

# **EcoGrid**<sup>dk</sup>

[www.ecogrid.dk](http://www.ecogrid.dk)



*Steps toward a Danish Power System  
with 50% Wind Energy*

*EcoGrid.dk Phase I  
WP 1: The EcoGrid Program  
and Communication Activities*

*PSO ForskEL R&D-contract for project no. 2007-1-7816  
Funded by Energinet.dk*

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**PSO ForskEL R&D-contract no. 2007-1-7816**

**Project responsible:**

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# The EcoGrid research program and organisation

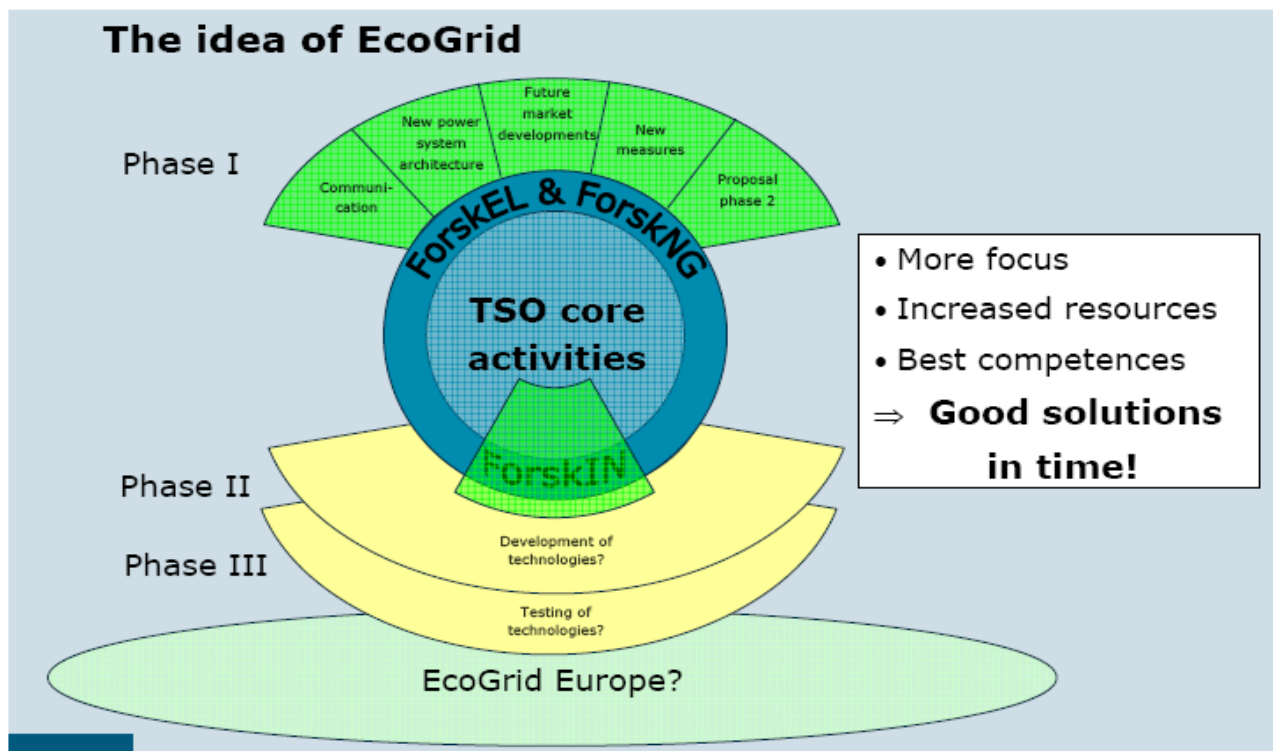
## Background and objective

In 2005 and 2006 several research project applications regarding control of power systems with large share of renewable energy sources have been submitted to the PSO research programme, ForskEL. Energinet.dk decided to pull out these applications from the PSO programme to form the basis of EcoGrid.dk.

The EcoGrid.dk program has the objective to develop new long term technologies and market solutions for power grid and systems, with reference to the Danish power system. The program is divided into phases, from phase 0 to phase 3. The focus of the phases is:

- Phase 0: Preparation of project description to the ForskEL program, including terms of reference (December 2006 – April 2007)
- Phase I: General description and analyses of demand and development of the Danish power system with increased volumes of renewable energy (Maj 2007 – March 2009)
- Phase II: Specific projects, analyses and recommendations to Energinet.dk with main focus on research activities
- Phase III: Technologies are implemented in real environment and demonstrated with subsequent adoption and implementation in Energinet.dk.

