



**To** The Ministry of Climate and Energy  
The Supervisory Board of Energinet.dk  
The Danish Energy Agency

Tonne Kjærvej 65  
DK-7000 Fredericia  
Tel. +45 70 10 22 44  
Fax +45 76 24 51 80

info@energinet.dk  
www.energinet.dk  
VAT no. 28 98 06 71

## **ForskEL focus areas 2010**

10 June 2009  
KBE/DGK

### **Summary**

Energinet.dk intends to use the PSO R&D programme ForskEL call 2010 to promote the implementation of the February 2008 energy agreement and contribute to meeting the climate goals. The ForskEL call 2010 will be conducted within the framework of *Strategy 2010+* and recommendations from the external evaluation of the ForskEL programme.

The ForskEL programme will give priority to the following focus areas:

- Control and regulation of energy systems
- Tomorrow's environmentally-friendly electricity generation
- Environmental improvements and greater efficiency as described in *Strategy 2010+*.

### **Three strategic objectives for the ForskEL programme**

In 2010 and the following years, the ForskEL programme will build on the strategy formulated in *Strategy 2010+ for the ForskEL and ForskVE programmes*, doc. 1918/09.

The ForskEL programme will support the intentions of the February 2008 energy agreement and make a targeted effort to meet the climate goals. The coming decades will see Denmark moving determinedly towards energy systems that do not use fossil fuels. There are a number of milestones on the road to this visionary goal.

The EU has set a target that by 2020, 20 per cent of its energy consumption must be supplied from non-fossil sources. Denmark aims higher: 30 per cent of its energy consumption must come from renewable energy sources.

Integrated planning of different energy areas such as electricity, heat and transport is necessary to meet the ambitious targets. For many years, combined heat and power (CHP) generation has benefited the environment, the consumption of resources and the expansion of district heating in Denmark.

A future with massive wind-turbine generated electricity opens up new possibilities of electricity displacing fossil fuels in the heating sector.

The transport sector is outside the sectors regulated by CO<sub>2</sub> allowances, and with the use of electricity from renewable energy sources, it can reduce its consumption of fossil fuels and CO<sub>2</sub> emissions considerably.

With strategic prioritisation of the efforts, ForskEL will contribute to Denmark benefitting more from integrated planning of the energy systems.

With the energy agreement of March 2004, the PSO R&D programme scope was extended to also include Control and regulation of the power system as well as Demand response and Integration of renewable energy.

The integration of electricity, heat and transport opens up to the targeted use of renewable energy from wind power through new types of demand response, for example for heating purposes or electric vehicles. This requires new control and communications equipment.

The three prioritised strategic focus areas for the ForskEL programme are the following:

1. Control and regulation of energy systems
2. Tomorrow's environmentally-friendly electricity generation
3. Environmental improvements and greater efficiency.

It is still necessary to develop more and new renewable electricity generation. Today and in future, wind power will be a major, significant contributor to renewable electricity generation. However, particularly the fluctuating wind power generation requires access to other adjustable sources of renewable electricity generation.

The road to a power system without fossil fuels is long. That is why it is also an objective to reduce environmental impacts from existing power stations and CHP plants. Environment is more than CO<sub>2</sub> reductions; it is also reductions in NO<sub>x</sub> and other emissions with an environmental impact.

## **ForskEL programme collaboration**

The ForskEL programme collaboration encompasses three levels:

1. Within Energinet.dk there is intensive collaboration with the two other public energy programmes, ForskVE and ForskNG.

The ForskVE programme supports the dissemination of small RE technologies such as wave power, photovoltaics (PV) and biogasification. Technologies developed under ForskEL or the Energy Technology Development and Demonstration Programme (EUDP) can therefore be disseminated with support from ForskVE.

The ForskNG programme supports the development of the gas system with special emphasis on the biogas area. Under the energy agreement, the use of biogas must be increased significantly in the coming years. Much of the biogas will be used for electricity and CHP generation. This will provide a fine coupling between ForskNG and ForskEL.

A joint call and evaluation will be arranged for ForskEL, ForskVE and ForskNG in order to obtain as much synergy as possible between the programmes.

2. The other Danish energy-research programmes are important partners for ForskEL. The collaboration has developed in a most positive direction at both strategic and executive levels. The partners in this collaboration are the Danish Energy Agency's EUDP, the Danish Energy Association's Elforsk, the Danish Council for Strategic Research's BEnMI (sustainable energy and environment), the Danish National Advanced Technology Foundation and Nordic Energy Research.
3. International collaboration gives extra strength to Danish energy research. Energinet.dk participates in a number of EU ERA-NETs through which joint project calls are coordinated. The ForskEL programme funds the participation of Danish enterprises and research institutions.

