

## **Strategic Plan for CREE – Oslo Centre for Research on Environmentally friendly Energy**

This strategic plan is intended as a long-term management document for CREE. Below we describe the general vision, aims and strategy for the center with an emphasis on the three first years of activity, i.e., from 2011 to summer 2014.

### **1. Vision**

The center has the following vision:

- We want to be a leading international research centre within energy, environmental and resource economics.
- We will generate knowledge that can contribute to a cost-effective and sustainable exploitation of Norwegian and international energy resources by industry and governments, as well as an effective and fair climate and energy policy, both nationally and internationally.
- We will contribute to recruitment and training at the master, doctoral and post doctoral levels in energy and environmental economics at the University of Oslo. Recruiting women to research will have a particular focus.

### **2. Aims**

The center's aim is to satisfy the Research Council's success criteria for the FME Centres for Social Science-related Energy Research (FME Samfunn). These criteria are documented in the governing documents from the Research Council ("Requirements and Guidelines" and "Information for applicants for the announcement of the Research Centres of green energy within the social sciences (FME Society)"). Thus, we adopt these criteria as CREE's long term aims:

#### **Research activity**

- The centre has a distinct research profile, conducts long-term, thematically relevant research of high international calibre in the field specified in the project description, and demonstrates this through its production of doctorates, scientific publications, papers for presentation at recognised international conferences and other measures of scientific excellence.
- The centre utilises a multidisciplinary approach in its research activities; i.e. it forges close links between various subject areas within the field of social science. The centre also strengthens the links between social science-related energy research and technology-related energy research.
- Researchers from the host institution and research partners participate actively in the centre's research.

#### **Relevance and benefit to users**

- The centre participates visibly in national and international arenas in which energy and climate-related questions are discussed.

- The centre has implemented measures to ensure that the expertise and results achieved by the research activity are effectively transferred to and utilised by the user partners, and actively disseminates research results to broader user groups and the public at large.
- The centre has achieved reciprocal mobility of staff between the centre's partners.
- The centre's user partners have increased their research commitments over time through participation in the centre's activities.

### **Internationalisation**

- The centre has been successful in achieving recognition at the international level (e.g. researchers associated with the centre have received awards or been invited to be keynote speakers at international conferences).
- The centre has been successful in international research cooperation, e.g. as a player under the EU's framework programme.
- The centre engages in active and binding collaboration with international research groups and has contributed in other ways to the internationalisation of Norwegian research. The centre has at least one recognised international partner.
- The centre attracts outstanding international researchers, including research fellows and senior staff, as visiting researchers.

### **Researcher training and recruitment**

- The centre has an effective framework in place for researcher training, and helps to train highly skilled personnel in the centre's areas of specialisation.
- The centre is actively engaged in education, especially at the master's and doctoral levels, and promotes recruitment to the centre's subject areas, including increased recruitment of women.

### **Partners and funding**

- The centre receives long-term funding from the host institution and partners.
- Active efforts are made to attract new partners.
- The centre has been successful in securing other external funding.

### **Organisation**

- The centre has a visible profile, a strong identity and a successful collaboration with its partners.
- The centre is organised in a manner that is well adapted to the host institution's organisation.
- The centre has a board and management which ensure that the intentions and plan for the centre are followed up.
- The centre has a common administration with a high degree of scientific and administrative autonomy.

## **3. Partners and cooperation**

A major aim of CREE is to facilitate cooperation between the research partners, as well as with researchers in other countries and in other disciplines. Such cooperation is essential for reaping economies of scale and scope and for realizing the research ambitions set out above. Establishing and maintaining cooperation between researchers across different institutions, different countries and, especially, different disciplines, is very demanding. It requires an institutional framework, a well-functioning administrative apparatus and sufficient funding for bringing researchers together. Below we detail how CREE will contribute to overcoming

hurdles to successful cooperation, as well as bringing other benefits, such as more systematic contact with users and recruitment of researchers to the field.

