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Nordic Energy Research

Annual Report 2007

Contents

Better climate for energy research

CHAIRMAN OF THE BOARD, SOLVEIG ROSCHIER

The American scientist John P. Holdren once said that "in short, energy is the most difficult part of the environment problem, and environment is the most difficult part of the energy problem". This is reflected again and again throughout 2007 where virtually all participants in global, European, Nordic and national policy discussions recognise that it is time for action.

Increasing energy demand, security of supply and global warming amount to huge challenges for mankind – combined with surging oil prices, these issues create a dire need for new and better solutions. Energy research and innovation are key factors for providing these solutions. Nordic Energy Research is ready to contribute towards the goal of promoting a transition to a sustainable energy system, and to complement the various national efforts in energy research.

In our part of the world, the year started with the launching of EU's climate and energy goals, and the subsequent national goals and targets. The goals are ambitious, and require extensive energy research to be met. The attainment of these goals requires an intelligent mix of market pull and technology push actions – meaning that market actors and research communities need to work together, in cooperation with governments to create the right technologies and the optimal market incentives.

LAUNCHING 16 NEW NORDIC ENERGY AND INNOVATION PROJECTS

2007 was the first year of Nordic Energy Research' strategy and action plan 2007-2010. In the beginning of the year, I had the pleasure of participating in the kick off workshop for the 16 larger research and innovation projects covering our focus areas. The stimulating discussions and conversations at this workshop give reason for optimism regarding the challenges that lie ahead.

Our 16 large research and development projects span over a wide range of topics, and include a variety of different professional disciplines. From the most basic research projects in Hydrogen storage and Bio H2 production, to the more market near projects, they all aim to solve critical issues in the Nordic energy sector. Over 100 industrial partners and 23 international networks (5 Nordic, 9 EU and 9 global networks) cooperate with the projects.

Along with the Nordic projects, new research programmes and initiatives have been launched with other Nordic and European partners in the ERA-NET projects. This demonstrates that the Nordic cooperation extends to the wider European Research Area.

ENERGY FROM THE EDGE

As a region, it is important that we do not forget the parts of our region whose energy challenges differ from those of the central areas. The West-Nordic region, with Greenland, the Faroe Islands and parts of Northern Norway, Sweden and Finland have weak or non-existent grid connections, high carbon dependency, and a stronger reliance on the natural conditions than the central parts of the region.

Nordic Energy Research participates in the West-Nordic project under the Nordic Council of Ministers, a project designed to find energy solutions for remote parts of the Nordic region. Through our cooperation with the Nordic Task Force for sustainable energy in remote locations, Nordic Energy Research participated in organising a symposium in the Shetland Is- >>

lands to address the energy issues in these regions. The symposium brought together stakeholders and participants from isolated or remote regions, researchers, industry and others.

Being part of the Nordic energy cooperation also means that we provide secretariat assistance to key working groups and task forces. These include the Electricity Market Working Group, the Bioenergy Market Project and from 2008 also the Working Group on Renewable Energy.

ANALYSING NORDIC ENERGY RESEARCH AND INNOVATION POTENTIALS

On the Nordic level, the policy discussion has continued during 2007, on how the region is to adapt to the new challenges in the 21st century. In order to make better strategies and provide meaningful actions, we need a better understanding about how new knowledge on energy technologies and systems is created and diffused. Therefore, we launched the NORIA energy initiative in 2007 to provide support for future decisions.

CREATING NEW KNOWLEDGE

The role of Nordic Energy Research is to complement the initiatives made on the national level, building on the national competences and efforts. While 2007 was the year for the launching of national and regional energy and climate strategies, in 2008 and the coming years the energy sector needs to respond to the political plans with action. It is in the intersection between different disciplines, institutions and boundaries we find the most exiting new knowledge and technologies. Consequently it is in the trans-national cooperation between nations that the Nordic region's true potential is unlocked. We can do more, and do better together than we can as five individual nations.

As chairman of the board of Nordic Energy Research I have met researchers truly committed to collaboration between nations. Using the Nordic initiatives to complement the national initiatives can unlock benefits for the entire region.

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differ from those of the central areas.

Adding value to national initiatives

MANAGING DIRECTOR, BIRTE HOLST JØRGENSEN

If one thing characterised 2007, it was a tremendous focus on energy and climate issues. At their summer meeting in Punkaharju in Finland, the Nordic Prime Ministers focused on the dynamics of globalisation. In a situation with rising oil prices, concerns about national energy security of supply and alarming impacts of global warming, not surprisingly climate and energy as well as climate solutions were among the prioritised actions for renewed Nordic collaboration. This places Nordic Energy Research in the absolute eye of the hurricane.