Figure 1



The Phase I EcoGrid report *Steps Toward a Future with 50 % Wind Energy* was finalized in March 2009. The research activities in phase I has been made independently of Energinet.dk's own research

activities. The next phase of EcoGrid (Phase II) is expected to begin 2009/2010. Phase II and III is intended to be financed primarily under Energinet.dk's own ForskIN programme, which involve participation from Energinet.dk. Phase 3 is expected to run into 2012. Planned phase III activities regarding technologies and methodology are implemented and demonstrated with subsequent adoption and implementation in Energinet.dk. The time schedule and final project wording of phases 2 and 3 can be adjusted during the project course to ensure the optimum result of EcoGrid.dk. Furthermore, the phases must be flexible and designed for application in accordance with the EU FP7 Energy theme. Examples of adjustments.

### **Organisation of the EcoGrid programme, Phase I**

Figure 2 gives an overview of the organisation of the first phase of the EcoGrid. The Phase I of the EcoGrid program is made up of Energinet.dk as chairman of the group and one representative from each participating enterprise/organisation. According to requirement the steering group can continuously adjust time schedule and objectives to ensure optimum outcome of EcoGrid.dk and only the steering group can accept new participants in EcoGrid.dk. A reference group was established as a consultative body with no powers in relation to the project. The reference group is besides Energinet.dk made up of selected players from the energy sector:

To ensure the overall progress and coordination of the project work, a project coordinator was appointed to decide the need for meeting activities and ensure that deadlines are met. Energinet.dk has appointed Danish Technological Institute to project manager (Kjeld Nørregaard). To secure the consortium idea, an editorial group was set up consisting of Project Manager and key contributors (work packages leaders and editors). The purpose is to guarantee that vision, objectives and results for the respective work packages are described as one joint output instead of individual results from the various project parties. Members are approved by Energinet.dk and from phase II Energinet.dk will be included in the editorial group.

### **Secretariat**

This function is handled solely by Energinet.dk and is primarily located at section for environment and PSO R&D. According to requirement **Corporate Communications** will also be involved. The function involves:

- Coordination of notice of meetings including meetings in the reference group
- Assisting the working committee, working group, steering group and editorial group
- Coordinating publishing of results etc. from the different WP and participants
- Updating [www.ecogrid.dk](http://www.ecogrid.dk)

The secretariat is not a secretariat for the individual participants.

### **Work Packages (WP)**

The various work packages that in total constitute EcoGrid.dk:

WP 1: The EcoGrid program and communication activities (Work Package leader: Jeanette Møller Jørgensen, R&D Coordinator, Energinet.dk)

WP 2: System Architecture (Work Package leader: Morten Lind, Professor, Centre for Electric Technology at DTU)

WP 3: International scenarios (Work Package leader: Berit Tennbakk, Director Econ Pöyry AS)

WP 4: Survey of new measures (Work Package leader: Poul Ejnar Sørensen, Senior Scientist, Risø at DTU)

WP 5: Activities for EcoGrid phase II (Work Package leader: Jacob Østergaard, Professor, Centre for Electric Technology at DTU)