The three national research partners of CREE constitute a large share of the researchers working in the field of environmental and energy economics in Norway. At the same time, each of the institutions has its own unique competence. The Department of Economics has its main strength in theoretical research and the Frisch Centre in modeling international energy markets, whereas the Research Department at Statistics Norway has long experience in developing large macroeconomic and energy market models. All the partners have considerable experience with empirical research, and both the Frisch Centre and the Research Department at Statistics Norway have built a strong competence in the analysis of Norwegian register and survey data. Also, the Frisch Centre and the Department of Economics run a laboratory for experimental economics.

While there is already cooperation among the Norwegian partners, CREE will facilitate a deepening of this by providing resources and an organizational structure for collaboration both within the community of economists and with the wider research community. The field of energy and climate is naturally multidisciplinary, making it important for CREE to be closely integrated with researchers in other social sciences, law and technology. As multidisciplinary research is more resource demanding than research within a given discipline, CREE will be an important factor for success in this respect.

CREE will be part of MILEN, the University of Oslo's interfaculty research network on environmental change and sustainable energy. To facilitate interfaculty and interdisciplinary research, MILEN aims to improve the competence of university researchers in working across disciplines, and will organize cooperation at workshops, seminars and conferences, as well as through the development of multidisciplinary courses at the PhD and master's level. We will work together with MILEN to organize seminars and workshops, and present our PhD students and researchers to the multidisciplinary environment and methods that MILEN represents.

Researchers from MILEN will also actively participate within CREE. From the network, we will draw on researchers from social anthropology, law and political science. From the discipline of social anthropology, SUM – the Centre for Development and the Environment, will participate. The center has long experience on topics related to sustainable consumption, which is relevant for understanding behavior when evaluating policy instruments. In addition, we will work closely with the research group in Natural Resources Law at the Faculty of Law. The group's activities are multidisciplinary and comprise research on natural resources, energy, environment and property. Law expertise is crucial in gaining an understanding of topics studied at CREE such as international energy and climate policies, innovation and policy instruments. Further, to achieve a better understanding of politics, political science is important. Since the political scientists in the MILEN network are involved in CICEP (Strategic Challenges in International Climate and Energy Policy) another FME funded by the Research Council, we have agreed with CICEP to establish a formal cooperation between the two centers, which means arranging joint workshops, seminars and graduate courses. This may also lead to joint research papers. Lastly, we are also in contact with the Department of Psychology. We share a common interest in behavior economics, and hope that they will be a discussion partner on our future research in that field.

Collaboration with experts on technology is also important if we want to perform relevant energy research. Therefore, we have engaged SINTEF Energy Research and IFE (Institute for Energy Technology) as subcontractors. SINTEF Energy has a long experience in modeling electricity markets and IFE possesses a deep knowledge about different technologies, e.g., through their development and use of the energy system models MARKAL and TIMES, which have been developed in a cooperative multinational project over a period of almost two decades by the Energy Technology Systems Analysis Programme (ETSAP) of the International Energy Agency (IEA). SINTEF Energy, IFE and the University of Oslo are already involved in existing technology FME centers. Based on these channels, we will keep in contact with these centers to be informed about the latest international trends within technological development and the energy markets.

Tilburg Sustainability Center (TSC), a new multidisciplinary center hosted by Tilburg University, working on topics such as environmentally friendly energy, innovation and international environmental agreements, is engaged as our international partner. While the national partners have collaboration with researchers at TSC, CREE will strengthen and extend this contact, as well as give Norwegian researchers access to the multidisciplinary sustainability network in Tilburg and give Dutch researchers access to the Norwegian network. The ambition of TSC is to become a leading international center for scientific expertise in the field of sustainability, in addition to providing support to companies, governments and other organizations. The cooperation with the Norwegian partners may help both centers to become internationally leading in their respective fields.

The resources and the organization of CREE will also make it easier to maintain better contact with the users of energy and environmental research. This requires resources in the form of regular meetings, conferences, and other interaction, all of which will be provided by CREE. The organizational structure of CREE will also establish a formal meeting point with our user partners. These represent industry and government and include Gassnova, Norwegian Climate and Pollution Agency, Norwegian Ministry of Petroleum and Energy, Norwegian Water Resources and Energy Directorate, Statkraft Energy, Statnett and Statoil. All the user partners possess knowledge on energy markets and climate issues that are very relevant for our research. The plan is to have a two-way communication with the user partners so that both user and research partners can gain.