For more than 20 years, the core business of Nordic Energy Research is to facilitate and support common Nordic energy research and innovation activities and projects in the Nordic countries. Projects have always been characterised by the highest scientific standards and relevant to the Nordic energy sector and economic development.

Adding Nordic value to energy research and innovation in the Nordic countries means:

RELEVANCE OF THE RESEARCH THEMES

Nordic Energy Research is an integrated part of the Nordic energy cooperation. New, renewable and affordable energy technologies and systems vary in degree of commercialisation, many currently far from the market still being too costly and unreliable. To achieve the goal of a sustainable and secure energy system, an intelligent mix of technology push and market pull measures is needed. Research is one side of the coin and has to be set into a strategic context with market deployment measures that pull the technologies out in the market.

From the very beginning the Nordic energy research cooperation has reflected the knowledge demand of the energy sector and energy policy in the Nordic countries. In 1986 the thematic fields were for example petroleum geology, petroleum technology, district heating and bio energy. No lengthy or formal processes were used to identify these areas, but they were agreed upon by the energy research programme committee together with the scientific colleges.

Since the beginning of 2000, a participative and communicative process has been used to develop four-year strategies, a process that engages key stakeholders from the energy sector, industry, academia and the energy authorities and thereby assures consensus about prioritised thematic areas and commitment to realise actions. The present strategy for 2007-2010 was initiated in 2004 and was finally approved by the Nordic energy ministers in August 2005 at their meeting in Greenland. Prioritised thematic areas were: renewable energy, energy efficiency, hydrogen economy, liberalised energy markets and impacts of climate change on the energy system. A detailed action plan was discussed and approved by the board in 2006, including which instruments, evaluation and monitoring procedures and policy support activities to be used.

SMART MONEY

The idea of pooling the Nordic resources in order to create synergy and critical mass between relatively small and often complementary knowledge communities is something that has been embedded in Nordic Energy Research from the very beginning.

The purpose of Nordic energy research cooperation is to complement and thereby add Nordic value to the national research programmes and activities. Using a “Smart Money” approach, even modest funds can unlock great research potential, and

Using a "Smart Money" approach, even modest funds can unlock great research potential and create a good foundation for scientific excellence and relevance to the economic activities.

create a good foundation for scientific excellence and relevance to the economic activities. If applied at the right issues, at the right time, small amounts of money can stimulate cooperative efforts that create new knowledge, strengthen trans-national networks and make the Nordic knowledge communities attractive in a competitive global knowledge context.

INTERNATIONAL COOPERATION – BRIDGE TO THE EUROPEAN RESEARCH AREA

In the efforts to build an internal market for knowledge in the European Area, the Nordic energy research cooperation is highly appreciated. Small Member or Associated Member states as the Nordic countries often play a positive role as facilitators in the cumbersome process to convince national funding agencies to allocate funds to trans-national research and common calls.

The long history of energy research cooperation through Nordic Energy Research has made us a desired partner in various EU ERAnet projects over the last years. Today, Nordic Energy Research participates in two ongoing EU ERA-net projects – INNER and HY-CO – while participating in the start-up efforts of the new Smart Grid ERA-net.

In practice it means that we offer our coordination ability, including call process, evaluation procedures, management of impartiality, reflective monitoring process and a non-bureaucratic administration. We have good experiences in designing common calls together with different funding agencies from the Nordic and European countries, including basic, innovative research areas (N-INNER Programme) and more market near research areas as deployment strategies (HY-CO Deployment Strategy research projects).

EFFICIENT NORDIC INSTITUTIONAL SET-UP

A precondition to strengthen a competitive Nordic research and innovation area in new energy technologies is that there are well established Nordic knowledge communities. This takes time, requires regular resources and a dedicated, continuous institutional effort. Nordic Energy Research has over the years demonstrated results and successes in trans-national research funding cooperation and activities. The most cost effective and efficient way to launch an ambitious concerted Nordic effort in energy research is to build on well functioning structures and institutions that are embedded in the Nordic democratic governance system. Nordic Energy Research offers to take the lead in coordinating and implementing top level energy research in partnership with other Nordic institutions, national agencies and the private sector. Today, the secretariat consists of nine highly motivated and competent experts with different educational background, professional experience and nationalities. We are collocated with two other Nordic institutions, Nordforsk and Nordic InnovationCenter at Nordic Center in central Oslo.

To conclude, 2007 was definitely an important year for Nordic energy research cooperation and our contributions to climate solutions, energy security of supply and economic growth. With the words of the UN General Secretary Ban Ki-moon, "Climate change, and how we address it, will define us, our era and ultimately the global legacy we leave for future generations".

