordic knowledge network, strengthen Nordic co-operation between research and the energy sector, and co-ordinate and position Nordic initiatives within European and international research and technology co-operation. It shall continue to contribute to Nordic energy-policy co-operation, develop a basis on which to make decisions on technology policy, and provide expertise and specialist skills to working groups, committees and projects. Nordic Energy Research shall also co-ordinate relevant activities with other Nordic institutions and international organisations.

### 6.3.2 Excellence in research and innovation

Large-scale Nordic investment in knowledge development on climate, energy and the environment has led to the Top-Level Research Initiative – a five-year Nordic research and innovation programme focused on climate-relevant issues and sustainable energy solutions. Nordic Energy Research plays a central role in the development, co-ordination and implementation of TFI. In particular, it ensures that the programme contributes to the development of strategic energy-technology solutions that serve common Nordic interests.

## Action points

The Nordic Region shall strengthen and develop internationally competitive skills and knowledge environments for efficient, sustainable and clean energy technologies and systems.

Nordic co-operation shall build on national initiatives in technology development and contribute to the effective use of overall resources.

Via Nordic Energy Research, Nordic co-operation shall develop a Nordic knowledge network, strengthen Nordic co-operation between research and the energy sector, and co-ordinate and position Nordic initiatives within European and international research and technology co-operation.

## 7. International co-operation

International energy questions top the energy ministers' agenda.

Flexible and open Nordic energy co-operation creates a good basis for raising international awareness of topical challenges in the Region. This enables Nordic synergies to be generated in areas that are very much in focus.

### 7.1 Objectives

The Nordic Region shall be at the forefront of key energy policy issues and, to a greater degree than at present, use its positions of strength and its network to exert influence on the work being done in this area in international organisations. The Nordic energy ministers shall be particularly strong and active players in shaping energy policy frameworks in the EU/EEA.

International marketing of the Region's energy solutions and creative potential shall enhance export opportunities and economic growth, and will profile the Nordic Region as sustainable and technologically advanced.

### 7.2 EU/EEA and Nordic energy co-operation

An enlarged EU has made closer regional co-operation on Nordic energy issues more topical. EU energy-policy discussions resulted in energy directives, which have had direct effects in the EEA countries.

Nordic energy co-operation shall be proactive in relation to promoting common interests and key issues, including via exchanges of information on national positions and current energy-policy initiatives in the EU/EEA. It shall also be facilitate close co-operation on implementing the directives.

Work on implementing the EU's third energy-liberalisation package on energy and the climate, as well as the EU directive on security of supply, will be key driving forces in the further development of Nordic energy co-operation and Nordic-level work related to EU/EEA matters.

The emphasis will be on informal exchanges and consultations in connection with meetings of ordinary energy councils in the EU, as well as co-operation with the Baltic countries. This has long been a useful tradition, and will

continue to be important during a phase where the political dimensions of energy policy are being reinforced within the EU.

### 7.3 Nordic energy co-operation with neighbouring countries

The Nordic Region shall exploit opportunities for strengthening ties with its neighbours through active collaboration in regional forums. This is true in the east as well as the west.

The Northern Dimension is a natural framework for extending co-operation in the Baltic Sea Region, particularly with North-West Russia. Other important platforms include the EU's Baltic Sea Strategy for Energy; the Baltic Sea Region Energy Co-operation (BASREC); and the Barents Euro Arctic Council's Energy Working Group (BEAC).

The strategic partners in the co-operation with Russia are the NCM's information offices in Russia and the NEF, Nordic Environment Finance Co-operation (NEFCO), and Nordic Investment Bank (NIB), which are already active in the area.

The Nordic Region's neighbours to the west, especially north-east Canada, Shetland, Orkney and Scotland, face many of the same energy challenges and opportunities as the sparsely populated parts of the West Nordic Region.

### Action points

Make the Nordic Region a strong and active player in shaping the EU/EEA energy policy framework.

Co-operation on the implementation of directives on energy and the climate, in relation to the framework for energy markets.

Further develop the co-operation with the Region's neighbours, particularly the Baltic states and North-West Russia.



<sup>i</sup> In 2007, the EU member countries adopted the action plan “An Energy Policy for Europe”, in which the EU countries jointly committed themselves to: 1) reducing emissions of climate-damaging greenhouse gases by 20% by 2020, 2) reducing energy consumption by 20% by 2020, and 3) phasing in 20% renewables in the EU’s overall energy mix by 2020. <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0001:FIN:DA:PDF>

<sup>ii</sup> In autumn 2008, the Nordic countries launched the largest-ever Nordic research and innovation effort, with a budget of DKK 400 million over five years. The objective is to help solve the global climate crisis and to strengthen the Nordic Region as a leader in research and innovation. <http://www.norden.org/no/nordisk-ministerraad/tverrsektorielle-aktiviteter/topforskningssinitiativet/om-topforskningssinitiativet>

<sup>iii</sup> In June 2007, the Nordic prime ministers agreed on a long-term joint Nordic globalisation process. The intention is to develop the Nordic welfare model, increase competitiveness through closer Nordic co-operation in several areas and by raising the profile and visibility of the Nordic countries as a pioneering region. <http://www.norden.org/no/samarbeidsomraader/globalisering>





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