An additional value added to the center is that funding over an eight-year period allows for the possibility of long-term planning. This is particularly important when it comes to recruitment to the field.

#### **4. Organization of research**

CREE will focus on research mainly connected to renewable energy and climate issues. The aim is to have a broad research portfolio and to work with all of the issues mentioned in the announcement from the Research Council of Norway. This makes us more open to include good ideas that come up and to employ good people within the field.

The research is organized in five different working packages, for more details see the *Project Plan (revised proposal to the Research Council of Norway)* and the *Annual Work Plans*:

- Working Package 1: The International Politics of Climate and Energy
- Working Package 2: Innovation and Diffusion policy

- Working Package 3: Regulation and Market
- Working Package 4: Evaluation of Environmental and Energy Policy Measures
- Working Package 5: The Next Generation of Numerical Models

Our research will be based on a broad set of methodologies. We will conduct theoretical analyses and empirical studies. The partners have specialized expertise which will be merged within the various parts of the research. Both the theoretical and empirical studies will be anchored in microeconomics, but will also draw on perspectives from other social sciences. On the empirical side, the research will be based on numerical economic models, econometric studies in which we make use of our large datasets, qualitative analyses of different cases and laboratory experiments. We will bring together researchers from various fields, who will be engaged in multidisciplinary activities such as conferences and workshops in addition to working on projects.

The output from CREE will be directed at both the research community and potential users including user partners and a broader interested public. CREE will introduce a new working paper series in which our research partners will publish their works. Furthermore, all of our research partners have a long tradition in presenting research at international conferences and publishing papers in peer-reviewed journals, and we will continue this tradition. We will also focus on popular publications such as newspaper articles, policy notes and popular science journals, as communication with users is important for scientifically based policy making.

While the Frisch Centre is the host institution of CREE, all national research partners are involved in directing the different working packages to. For more details about the different working packages, see the project descriptions.

## **5. Strategies to obtain the aims of the center**

### *5.1 Research activity*

CREE has a distinct research profile described in the *Project plan* and *Annual work plans*. The long-term funding ensures that we can plan large projects that build on each other. The multidisciplinary approach is taken care of via collaboration with our sub contractors.

While the main research profile of the center is outlined in the above mentioned documents, more detailed projects will develop as a result of the general progress of research in the field, international collaboration, the competence of the researchers connected to the center, discussions with user partners and political and industrial developments. This will require meeting places for researchers and also for researchers and user partners.

All research partners already encourage their researchers to participate in the international research community, to collaborate with other researchers nationally and internationally, to publish in international peer-reviewed journals, and to be active in popular and/or user-oriented dissemination. The center has thus not established additional strategies for publishing, attending conferences etc. that go beyond those of the different research partners. We will encourage our researchers to attend relevant conferences such as those of the EEA, EAERE and IAEE. A main aim is to continue to publish in good international journals, in addition to other publications such as books. We do not, however, focus on quantitative goals for publications, as research quality is considered more important than output quantity. The quality will be ensured with extensive contact with the international research community via

publications, conferences, workshops and collaboration.

To facilitate cooperation among the research partners and also among research partners and sub-contractors, we will organize several activities:

- An annual research workshop that includes presentations from researchers from the different research partners, subcontractors and other researchers connected to CREE. This will be held in September each year.
- A seminar series that will be coordinated with the seminar series at Department of Economics, Frisch Centre and Statistics Norway. This will be held continuously during the year.
- Exchange of researchers among research partners for longer or shorter periods of time.
- CREE has a web-page that is always updated on CREE activities.
- A CREE working paper series has been established electronically.
- Regular breakfasts and lunches where CREE researchers meet and exchange information.
- Social activities such as summer party and “julegløgg”.

### *5.2 Relevance and benefit to users*

One of the basic requirements of the center is that the research must be relevant, both for our users, but also for the international research community on environmental and energy economics. While the latter is included in our research strategy, the first will be ensured through regular contact with user partners and other users. Increased communication will also provide an incentive to policy relevant research.