Project portfolio 2007-2010

Project Title	Objective	Project Leader
Integration of the energy market:		
Nordic Energy, Environmental Constraints and Integration	The project aims to further increase the understanding of the functioning of the energy markets, with respect to the interaction and relative importance of the different forces at play and how to improve the performance of these markets.	Torstein Bye, SSB (NO)
Distributed generation integration in the Nordic energy market	The overall objective of the project is to develop a roadmap for efficient long-run integration of DG in the Nordic electricity market, including Northwest Russia, and indicators for measuring DG integration.	Berit Tennbakk, ECON Pöyry (NO)
Initiation of Nordic Automatic Metre Reading Forum	The main long-term objective of the action is to encourage a cost-efficient implementation of AMR solutions in the Nordic countries in order to establish a more flexible and well-functioning electricity market. In order to achieve this, the project will establish a common Nordic AMR Forum.	Andrei Morch, SINTEF (NO)
Energy Foresight Forum	The ambition of the Board of the Energy Forum is to make the EFF a leading international forum, with a Nordic focus, where researchers, government and industry representatives and students meet to discuss energy issues and topics with a clear focus on future challenges facing the industry.	Einar Hope, NHH (NO)
Renewable energy:		
Nordic Graduate School II of Biofuel Science and Technology	The goal of the new Graduate School, the BiofuelsGS-2, is to continue to increase the esteem and quality of the doctoral training within the Nordic universities in the area of biomass and waste conversion to fuels, heat and power.	Mikko Hupa, Åbo Akademi (FI)
New innovative pre-treatment of Nordic wood for cost effective fuel-ethanol	Development of predictive pretreatment models will enable the selection, design, optimization and process control that will match biomass feedstock with the appropriate method and process configuration.	Karin Øyaas, PFI (NO)
Nordic Centre of Excellence in PV	The main objective of the project is to strengthen the already formed Nordic R&D network and develop it into a centre of excellence effectively serving the fast-growing and demanding Nordic PV industry.	Arve Holt, IFE (NO)
Model Development for Power System & Wind in the Nordic Grid	The main objective of the project is to develop models for studying the implications of operating the Nordic grid with a large amount of the electric power and energy coming from wind farms.	Ola Carlson, Chalmers (SE)
Nordic network for sustainable development in isolated locations	The main objective is to significantly improve the capability of energy using communities in isolated and Arctic areas to take practical and effective steps to identify, evaluate and access sustainable energy solutions.	David Pointing, DTU-Risø (DK)

Participating Institutions	Duration	Budget (MNOK)	NER (MNOK)
Stockholm School of Economics (SE), Copenhagen Univ. (DK), Univ. of Reykjavik (IS), Helsinki School of Economics (FI), Univ. of Bergen (NO), Univ. of Oslo (NO), Gothenburg Univ. (SE), DTU-Risø (DK)	2007 - 2010	9.4	8.0
The Norwegian Electricity Industrial Association (NO), VTT (FI), Sweco Grøner (NO), Norwegian Univ. of Life Science (NO), Univ. Chatolique de Louvain (BE), Royal Veterinary and Agricultural Univ. (DK), Norwegian School of Management (NO), Kola Science Centre (RU)	2007 - 2008	2.6	1.3
VTT (FI), Elforsk (SE), DEFU (DK), Ekodoma Ltd (LV)	2007 - 2008	2.7	1.4
Univ. of Bergen (NO), Stockholm School of Economics (SE), Copenhagen Univ. (DK), Univ. of Iceland (IS), Helsinki School of Economics (FI)	2007 - 2009	1.2	0.9
Chalmers Univ. of Technology (SE), NTNU (NO), DTU (DK)	2007 - 2010	16.0	8.0
Prokaria EHF (IS), STFI-Packforsk AB (SE), SINTEF (NO), LTH (SE), VTT (FI)	2007 - 2010	12.7	8.0
Univ. of Uppsala (SE), Helsinki Univ. of Technology (FI), Danish Technology Inst. (DK), NTNU (NO), Physico-Technical Inst. In St. Petersburg (RU), Tallinn Univ. of Technology (EST)	2007 - 2010	12.8	8.0
DTU-Risø (DK), SINTEF (NO), VTT (FI), Tallinn Univ. of Technology (EST)	2007 - 2010	11.1	5.0
IFE (NO), DTU Arctic Technology Centre (DK), Greenland Innovation Centre (DK), Danish Polar Centre (DK), GRID-Arendal (NO), NCM "TBO" Task Force, IRD Fuel Cells (DK), StatoilHydro New Energy (NO), Pure project (UK), REEEP South East & Asia Pacific Secretariat (AUS)	2007 - 2010	7.1	4.0

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Project portfolio 2007-2010

(continuing)