Figure 2: Organisation of EcoGrid Phase I

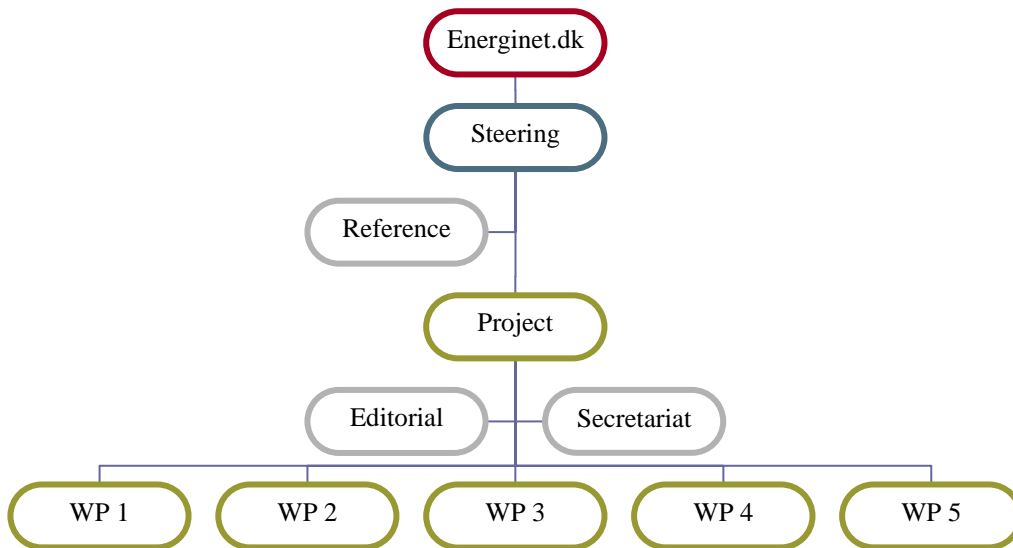


Table 1. Members of the Steering Group and Reference Group

Steering Group	Reference Group
<ul style="list-style-type: none"> <li>- Aalborg University, Institute of Energy Technology</li> <li>- Danfoss</li> <li>- Danish Technological Institute</li> <li>- Dong Energy</li> <li>- DTU, CET and IMM</li> <li>- EA Energy Analyses</li> <li>- EC Power</li> <li>- ECON</li> <li>- Energinet.dk</li> <li>- KK Electronic</li> <li>- Paul-Frederik Bach, extern evaluator for Energinet.dk</li> <li>- PowerLynx</li> <li>- Risø National Laboratory, System Analysis and Wind Energy</li> <li>- Vattenfall Thermal Power</li> <li>- Vestas</li> </ul>	<ul style="list-style-type: none"> <li>- Danish District Heating Association</li> <li>- Danish Energy Association</li> <li>- Danish Energy Authority</li> <li>- Danish Wind Industry Association</li> <li>- DONG Energy</li> <li>- FDKV (Foreningen danske Kraftvarmeværker)</li> <li>- RE-Net (VE-Net: Det højteknologiske netværk for vedvarende energi)</li> <li>- The Association of Danish Energy Companies</li> <li>- Vattenfall</li> </ul>

**Financing**

Phase 1 was supported by the ForskEL programme, app. DKK 3.5 – 4 million. Self-financing from the participating parties in form of hours spent and other contributions was app. DKK 1.5 – 2 million. In Phase 2 and 3 The ForskIN programme more than DKK 10 million. Self-financing from the participating parties in form of hours spent and other contributions app. DKK 5 - 6 million. Expected EU application under the EU FP7 Energy theme with Energinet.dk or the university as main applicant, at least DKK 25 - 40 million. Total amount for EcoGrid.dk will be more than DKK 50 million.

### **Internal work shops and meetings within the EcoGrid phase I team**

During the project period work shops has been held both within the work package groups and mutual meetings including work package leaders and the project coordinator. The discussions and dialogues constitutes an important part of the results in the EcoGrid phase 1 report.

Example of internal work shops/activities :

- Each of the work packages has held a number of internal workshops to coordinate their contributions. E.g. WP 3 group has held five internal workshops during 2007/2008 in which the international scenarios have been developed. A representative from Energinet.dk has assisted the group with the understanding and discussion of the scenario drivers. The resulting international scenarios presented in the phase I report are result of the common work in the work group. Inputs from stakeholders have also been collected
- During November 2008 to March 2009 seven one days work shops and several phone conferences was held between the project coordinator, work package leaders and other main contributors. The purpose of these activities was to ensure that vision, objectives and results for the respective work packages was coordinated and cross referenced as one joint output. Common conclusions and recommendations has been evaluated and agreed.
- From January – April an external editor attends on the editorial meetings to assist with writing of the the final phase I summary report, which includes seven interviews of work package leaders and main contributors.
- EcoGrid.dk has been presented publicly as an ongoing project by Energinet.dk and project participants at relevant opportunities throughout the project period.

## Energinet.dk's international and external communication activities

The following major EcoGrid phase 1 work shops and activities with external representation:

- May 15, 2007: Kick off Work Shop (Phas I project start)
- November 15 2007, Mid-way status
- May 15, 2008, Result from Phase I with focus on WP 2, WP 3 and WP 4
- External evaluation of first draft report ( from xx – xx 2008?)
- November 21, Works shop discussion of external and Energinet.dk evaluation results
- May, 13 Final Ecogrid.dk phase 1 report presentation
- EcoGrid.dk Conference?

Publication and dissemination of results:

- August 2008, EcoGrid Phase 1, Draft report for evaluation.
- Work shop presentation published on web-site [www.ecogrid.dk](http://www.ecogrid.dk)
- Final summary report with interviews
- Summary report (power point presentation)