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Nordic Energy Research



# Energy research for the future

**10 reasons why**



Whether or not human activity is the source of climate change is no longer a debate. Now, we must pool our resources to meet the challenge.



Emissions from our industrial conduct and the consumption in the developed world threaten to ruin our ecosystems. This is further aggravated by rapidly growing consumption levels in developing countries. We need a different way of thinking about consumption, true, but we also need new ways of thinking about energy.

Climate change and global warming is no longer a distant threat, but the present and close future. Already today global warming is claiming lives. As a community, we need to place combating the climate change at the very top of our common goals.

“An overwhelming body of scientific evidence indicates that the Earth’s climate is rapidly changing, predominantly as a result of increases in greenhouse gases caused by human activities.”

*Stern Review: The Economics of Climate Change, Part I: Climate Change, Our Approach. 2006.*

“The World Health Organisation (WHO) has estimated that climate change is already causing more than 150,000 deaths per year through increasing incidence of [...] diseases and estimates that a 1°C increase in global temperature could double this figure.”

*Lehman Brothers: The business of Climate Change. 2007.*



Today's energy sources and our over-use of these limited resources is causing climate change. Therefore we, need both new energy sources, and devices and technology to help us limit the consumption of energy.

Research, development and innovation in new energy solutions are crucial in order to combat climate change. Neither the global, nor the regional and national emission reduction targets can be met without significant innovation in energy technologies and systems.

There are many renewable and clean energy sources on the market today, yet there is potential for improving their efficiency. Through extensive research and development, the quality and availability of renewable energy sources available for households, services and firms will improve greatly.

“ Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources. ”

*UN Millennium Development goal number 7*

“ Technology makes a lot of things possible, but it only has one realistic and sensible job in the future: To minimize consumption of energy and resources. ”

*Chairman Øystein Dahle, the Global and Nordic World Watch Institute. 2007.*



New, renewable energy technologies and systems vary in degree of commercialisation; many are still far from the market. Increased funding in the early stage of the value chain will have great benefits as it will spur the development. To achieve our goal of a new sustainable energy system, we need both market pull and technology push instruments. The pull from the market alone cannot create enough pressure to stimulate innovation in this area. In order to have the widest possible selection of renewable and clean energy, both governments and firms need to focus on the R & D of energy technologies that are still far from the market.

No matter how we look at the world today, it seems highly likely that the challenges of developing a sustainable energy sector will dominate the political, economic and academic agendas in the foreseeable future. Global warming and the demise of the petroleum era could make the quest for new energy solutions the moon project of our century.

“Energy related research has contributed strongly to energy efficiency (e.g. in car engines) and to energy diversity through renewable energy sources. However, the magnitude of the challenges ahead requires increased efforts.”

*EU Green Paper: A European Strategy for Sustainable, Competitive and Secure Energy. 2006.*

“All major energy sources face severe restrictions related to environmental, safety or economic factors. Major R&D will, therefore, be necessary to find acceptable solutions for their future use.”

*Professor Peter Lund, Helsinki University of Technology. 2007.*



It can be argued that the economic interest of corporations will converge with the interest of reducing carbon emissions and ensuring a sustainable development - if nothing else because the cost of polluting will be too high, not only economically, but also socially. However, we need to speed up this response in order to limit costs and damages and thus need take measures to ensure a more rapid development and deployment of cost effective sustainable energy technologies and solutions.

Faced with the above mentioned challenges there is a need for more investment in research and development aimed to attain maximum value for money. It is the goal of Nordic Energy Research to contribute to maximising the results of energy-related research and development in the Nordic Region and their adjacent areas.

“ The size of Nordic family is small enough to have a smooth co-operation, yet big enough to have the critical mass. And the connections and enlargements to areas close by - the Baltic, Russia etc. - can be done in a controlled way. ”

*Senior Engineer Timo Ritonummi, Finnish Ministry of Trade and Industry. 2007.*

“ The Nordic Countries complement each other in several areas, and would therefore have great output from increased cooperation – through for instance using less resources on trying to become the best in every area individually but rather by pooling our resources. ”

*Programme Coordinator Hans Otto Haaland, The Research Council of Norway. 2007.*



Nordic Energy Research supports energy research in the Nordic countries and adjacent areas. We see it as our mission to participate in consolidating and developing the Nordic region as a leading knowledge region, based on new, environmentally friendly energy technology and an efficient energy system.

Today, the clarity of the message from "Our Common Future" 20 years ago is striking. The clear evidence and public opinion has gathered force to underline the importance of transnational action and responsibility.

“ In energy-supply, there are multiple areas where we have a common interest (hydrogen, sustainable energy, energy efficiency) and a Nordic cooperation in these areas could yield considerable synergies with joint goal formulations and effective implementation, and a shared external profile. ”

*Executive Board member Hans Jürgen Stehr, CDM, Kyoto Protocol 2007.*

“ We live in an era in the history of nations when there is greater need than ever for co-ordinated political action and responsibility [...] Responsibly meeting humanity’s goals and aspirations will require the active support of all of us. ”

*Brundtland Report; Our Common Future. 1987.*



## **ENERGISING THE FUTURE**

Knowledge for sustainable, affordable  
and clean energy solutions

*Nordic Energy Research*

Nordic Energy Research is a  
Nordic institution under the auspices  
of the Nordic Council of Ministers

[www.nordicenergy.net](http://www.nordicenergy.net)  
[info@nordicenergy.net](mailto:info@nordicenergy.net)

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