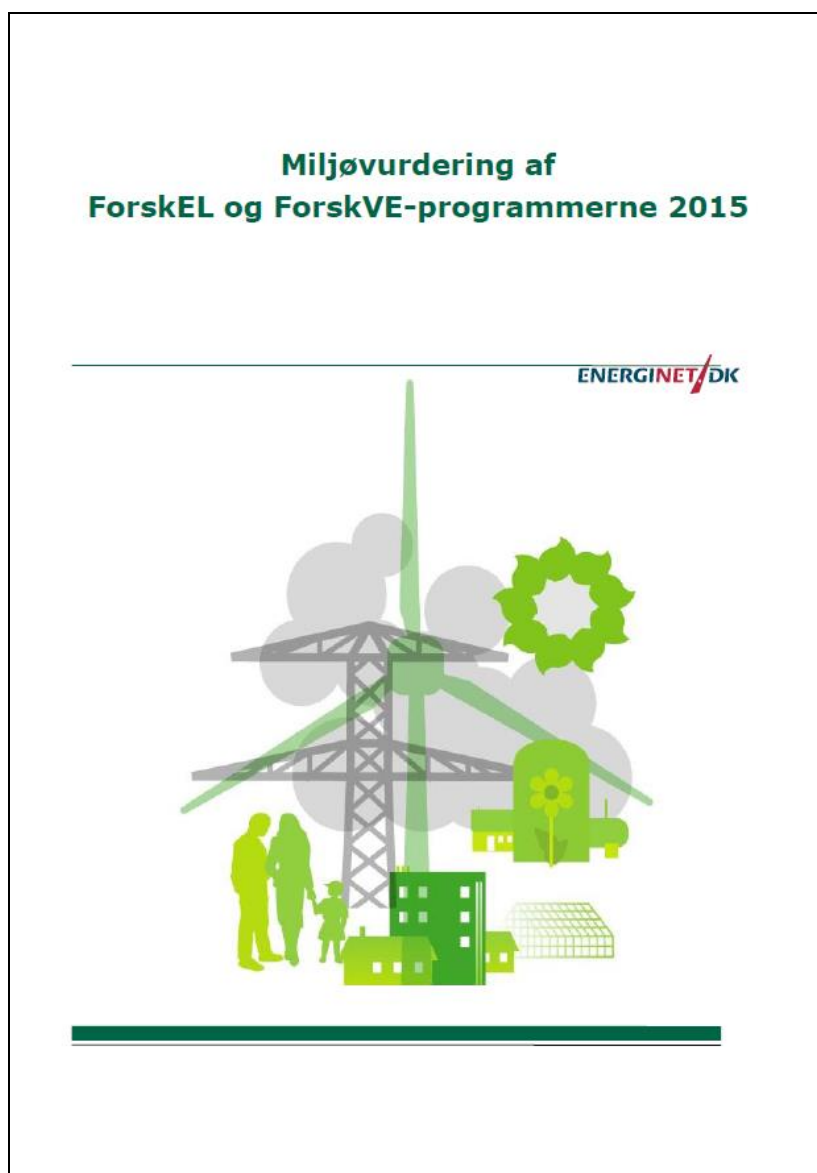


Final report Project 12260

A process-oriented environmental assessment



January 2016

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1.1 Project details

Project title	A process-oriented environmental assessment of R&D programmes [En procesorienteret miljøvurdering af F&U programmer]
Project identification (program abbrev. and file)	12260
Name of the programme which has funded the project	ForskEL
Project managing company/institution (name and address)	Aalborg University, Department of Planning, The Danish Centre for Environmental Assessment. Skibbrogade 5, 9000 Aalborg.
Project partners	-
CVR (central business register)	DK29102384
Date for submission	January 25, 2016

1.2 Short description of project objective and results

R&D programs are broadly speaking an overlooked arena for optimising environmental performance of R&D projects. The objective of this research project is to develop a process-oriented ex-ante environmental assessment of (public) R&D programmes. The project builds upon previous experiences in Energinet.dk and aims at extending the use of the ex-ante assessment in the R&D programme process as well as improving the methodology.

With point of departure in the ForskEL programme, the key results are:

- Development and implementation of a process-oriented environmental assessment that allows environmental considerations to be part of prioritisations of R&D activities throughout the programme process and at project level.
- Publication of a guidance document to R&D programmes in general based on a documentation of the four years of experiences with environmental assessments of the ForskEL programme.

F&U programmer er generelt en overset mulighed for at optimere miljøperformance i F&U projekter. Formålet med dette mindre forskningsprojekt er at udvikle en procesorienteret ex-ante miljøvurdering af (offentlige) F&U programmer. Projektet bygger på tidligere erfaringer i Energinet.dk og sigter på at øge nytten af ex-ante miljøvurderingen i F&U programmets proces samt at forbedre metodikken bag.