Project Title	Objective	Project Leader
Energy efficiency:		
Basic phenomena in mechanical pulping	The project aims to significantly increase energy efficiency in the pulp and paper industry.	Mikael Lucander, KCL (FI)
Primary Energy Efficiency	The overall objective is to contribute to the effort of enhancing the primary energy efficiency (PEE) and reducing CO_2-emissions in the energy sector.	Rolf Ulseth, SINTEF (NO)
The hydrogen society:		
Bio Hydrogen	Solar energy and water are endless resources and if the vision of BioH2 comes through, renewable H2, directly or indirectly from solar energy and water, would have enormous impact on the energy sector.	Peter Lindblad, Uppsala Univ. (SE)
Nordic Centre of Excellence in H2 storage	By combining expertise of the leading Nordic research groups working in the area of hydrogen storage – through the sharing of research tools and the exchange of information – the project will ensure that the Nordic countries will be at the forefront of this important and active research area	Hannes Jonsson, Univ. of Iceland (IS)
Development & Demonstration of competitive PEMFC	A state-of-the-art PEMFC system will be designed, assembled and demonstrated with a goal of reducing total system cost by 40%. Freeze-tolerant capabilities will be incorporated without compromising system power density and durability.	Steffen Møller-Holst, SINTEF (NO)
Scandinavian Hydrogen Highway Partnership	The SHHP vision is to make the Scandinavian region one of the first regions in Europe where hydrogen is commercially available and used in a network of refuelling stations.	Ulf Hafseld, StatoilHydro (NO)
The effects of climate changes on the energy sector:		
Climate and Energy Systems; Risks, Potential and Adaptation	The goal of the project is to assess the development of the Nordic electricity system for the next 20-30 years. It will address how the conditions for production of renewable energy in the Nordic area might change due to global warming.	Arni Snorrason, NEA (IS)

Participating Institutions	Duration	Budget (MNOK)	NER (MNOK)
Mid Sweden Univ. (SE), NTNU (NO), Tampere Univ. of Technology (FI), Helsinki Univ. of Technology (FI)	2007 - 2009	9.7	4.0
Univ. of Iceland (IS), VEKS (DK), Lund Univ. (SE), Helsinki Univ. of Technology (FI), Tallinn Technical Univ. (EST)	2007 - 2010	13.4	8.0
Univ. of Bergen (NO), Univ. of Turku (FI), The Royal Veterinary and Agricultural Univ. (DK), Univ. of Akureyri (IS), Tampere Univ. of Technology (FI), Univ. of Jyväskylä (FI), Stockholm Environment Inst. (EST), Tallinn Technical Univ. (EST), Roskilde Univ. (DK), Riga Technical Univ. (LV)	2007 - 2010	8.1	6.0
IFE (NO), Univ. of Oslo (NO), Stockholm Univ. (SE), Uppsala Univ. (SE), DTU (DK), DTU-Risø (DK), Helsinki Univ. of Technology (FI), Lithuanian Energy Inst. (LT), St. Petersburg State Univ. (RU)	2007 - 2010	10.8	8.0
Powercell SV AB (SE), Volvo Technology (SE), StatoilHydro (NO), H2 Logic (DK)	2007 - 2009	8.8	4.4
Zero (NO), ETC Batteries and Fuel Cells Sweden AB (SE), Region Midtjylland (DK), H2 Logic (DK)	2007 - 2008	2.2	1.0
Swedish Meteorological and Hydrological Inst. (SE), NVE (NO), VTT (FI), SINTEF (NO), Landsvirkjun (IS), Elforsk (SE), Finnish Energy Industries (FI), Dong Energy (DK), Statkraft (NO)	2007 - 2010	18.2	10.0

In energy-supply, there are multiple areas where we have a common interest (Hydrogen, RES, Energy Efficiency) and a common Nordic cooperation in these areas could yield considerable synergies with common goal formulations and effective implementation, and a common external profile. Hans Jürgen Stehr (Former Executive Board member CDM, Kyoto Protocol) 2007

Key events in 2007

ENERGY FROM THE EDGE 11-13 SEPTEMBER 2007, SHETLAND ISLANDS, UNITED KINGDOM

The symposium was organised by the Shetland Islands Council, The Nordic Council of Ministers' Task force for sustainable energy in remote locations, Nordic Energy Research and Quilliq Energy Company. Delegates at the symposium could listen to informed speeches given by experts and researchers coming from all over the world. The presentations included the West-Nordic project managed by Nordic Energy Research. The objective of this project is to describe, develop and analyse the potential and feasibility of sustainable, on renewable energy resources based, energy concepts suitable for isolated locations.