As mentioned above, the resources and the organization of CREE will make it easier to maintain better contact with the users of energy and environmental research. This means regular meetings, conferences, and other interaction where we can have a two-way communication with our users. CREE has a responsibility for research dissemination, both to users and to the public. We will use the following communication channels:

Communication to users:

- Dissemination of research through the Web
- Hold an annual user conference (April). This will be organized together with CICEP.
- Organize user activities such as meetings and seminars as required
- Organize a Model Forum (once or several times a year) where users together with researchers in other disciplines, can make contributions to economic modeling.
- Publish in Norwegian-language journals such as Samfunnsøkonomen and Økonomiske analyser.

Once a year we will organize a meeting with all user partners where we will present the different working packages, the new research findings as well as new plans. The user partners will then have an opportunity to comment on this. This could be a part of the annual user conference or as a user seminar.

In addition to this, researchers from CREE should be available for meetings with user partners to discuss relevant topics. User partners may also fund research projects directly that are of high relevance to them.

The research partners can also do analysis for the user partners, but these should primarily be based on the research activity in the center.

The user partners can contribute to the research activities by, e.g.,

- Contribute with data
- Contribute with funding
- Contribute to discussions around modeling (e.g., in the Model Forum)
- Comment on research and suggest research tasks for instance at meetings and other user activities
- Participate at seminars and conferences organized by CREE

The user partners will also contribute to the governance of the center as two representatives in the board should come from user partners (see under organization below).

Communication to the public:

- We will publish opinion pieces, feature articles, interviews and policy commentaries on our website under "CREE in the media". These can be in Norwegian or English.
- We will contribute to hearings in the Parliament and public debates.

CREE will make a *Dissemination plan* that goes more into detail on this topic.

### 5.3 Internationalization

In addition to the usual research channels such as collaboration on projects, publishing, presentations at conferences, etc., CREE formalizes its international contacts through

- An international research partner (Tilburg Sustainability Center). We will aim for collaboration, discussions and exchange of researchers for short time periods.
- Employing internationally recognized researchers in part time positions at all three national research partners (see also the Project Plan)
- Invite renowned researchers to our workshops and to hold PhD courses.
- Actively participate in applications for EU funding.

CREE will participate in EU-projects as a partner. However, we do not intend to lead EU-projects as this requires a much larger administration than what we have established. Studies based on our numerical models are particularly relevant for EU-projects.

### 5.4 Researcher training and recruitment

CREE will fully fund two PhD students and two post-doctoral researchers over an eight year period. This means that we will recruit a PhD student in 2011 and 2015 respectively, as well as post-doctoral researchers in 2012 and 2016. These research recruits will be employed by the Department of Economics. In addition, the other research partners will also employ research assistants and research recruits. The research recruits will be given supervision by their supervisors and project leaders and will be invited to the ordinary CREE activities.

CREE will contribute to an interest in environmental and energy economics by providing up to three scholarships annually to students who want to write a master thesis in the field.

Researchers from CREE will teach at the master's and doctoral program at the Department of

Economics as well as the summer school at the University of Oslo, and supervise master students and doctoral candidates.

CREE supports MILENs Research School, an interdisciplinary research school at the University of Oslo in environment and energy, both financially and through organizing and teaching courses and seminars.

CREE supports the national research school in renewable energy for all the FME centers; NorRen. This means that we help organizing courses and seminars.

CREE also want to contribute to the exchange of PhD candidates among our research partners and also with other international collaborators.

### *5.5 Partners and funding*

CREE will actively work to increase funding for the center's activities through

- User Partner Funding
- Search external research funding from the Norwegian Research Council and other external sources such as the EU's framework program.