Med udgangspunkt i ForskEL-programmet er de primære resultater:

- Udvikling og implementering af en procesorienteret miljøvurdering, som gør det muligt at gøre miljøhensyn til en del af prioriteringerne i udvælgelsen af F&U projekter på program-niveau og på projektniveau.
- Publicering af en generel vejledning til F&U programmer baseret på en dokumentering af de fire års erfaringer med miljøvurderinger i ForskEL-programmet.

Executive summary

The project has point of departure in a cutting-edge practice on ex-ante environmental assessment of R&D programmes. Evaluations and environmental assessments of R&D are rarely conducted ex-ante and Energinet.dk seems to be among the most innovative on this practice.

Previous experiences in Energinet.dk indicated a need to integrate the assessment and its results during a wider span of the program process, so that it not only covers the program outcome, but also the program formulation, tender process, prioritisation and project follow-up. It has not been possible to identify a similar process-oriented ex-ante environmental assessment of R&D programmes in the literature, why this project is unique.

Ex-ante environmental assessment of R&D activities is not a simple exercise. It involves a difficult balancing between demands for relevant data and use of resources among actors as well as a balancing between the scope of environmental parameters and accessibility for applicants. This project aims at continuing the optimisation of these parameters in a model for ex-ante environmental assessment of R&D programmes.

The development of a process-oriented ex-ante environmental assessment of R&D programmes is characterised by three main challenges:

- Technical challenges in the systematisation of environmental aspects and development of relevant parameters for the divergent R&D project activities.
- Challenges related to evidence and validity of the data provided by applicants in the environmental assessment process.
- Organisational challenges in the interaction between actors and in ensuring a learning process.

The development is to a high extent based on document review of applications, evaluation reports, interim reports as well as dialogue with program administrators in Energinet.dk and a survey to evaluators.

A state-of-the-art within the field of environmental assessment research is point of departure and scientific communication and peer review are core elements. The research is applied research conducted in continuous collaboration with the program administrators in Energinet.dk. The results are presented and discussed at the 2015 conference of the International Association for Impact Assessment. The aim of this activity was to validate the findings, get constructive input to the project and raise awareness of the need for assessment of impacts of this type of activities.

Until February 2015 the project proceeded as planned with promising results in research and practice. Then, after implementing the project results in Energinet.dk's environmental assessments of the ForskEL programme, Energinet.dk reinterpreted the purpose and scope of the ForskEL-programme. The R&D activities changed from physical infrastructure with significant environmental impacts to more technical integration activities with few negative impacts. The need for ex-ante environmental assessments was therefore minimised and Energinet.dk decided to end the environmental assessments practice. The research project therefore changed character, so that the key purpose and activity from that point in time was external communication of experiences and knowledge gained throughout the four years of environ-

mental assessment practice in Energinet.dk. A second purpose was to utilise the experiences internally in other evaluation activity. The changes in the project is decided and implemented in collaboration with Energinet.dk. The increased external communication is in line with the national public service obligation and enhances the societal use of the project.

1.3 Project objectives

The objective of this minor research project is to develop a process-oriented ex-ante environmental assessment of (public) R&D programmes. The project builds upon previous experiences in Energinet.dk and aims at extending the use of the ex-ante assessment in the R&D programme process as well as improving the methodology.

The ForskEL-programme is the case for developing the process-oriented environmental assessment and the research is conducted in collaboration with Energinet.dk in order to ensure that the methodology is applicable and beneficial in practice. In order to bring the existing environmental assessment system to a process-oriented system the more detailed objectives are:

- Adding a preliminary environmental assessment to the phase of prioritising applications. This provides the evaluators and the program administrator with an overview of the predicted program-level consequences for the environment. This allows for decisions on programme-level success criteria related to the environment and actions to obtain these.
- Adding a system for follow-up in order to avoid unwanted environmental effects of the supported R&D projects. The follow-up system requires the supported applicants to report on unexpected developments within the environmental performance. The system will provide attention to the substantial uncertainty related to the future environmental consequences of the R&D activities that are hard to identify at the early funding stage.
- Improving the basis for the evaluators' validation of the applicants' information about environmental aspects in the applications. This entails improvements in the application templates in regards to the description of environmental aspects. It also entails a survey among the evaluators concerning their role and use of the information. The aim is to increase the possibilities for acting upon the noteworthy risk of subjectivity and selectivity in the applications.
- Improving the format of the environmental assessment report to accommodate the changes above.

In 2014, the project activities were carried out in a fruitful collaboration with the administrators of the ForskEL-programme. The activities were carried out in accordance with the schedule and description of work packages in the project description.

As a consequence of the change in practice in 2015, Energinet.dk and DCEA agreed to change the activities in the project from a further development of the environ-

mental assessment methodology to focusing on reporting on the experiences gained throughout the years and an earlier termination of the research project.