The energy situation in remote locations poses a series of challenges. Most isolated communities are extremely dependent on energy imports. Typically these locations have weak or non-existent grid connections and are forced to rely on imported diesel, which is often purchased in bulk, in many places no more than once a year, which in turn affects the safety of energy supply. More use of renewable energy should be possible as most of the countries have enormous resources of a specific renewable energy source – or even of more than one.

INNOVATION IN ENERGY 29 NOVEMBER 2007, OULU, FINLAND

Through a general introduction and four cases, this event provided a basis for discussion regarding how to create optimal framework conditions for energy innovation. In this way it was also related to, general innovation – the theme of the Nordic Innovation Centre conference "New trends in Nordic Innovation" that took place right after this energy event.

In the side event New trends in Nordic Energy Innovation focus was on how to speed up market breakthrough for new energy technologies. In addition presentations were made on four successful Nordic energy innovation cases; energy innovation in Iceland, osmotic power in Norway, Danish wind turbine industry and Bio-refineries.

NORDIC COUNCIL SESSION, SIDE EVENT 30 OCTOBER 2007,OSLO, NORWAY

Nordic Energy Research cooperated with NICe, NordForsk and Nordic Investment Bank in organising a side-event to the 2007 Nordic Council session in Oslo. The theme for the event was "Climate – Environment – Energy". The target groups were politicians, political planners and the media. The objective was to illustrate how today's climate, environment and energy challenges affect those of us who live in the Nordic countries and in what ways we can work together to overcome these problems.

International activities

Nordic Energy Research participates in two EU projects under the ERA-NET umbrella. These are HY-CO (hydrogen and fuel cells) and INNER (innovative energy research). Nordic Energy Research is managing the N-INNER programme (the Northern European Innovative Research Programme) on behalf of the five Nordic countries and Germany. N-INNER has originated through the INNER ERA-NET. In addition, Nordic Energy Research is planning to take part in the Smart Grid ERA-NET, which will commence during 2008.

Nordic Energy Research has extensive experience with planning and implementing trans-national application processes. This makes us a valuable partner for organising international research projects. Through our participation in these projects, we expand our network and experience that in turn benefits our other management and research projects.

HY-CO

PARTNERS IN THE HY-CO ERA-NET:

Norway, Sweden, Finland, Denmark, Iceland, Germany, Greece, The Wallon region (Belgium), the Flemish region (Belgium), France, Spain, The Basque region (Spain), the Netherlands, The Czech Republic, Portugal, Slovenia, Italy, Austria, Romania, the United Kingdom and Nordic Energy Research

OBJECTIVE

The goal of the project Hydrogen and Fuel Cell Co-ordination (HY-CO) is to harmonise the targets of the H2FC programmes of – at first – 18 different European countries or regions, representing approximately 160 Million Euro public funding, and implement trans-national joint research and development activities.

HY-CO recently had a call for proposals in Deployment strategies. Projects are expected to start up in the autumn of 2008. The call is managed by Nordic Energy Research.

The partners in the HY-CO deployment strategies call are: ADEME (FR), Danish Energy Agency (DK), the Research Council of Norway (NO), The Ministry of Higher Education, Science and Technology (SL), Senternovem (NL), The Science and Technology Foundation (PT) and Nordic Energy Research

INNER

PARTNERS IN THE INNER ERA-NET:

Germany, Netherlands, France, Norway, Slovakia, Portugal, Poland, Spain, Sweden, the United Kingdom and Nordic Energy Research

OBJECTIVE

The INNER project aims to establish cooperation between European national research programmes that stimulate innovative energy research. This cooperation will contribute to the coherence and coordination of the European Research Area, through benchmarking of approaches and a set of joint transnational programme activities. The activities are designed to allow a durable collaboration, beyond the duration of the INNER project.

N-INNER PROGRAMME 2008-2011

PARTNERS IN THE N-INNER PROGRAMME:

Academy of Finland (FI), the Research Council of Norway (NO), the Swedish Energy Agency (SE), the Danish Council for Strategic Research (DK), Projektträger Jülich (DE), Orkustofnun (IS) and Nordic Energy Research

OBJECTIVE

The programme Northern European Innovative Energy Research (N-INNER) aims at supporting innovative and visionary basic energy research that can lead to secure, clean and affordable energy technologies and systems and to increase Nordic and German networking and multidisciplinary cooperation among researchers.