## **Delimitation of the ForskEL programme**

ForskEL interfaces with other energy-research programmes. ForskEL funds projects in the value chain from applied research to demonstration.

- ForskEL projects on Control and regulation of the power system, Integration of renewable energy and Demand response have high strategic priority. The coupling to Energinet.dk's core activities is obvious, and close coordination with other Energinet.dk R&D activities will be ensured, for instance via observation groups. It is also possible that projects approach efficient energy use funded by the Elforsk programme.
- As regards projects on PV cells, wave power and biogasification, ForskEL borders on the ForskVE programme's possibility of funding the dissemination of the technologies. The two programmes together ensure that a project can be taken from the demonstration phase to the dissemination phase on its way to commercialisation.
- ForskEL projects on biogas, synthetic natural gas (SNG) and hydrogen, for example, primarily concern the production and sale of gas for electricity and CHP generation. The ForskNG programme funds projects on gas distribution, upgrading, storage, metering and settlement.
- ForskEL projects on fuel cells focus on applied research and major, coherent projects. The EUDP will provide the best funding for projects on demonstration activities for fuel cells.
- ForskEL can fund projects on integrated planning of energy systems such as district heating and transport if the projects are intended to ensure better integration and utilisation of renewable electricity generation.
- Only to a limited extent will ForskEL fund projects on the production of fluid biofuels, and only if it is done as efficient cogeneration with electricity and CHP. The EUDP will provide the best funding for projects on actual production of biofuels.
- Only within limited areas will ForskEL fund projects that are part of CCS (carbon capture and storage). CCS at large conventional power stations is not funded. Projects on research and development in CCS at small plants, for

example with biomass or pre-treatment of fuels to obtain lower CO<sub>2</sub> emissions can be funded. Add to this general international clarification projects with Danish participation.

## Prioritisation of projects in the ForskEL programme

ForskEL again expects to receive far more applications than can be met by the funds available. A number of criteria are in focus when projects are prioritised.

- Large consortiums where research institutions join forces with enterprises to develop projects all the way to application.
- Reference to the Danish strategies for energy technologies and the reaching of milestones and/or projects building on the results of previous projects.
- Innovation in the form of end-user participation in the project.
- Contributions to *Strategy 2010+* thereby promoting the energy agreement and the climate goals.

As before, it will be the external expert network of evaluators who will comment on the energy-technical aspects of the applications. The Danish Council for Strategic Research will comment on the projects' research potential. Dedicated evaluators look at the projects' business strategies, which are very important programme elements. The programme prefers projects with a clear picture of future business opportunities.

## Schedule for ForskEL programme call for 2010

Calls for the PSO R&D programme ForskEL from Energinet.dk are published according to section 29 of the Danish Electricity Supply Act. The programme must fund research, development and demonstration of environmentally-friendly electricity generation technologies and their integration.

According to section 15 of the Danish Executive Order on Transmission System Operation, the Danish Minister for Climate and Energy '... determines every year, on the basis of, among other things, recommendations from Energinet.dk, the focus areas for the projects mentioned in section 14 of the same order which may be considered for the following year. At the same time, the Minister lays down a financial framework for the projects.'

Energinet.dk prepares the annual recommendation to the minister as to the selection of focus areas. In relation to the ForskEL call for 2010, there are two new contributions to the determination of the focus areas. As requested by the Minister for Climate and Energy, Energinet.dk has prepared '*Strategy 2010+ for the ForskEL and ForskVE programmes*' in dialogue with the Danish Energy Agency. Add to that an external evaluation of the ForskEL programme by the Alexandra Institute at Aarhus University. The process towards the public call will have the following milestones in 2009.

End of April	The Alexandra Institute submits a memorandum with recommendations from the evaluation. Update of focus areas for the ForskEL programme's call for 2010 and <i>Strategy 2010+</i> .
--------------	--

19 May	The Supervisory Board of Energinet.dk approves the recommendation as to the focus areas for the ForskEL programme's call for 2010. Updated <i>Strategy 2010+</i> is also considered.
End of May	The Climate and Energy Ministry and the Danish Energy Agency receive updated versions of the focus areas for the ForskEL programme's call for 2010 and <i>Strategy 2010+</i> .
3 June	The Alexandra Institute's evaluation report is available and will be sent to the Ministry of Climate and Energy, the Danish Energy Agency and the Supervisory Board of Energinet.dk.
Beginning of June	The Minister for Climate and Energy is asked to approve the focus areas for the 2010 ForskEL programme. Calls are then published together with the other energy research programme calls.

Energinet.dk will do its utmost to ensure that the climate year 2009 will also receive a positive contribution from the ForskEL programme's call for 2010 and support the energy agreement of February 2008 with its promising potential.