1.4 Project results and dissemination of results

The key results of the project are:

- Designing a process-oriented environmental assessment that allows environmental considerations to be part of prioritisations of R&D activities at project and programme level.
- Evaluation of the design in terms of practice experiences from the ForskEL programme as well as the effect of the design on the applications.
- Publishing a guidance to other R&D programmes based on a documentation of the four years of experiences with environmental assessments of the ForskEL programme

At a more detailed level the results are:

- A map of needs and purposes of the environmental assessment of the ForskEL-programme
- Adaptation of application templates and guidance documents in order to meet the purposes of the environmental assessment
- A new design of the process-oriented environmental assessment procedure to facilitate a more direct use of the assessment in the prioritization of applications for funding.
- A new design of a system for follow-up on key environmental issues in the project reporting to the ForskEL-programme – with attention to the cross-programme R&D effect evaluation and end report requirements.
- A proposal for a new design for the environmental assessment report
- Documentation of the learning process throughout the years in the ForskEL-programme
- Integration of experiences from the work on environmental assessments in the cross-programme effect evaluation of R&D activities in the KEBMIN R&D programmes

With attention to the above described changed practice in Energinet.dk, these results succeeded in realising the adjusted project objectives. The increased external communication following the changed practice in Energinet.dk is an extra result compared to the project application.

The dissemination of the results entails both scientific and societal elements in various media. The full list of dissemination activities are:

- Publishing the environmental assessment report for the ForskEL tender 2015 in the new design at Energinet.dk's webpage:
Energinet.dk (2016) "Miljøvurdering af ForskEL og ForskVE-programmerne 2015"
- Publishing a poster about the research project at the EnergiForsk14 conference:
"En procesorienteret miljøvurdering af F&U. Tidlig miljøvurdering sikrer miljøvenligt ForskEL-program".

- Disseminating the new design and experiences related to the applications at the international conference Impact Assessment and Project Appraisal in Firenze 2015 (both presentation and conference paper):
"Impact assessment as a design tool: Experiences and effects in the case of R&D programmes".
- A scientific journal publication in the journal Energy Policy contributing to the literature with a focus on the possibilities for integrating locality-based impacts and public acceptance in the R&D funding activities:
"Refining the ex-ante assessment of energy R&D programmes: Integration of community acceptance concerns" (submitted December 2015)
- A guidance document in Danish based on the ForskEL experiences and targeted other R&D programmes. It is published by the Danish Centre for Environmental Assessment at Aalborg University:
"Integration af miljøovervejelser i forsknings- og udviklingsprojekter" (published January 2016, <http://www.e-pages.dk/aalborguniversitet/386/>)
- Meetings in Energinet.dk to present the results throughout the project period

1.5 Utilization of project results

The project results have been utilized by Energinet.dk in tender 2015 for the ForskEL and ForskVE programmes. As mentioned above, Energinet.dk has decided not to continue with environmental assessment of their R&D activities, however, some elements of the methodology is still applied in the application template.

The Danish Centre for Environmental Assessment (DCEA) intends to continue research activities on ex-ante environmental assessment of R&D activities. The knowledge gained is potentially interesting for a range of other actors and DCEA would be interested in collaborations on the topic. To some degree are the results also relevant input to the other research activities in DCEA. Finally, the results may also be included in teaching activities.

1.6 Project conclusion and perspective

The project has proved and documented that it is possible to integrate environmental concerns throughout R&D programme cycles through a process-oriented ex-ante environmental assessment. The project has provided a specific methodology for the ForskEL R&D programme, which in its essence is relevant for a range of other R&D programmes. The methodology is relevant for actors that aims an enhancing the environmental performance of their R&D activities, including for instance climate change adaptation and mitigation.

The dissemination of experiences to the broader society (see above) has the intention of facilitating a wider use of the project results in Denmark. It is distributed to a series of potentially relevant funding programmes and private funds. The international scientific communication of the project results likewise aims at facilitating a wider use of ex-ante environmental assessment in R&D programmes.

International research on optimisation of R&D activities are widely concerned with national targets, technology development, and large-scale socio-economic effects, whereas this research project provide an interesting contribution on local-spatial impacts related to R&D activities, which are of increasing interest due to the massive public opposition to energy technologies and other R&D activities. If the methodology is adopted by other actors, it involves the potential to shed light on and minimise the characteristics of the future technologies that provokes public reactions at local level.

The project leaves a series of interesting research questions related to the technical and organisational challenges of ex-ante environmental assessment of R&D activities as well as on the adequacy and possibility for integrating local-spatial concerns in R&D activities.

Annex

Links to relevant documents, publications, home pages etc.:

- The publication "*Integration af miljøovervejelser i forsknings- og udviklingsprojekter*": <http://www.e-pages.dk/aalborguniversitet/386/>
- The AAU-site for the research project: <http://vbn.aau.dk/en/projects/en-procesorienteret-miljoevurdering-af-fu-programmer%285c6791f0-5a96-42c6-8524-6ea28ec0302d%29.html>
- The environmental assessment of the 2015 tender of the ForskEL program: <https://www.energinet.dk/SiteCollectionDocuments/Danske%20dokumenter/Forskning/ForskEL%20Milj%C3%B8vurdering%202015.pdf>