Ongoing projects in N-INNER

Project Title	Objective
Synthesis and durability of CNT based MEAs for PEMFC (Nanoduramea)	To increase the stability of the Pt/C catalyst in PEMFC by replacing the carbon black support by carbon nanotubes (CNT), carbon nanofibres (CNF) or novel hybrid carbon nanomaterials or nanobuds; increase the durability of the PEMFC MEAs by using optimised Pt-alloy oxygen reduction catalysts to decrease the concentration of harmful reaction intermediates.
Optimizing lipid production by planktonic algae – LIPIDO	Screening the most promising algal species for temperate environments; Optimizing their growth and lipid yield as functions of growth condition; Testing the practical applicability of coupling algal culturing to CO_2 emission mitigation; Screening commercially interesting by-products from biomass of selected species.
Solar hydrogen	The primary objectives are to acquire a detailed understanding of the mechanisms behind water splitting with solar light using both experiment and theory, find and characterize new photo electrode materials, to scrutinize the potential of nanoscience and nanotechnology in the above context, and to construct water-splitting devices with improved efficiencies and durability.
Evaluation platform for polymer solar cells – Morphoso	The objective of this project is to establish an evaluation platform that integrates device-modelling, -processing, -characterisation to find the theoretical and experimental correlation between the thin film process, its nanomorphology and the charge carrier generation and transport in organic solar cells.
Novel high-temperature proton and mixed proton electron conductors for fuel cells and H_2-separation membranes	The principal objective is to develop CO_2-stable HTPC and HTMPEC membranes with area specific proton or ambipolar resistances below 0.1 ohm cm^2.

Project Leader	Partners	Budget (M€)
Pertti Kauranen, VTT (FI)	HUT (FI), SINTEF (NO), NTNU (NO), SDU (DK), KTH (SE)	1.4
Timo Tamminen, SYKE (FI)	Ludwig Maximilian Univ. (DE), Icelandic Energy Research Inst. (IS), NTNU (NO), Univ. of Oslo (NO)	0.84
Dinko Chakarov, Chalmers Univ. of Technology (SE)	Univ. of Oslo (NO), DTU (DK), Univ. of Iceland (IS)	1.3
Michael Niggemann, Fraunhofer ISE (DE)	Åbo Akademi Univ. (FI), Linköping Univ. (SE)	1.26
Reidar Haugsrud, Univ. of Oslo (NO)	SINTEF (NO), DTU-Risø (DK), Chalmers Univ. of Technology (SE), Research Cenetre Jülich GmbH (DE)	1.2

Management projects

In addition to the research and policy projects, Nordic Energy Research has two management projects, where we offer administrative and secretarial support to working groups under the Nordic Council of Ministers.

ELECTRICITY MARKET GROUP

www.norden.org/energi/el/sk

The Electricity Market Group (EMG) is responsible for following up resolutions from the Nordic Council of Ministers, coordinating the work through the year and preparing background documents for the Ministers' annual meetings concerning electricity market issues. The group has charge of increasing the harmonisation of the Nordic electricity market.

The Electricity Market Group reports to the Committee of Senior Officials for Energy and the Nordic Council of Ministers for Energy. As part of the annual reporting, the group submits a memo to the ministers and senior officials outlining the challenges and developments in the Nordic electricity market. The memo is public, and can be found at the Nordic Energy Research website.

BIO ENERGY MARKET

www.nordicenergy.net/bioenergy

The project "Opportunities and Consequences of an Expanding Bioenergy Market in the Nordic Countries" was initiated by the Norwegian Presidency of the Nordic Council of Ministers in response to the need to improve our understanding of the role of bioenergy in meeting policy objectives and provide insights on the expected impacts of an expanding bioenergy market. The project had the further objectives of improving the coordination of bioenergy initiatives in the Nordic countries and increasing the visibility of existing and future Nordic solutions.

The Bio Energy Market project was initiated in 2007 and continues in 2008. The project is led by a steering group of Senior Nordic Energy Officials. Nordic Energy Research is the secretariat for the steering group.

NORIA policy projects

In 2004 the Nordic Council of Ministers launched the report "NORIA – White Paper on Nordic research and innovation", and the idea of formalising and strengthening the Nordic region as one Research and Innovation area was presented.

The report identified ways of encouraging closer collaboration between universities, research institutions, industry, national ministries and other official bodies, with the aim of enabling the Nordic Region to becoming a leading research and innovation region on the global arena.

In light of the world's growing demands for energy, and the threats of climate change, new energy solutions are necessary. To manage a transition towards sustainable energy systems, increased and focussed efforts in research and development are necessary.

