



## Top-level Research Initiative

# Nanotechnology and Energy Efficiency

The future carbon-free energy infrastructure is supposed to consist of a combination of distributed renewable generation, large central power plants as well as efficient end-use technologies. Smart grids with energy storage are needed for the distributed generation and high voltage long distance transmission lines for the central generation.

New capabilities to process and control nanosized particles and structures will allow development of carbon-free energy technologies to a new level. Their performance and economical competitive edge can be improved by the application of nanotechnology, and thus, their application to the markets can be significantly accelerated. Nanomaterials and nanostructures can be applied to improve the efficiency and durability of all these conversion, storage, transmission and end-use technologies.

Nanotechnology is a major priority at the research agenda in all Nordic countries. Access to specialised competence and technology is a key

factor for success. Nanotechnology is an internationally accepted theme for high level research and innovation. Basic research and innovation within nanotechnology will be connected to various market-oriented energy technology solutions for improving energy efficiency. The main issue is how to develop the best materials by using unique Nordic know-how.

The nanotechnology program will launch a call for proposals in the beginning of 2010. The target group for the call will be research institutions as well as industry. The focus will be not only on research, but also on the end user and commercialisation of the research results. Concerns will be drawn to dialogue between the Nordic region and the EU, and national Nordic activities will be initiated. The budget for the program is approximately 50 MNOK over five years.



## Top-level Research Initiative

– a major Nordic venture for climate, energy and the environment

The world's major climate and energy challenges demand new knowledge and innovations. The Nordic countries are particularly well placed to contribute to this, due to their high level of education, political will to act, and abundance of natural resources.

The Top-level Research Initiative was initiated by the Nordic Prime Ministers in 2008, and is supported by national institutions and agencies, in particular those financing research and innovation. The initiative will promote research and innovation of the highest level, involving the very best agencies and institutions. Great importance is attached to a close partnership with business and industry to ensure application and utilisation of research results.

The Top-level Research Initiative shall provide a platform for increased international cooperation both within the EU and beyond.

The initiative will last for five years. Calls for proposals begin in the autumn of 2009.

### Top-level Research Initiative Programmes:

- 1 Effect Studies and Adaptation to Climate Change
- 2 Climate Changes' Interaction with the Cryosphere
- 3 Integration of Large-scale Wind Power
- 4 Sustainable Biofuels
- 5 Nanotechnology and Energy Efficiency
- 6 Carbon Capture and Storage

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