### *5.6 Organization*

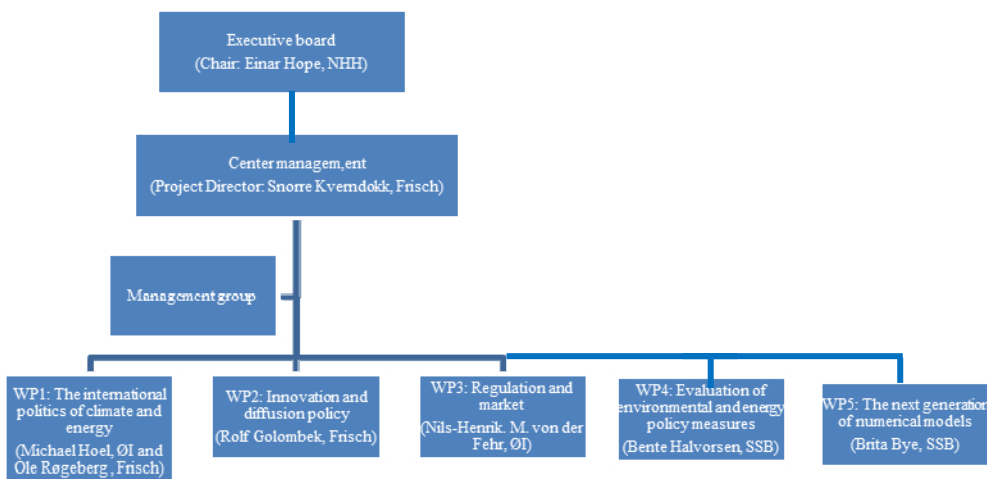
The organization of the center in 2011 is as shown in the figure below. It is also described in a separate document in Norwegian (*Styringsstruktur – CREE*).

The chair of the executive board should not represent any of the research partners, user partners or sub-contractors, and is therefore independent of the partners in CREE. The board also consists of one member from each of the three Norwegian research partners, while the user partners should be represented by two members, one from industry and one from government.

The board has the overall responsibility for the direction of future research activities, including adoptions of research issues and potential modifications of the working packages. The board is also responsible for constructive interaction between the center, the host institution and partners in the consortium. More precisely, the board is responsible for ensuring that the Center's vision and activities formulated in the Strategy document, are followed up in key documents such as project and work plans as well as budgets. This means adoption of the strategic plan, annual work plan, annual report, progress reports, budget, and approve the accounts.

The administration of CREE is located at the Frisch Centre. It should have regular meetings with the management group consisting of all the working package leaders to discuss matters of importance for the center.





## 6. Focus the first three years, 2011-14

The center will continuously work to meet the vision and aims of this strategic plan, also during the first three years of the center's activity.

However, in the beginning we will particularly focus on getting the organization in place, such as all the formal contracts and documents, creating collaborative relationships, set up a seminar series, workshops and conferences, work to create a center identity, and to ensure a stable funding.

CREE is working to improve center identity through

- Regular lunches / breakfasts
- Seminar series and other professional events
- Own website
- Social events
- Opportunities for exchange of scientists for shorter or longer periods
- Visits to the user partners.

When it comes to funding, the “fixed costs” of running the centre such as administration, PhD students, post docs, sub contractors and external part time positions, take a large part of the base funding from the Research Council of Norway. Thus, the aim is to increase external funding to be able to ensure a stable funding of the research activity of the senior researchers. We do not aim to expand the center much, but we plan to keep up a steady recruitment to the field of energy and environmental economics.

When it comes to research, one main activity during the first three years is to build our numerical models to make them available for studying important research questions. As a mean to do this, we have set aside NOK 1,000,000 each year for numerical modeling. We also have a large activity on WP1 (The International Politics of Climate and Energy) in the first phase of the center, which is mainly due to existing funding from research council programs. The plan is that the funding of the different working packages will be more even after three years. We do not intend to expand the number of working packages, but new ideas will

always come up that will be included under the existing umbrella of working packages. Good communication with user partners and sub-contractors within the meeting places established by the center will be important for the generation of research ideas.

The main challenge for the first phase of the center activity is to make the different research partners and subcontractors work together, and to ensure a useful interdisciplinary relationship with our subcontractors. They are now involved in different projects, and we will have an annual internal evaluation of the cooperation in order to make the projects work smoothly.

It is important to include user partners in a way that is to a mutual advantage of both the research and user partners. A good communication with the user partners through meetings, seminars and conferences is required to make this happen. During to 2012 the Project Director and researchers will have meetings with all user partners to discuss their needs and their involvement in the center. Based on feedbacks from user partners, we will revise communication plans.

This strategic plan will be revised after three years.