In response to this and as a part of the answer to these global challenges, Nordic Energy Research launched the programme NORIA-energy in 2007. The aim of NORIA-energy is to strengthen the Nordic research and innovation area in new energy technologies and systems, and to aid Nordic decision-makers in developing efficient policies on science, technology and investment in new energy technologies and systems. All the NORIA policy projects will be finished by the end of 2008. >>

NORIA policy projects
(continuing)

Project Title	Objective
Competitive policies in the Nordic energy research and innovation area (eNERGIA)	The project will describe and analyse the framework conditions for the sector innovation systems for energy production in the Nordic and Baltic countries.
Patterns of need integration and co-operation in Nordic energy innovation systems	This project will assess, compare and develop existing knowledge on Nordic energy innovation systems, as well as analyse patterns of integration of needs and technological opportunities in these systems.
Russian energy research and innovation – prospects for co-operation on renewables and energy efficiency	The study will provide comprehensive information about the energy efficiency and renewable energy research sectors in Russia.
Industrial development and export opportunities for Nordic energy industry and other companies in the energy field	This project investigates the industrial development and the increasing business opportunities for Nordic companies in the energy sector and the possible export opportunities of environmentally friendly technology, energy carriers and know-how. The project is a part under the larger NEP II. project umbrella.
How to bring renewable energies down their learning curves	This project aims at developing a model for the calculation and comparison of returns on R&D investments in new energy technologies in order to promote the attraction of capital needed to bring about technological breakthroughs.
Governance and research of Nordic energy system transaction (GoReNest)	The project aims to develop an analytical framework for the governance of Nordic energy systems and utilise it to determine the role of various research and policy instruments in strengthening the role of Nordic actors in proactively supporting a global transition towards more sustainable energy systems.
Nordic opportunities for collaboration with China in energy research and innovation	The key purpose of this study is to highlight opportunities and strategies for Nordic companies and R&D institutions working with energy research, technology and innovations to collaborate with Chinese stakeholders and actors in energy R&D to address the key issues associated with China's energy production and consumption while opening up to the world market as well.
The CDM market – New business opportunities for Nordic companies	The overall objective of this study is to investigate possibilities for Nordic knowledge and energy technology transfer in connection to Clean Development Mechanism projects.

Project Leader	Partners	Budget (M NOK)
Antje Klitkou, NIFU Step (NO)		1.00
Mads Borup, DTU-Risø (DK)	Norwegian School of Management (NO), Chalmers Univ. of Technology (SE)	0.99
Indra Øverland, NUPI (NO)		0.49
Anders Sandoff, Univ. of Gothenburg (SE)	VTT (FI), Profu (SE)	1.01
Camilla Josephson, Lund Univ. (SE), Cinzia Daraio, Univ. of Pisa (IT)		0.48
Annele Eerola, VTT (FI)	CEM (ES)	0.50
Jørgen Delman, NIAS (DK)	Ministry of Science and Technology (CN), Lund Univ. (SE)	0.50
Peter Nedergaard, Copenhagen Business School (DK)	MDT analysis (NO)	0.50

The board

FINLAND

Senior Technology Advisor
Solveig Roschier (chairman)
Energy and Environment Industries
Tekes, Finnish Funding Agency for Technology and Innovation
P.O. Box 69
FI-00101 Helsinki
E-mail: solveig.roschier@tekes.fi
Phone: +358 10 60 55674
Fax: +358 10 521 5905

Senior Engineer Timo Ritonummi (deputy)
Ministry of employment and the economy, Energy Department
P.O. BOX 32
FI-00023 Government
Phone: +358 9 1606 4798
Fax: +358 9 1606 2695
E-mail: timo.ritonummi@tem.fi

NORWAY

Programme Coordinator Hans Otto Haaland (member)
The Research Council of Norway
P.O. Box 2700 St. Hanshaugen
0131 OSLO
E-mail: hoh@forskningsradet.no
Phone: + 47 2203 7297

Advisor
Marius Knagenhjelm (deputy)
Ministry of Petroleum and Energy
P.O. Box 8148 Dep.
N-0033 Oslo
E-mail: mak@oed.dep.no
Phone: +47 2224 6376
Fax: +47 2224 9566

DENMARK

Head of department Nicolai Zarganis (member)
Energistyrelsen
Amaliegade 44
1256 Copenhagen K
E-mail: nz@ens.dk
Phone: +45 3392 7601 (direct)
Fax: +45 3311 4743

Head of Section Aksel Beck (deputy)
Danish Energy Authority
Amaliegade 44
DK-1256 Copenhagen
E-mail: AB@ens.dk
Phone: +45 3392 6700
Fax: +45 3311 4743

ICELAND

Deputy Director Ragnheiður Inga Þorarinnsdottir, (member)
Orkustofnun
Grensásvegur 9
IS-108 Reykjavik
E-mail: rith@os.is
Phone: +354 569 6000
Fax: +354 568 8896

General Director Þorkell Helgason (deputy)
Orkustofnun
Grensásvegur 9
IS-108 Reykjavik
E-mail: thh@os.is
Phone: +354 569 6000
Fax: +354 568 8896

SWEDEN

Director of RTD Strategy
Lars Guldbrand (member)
Swedish Energy Agency
Box 310
Kungsgatan 43
631 04 Eskilstuna
E-mail: lars.guldbrand@energimyndigheten.se
Phone: +46 16 544 22 80

Special Advisor, Björn Telenius (deputy)
Ministry of enterprise, energy and communications
Jakobsgatan 26
SE-103 33 Stockholm
E-mail: bjorn.telenius@enterprise.ministry.se
Phone: +46 8 405 4261

FAROE ISLANDS

Director Sigurð í Jákupsstovu (observer)
Jardfeingi/Faeroese Earth and Energy Directorate
Postsmoga 3059
FO 110 Tórshavn
E-mail: sigurd.i.jakupsstovu@jardfeingi.fo
Phone: +298 35 70 00
Fax: +298 35 70 01

NORDIC COUNCIL OF MINISTERS

Senior Adviser Pouline Terpager Rasmussen (observer)
Store Strandstræde 18
DK-1255 Copenhagen K
E-mail: ptr@norden.org
Phone: +45 3396 0200
Fax: +45 3393 2047

Annual accounts 2007

REVENUES/Inntekter	2007	2006
Ordinary budget funds from NCM/Ordinære budsjettmidler fra NMR	5.540.000	1.155.900
National grants/Nasjonale bidrag*	21.067.410	32.704.694
Other revenues/Øvrige inntekter	2.042.031	2.010.950
Financial revenues/Finansielle inntekter	1.464.677	1.012.454
Project grants from NCM/Prosjektmidler fra NMR	1.587.505	1.395.886
TOTAL REVENUES/Totale inntekter	**31.701.623**	**38.279.884**
EXPENSES/Utgifter		
Secretariat/Sekretariat	8.930.728	7.536.219
Project expenses/Prosjektutgifter	21.133.911	32.704.694
Other expenses/Øvrige utgifter	1.460	22.225
TOTAL EXPENSES/Totale utgifter	**30.066.099**	**40.263.138**
NET PROFIT/Årets resultat	**1.635.524**	**(1.983.254)**
ASSETS/Aktiva (NOK)		
Trade debtors/Debitorfordringer m.m		79.659
Grants/Prosjektfordringer	1.428.474	247.551
Costs paid in advance/Forskuddsbetalte omkostninger	18.249	
Cash at bank/Bankkonto	28.879.497	28.004.507
TOTAL ASSETS/Aktiva i alt	**30.326.220**	**28.331.717**
LIABILITIES/Passiva (NOK)		
Trade creditors/Kreditorgjeld m.m.	3.664.654	465.512
Project advance payment/Prosjektforskudd	20.816.952	26.744.968
Accounts payable/Skyldige omkostninger	4.209.090	536.927
Transfers/Overførte midler	1.635.524	584.310
TOTAL LIABILITIES/Passiva i alt	**30.326.219**	**28.331.717**

*National grants 2007:	Nordic activity	Activities in Baltic states/NW Russia	Total
Danmark	5.725.000	572.500	6.297.500
Finland	4.525.000	452.500	4.977.500
Iceland/Island	275.000	27.500	302.500
Norway/Norge	6.300.000	630.000	6.930.000
Sweden/Sverige	8.175.000	817.500	8.992.500
Total	25.000.000	2.500.000	27.500.000

The national grant appears as revenues NOK 21.067.410. The remaining national grant appears in the balance

I regnskapet er det kun inntektsføre NOK 21.067.410 resten av nasjonale bidrag er ført i balansen.

The annual accounts are revised by the Office of the Auditor General in Norway.

Regnskapet er revidert av Riksrevisjonen i Norge

The administration

From left: Daniel, Birte, Amund, Eva, Mats, Unni, Lise, Vida, Mikael.

Birte Holst Jørgensen
Managing Director
E-mail: bhj@nordicenergy.net
Phone: +47 9747 3544

Mats B Andersson
Senior Adviser
E-mail: mba@nordicenergy.net
Phone: +47 9508 5154

Eva Grøttland
Head of Administration
E-mail: eg@nordicenergy.net
Phone: +47 9923 8143

Mikael Forss
Senior Adviser
E-mail: mf@nordicenergy.net
Phone: +358 400 498497

Vida Rozite
Senior Adviser
E-mail: vr@nordicenergy.net
Phone: +47 905 18 445

Unni Bruaset
Senior Officer
E-mail: ub@nordicenergy.net
Phone: +47 9076 1425

Lise Jørstad
Project Manager
E-mail: lj@nordicenergy.net
Phone: +47 9243 5888

Amund Vik
Adviser
E-mail: av@nordicenergy.net
Phone: +47 916 08 347

Daniel Molin
Project Assistant
E-mail: dm@nordicenergy.net

Nordic Energy Research

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Nordic Energy Research
Stensberggata 25
NO-0170 OSLO
www.nordicenergy.net

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