

Work plan for CREE 2012

CREE's activities are divided into five work packages. The leaders of the work packages are listed in parentheses:

WP1: The International Politics of Climate and Energy (Michael Hoel/Ole Jørgen Røgeberg)

WP2: Innovation and Diffusion Policy (Rolf Golombek)

WP3: Regulation and Market (Nils-Henrik von der Fehr)

WP4: Evaluation of Environmental and Energy Policy Measures (Bente Halvorsen)

WP5: The Next Generation of Numerical Models (Brita Bye)

The research will take place at the four research partners - Frisch Centre (Frisch), Department of Economics, University of Oslo (ØI), Research department, Statistics Norway (SSB) and Tilburg Sustainability Center (Tilburg) - our subcontractors – Institute for Energy Technology (IFE), SINTEF Energy (SINTEF) and Natural Resources Law at the Faculty of Law, University of Oslo (Law). In addition to this, several international researchers connected to the center will also contribute.

There will be activities on all work packages in 2012. Below we describe this in more detail.

WP1: The International Politics of Climate and Energy

As already mentioned in the work plan for 2011, this work package will focus on the following question in the first years of the CREE center:

- 1) How can international climate treaties be structured to improve participation, ambitions and implementation?
- 2) How is participation in climate treaties influenced by R&D cooperation aimed at reducing abatement costs?
- 3) How does international emission quota trading influence efficiency and equity when the treaty is characterized by weak international cooperation?
- 4) How can carbon leakage be reduced?

- 5) Equity issues. For instance is there a trade-off between intra- and intergenerational equity in climate policies, and how can economic mechanisms such as quota trading be used to handle ethical issues?
- 6) How will the energy market and energy policies vary under different climate-treaty scenarios?

All three Norwegian research partners in CREE will be involved in this work, which will be primarily theoretical, with exception of number 4).

In addition to these groups a number of international researchers will be involved, such as Larry Karp, Aart de Zeuw, Johan Eyckmans, Christopher Böhringer and Samuel Fankhauser. These are currently involved in ongoing projects financed by the Norwegian Research Council (Miljø2015 and NORKLIMA). The most relevant projects that are currently active and that will be included as self-financing of CREE are *Norms, green agents and environmental policy*, *Intergenerational and intragenerational equity in climate change policies* and *Improved international cooperation on emission abatement*.

Alice Ciccone started on a PhD, fully financed by CREE, at the Department of Economics at the University of Oslo in 2011. Her working title of the thesis is “How to change the economy toward less emissions of CO₂”. Professor Michael Hoel (Department of Economics, University of Oslo) is her supervisor. Half her time in 2012 will be on WP1, the rest on WP4.

As a subcontractor, Natural Resources Law at the Faculty of Law, University of Oslo, is involved in this work package, mainly through Endre Stavang and Christina Voigt. They will mainly supplement the economic analyses through studies on the international climate regime, the importance of law and other policy measures, and will contribute to seminars and workshops organized by CREE.

We also plan some joint activities with CICEP. We had a meeting with them early in the fall where we decided to keep each other informed about activities and so that we could have a better basis for future cooperation. A new meeting is planned in January/February. Joint activities can either be on dissemination or research.

To some extent, the above mentioned topics are self-financed, in the sense that the work is financed by other ongoing projects. The CREE-specific financing is specified below for 2012:

Table 1: Planned work-months WP1 in 2012

Topic	Primary institution	2012	
		Total	Of which CREE-financed
Administration	Frisch/ØI	1,2	1.2
New mechanisms in current climate treaty system	Frisch/ØI	7,5	1
Climate R&D cooperation and implications for treaties	Frisch/ØI	1	1.2
Global treaties and weak international cooperation	SSB	2	1
Carbon leakage and climate policies	SSB	9	2
Economic mechanisms and equity issues	Frisch/ØI	16,7	4

This gives the following distribution of CREE-financing of WP1 (by research institution):

Table 2: Budget for CREE-financing by research institution on WP1 (in thousand NOK)

<i>Institution</i>	<i>2012</i>
Frisch	
- Internal researchers	655
- Experiment	60
- External researchers (Carbone)	69
SSB	
- Internal researchers	330
- External researchers (Böhringer)	67
ØI	
- Part time positions Frisch (Hoel, Harstad)	334
- PhD (50%)	400
- Paid research time (Brekke)	184
Law, UiO	100
Total	2.199

WP2: Innovation and Diffusion Policy

The main activities in 2012 will be as follows:

1. R&D in CCS technologies

Carbon capture and storage (CCS) may become a bridge between the present greenhouse gas (GHG) intensive society and a future GHG-free society. The development of CCS requires R&D – so far only a few firms are involved in developing this type of technology. Using a numerical model of the European energy market, LIBEMOD, and building on game theory as well as the R&D literature, we want to examine whether the government should support R&D that will reduce costs of CCS investments or that will make CCS less energy intensive.

In the game, the government imposes environmental policy and also offers R&D support schemes. Private R&D firms choose R&D expenditures, whereas electricity plants determine acquisition of CCS facilities. Demand for the CCS technology will be derived from LIBEMOD, given an imposed environmental policy package. Example of research questions are:

- Should the government support R&D in CCS technologies? If so, what type of instruments should be used?
- How should the design of the CCS support scheme depend on market structure, like, for example, number of CCS suppliers, and international technology spillovers?
- Will the market provide too much or too little R&D relative to the first-best outcome?

2. The profitability of environmental R&D

Environmental policy will normally increase the profitability of providing climate and environmental technologies to the market, including performing R&D within the field, but how large are the effects? Put the other way around, does environmental innovation lead to tightening of environmental standards and less emissions, reflecting lower pollution abatement costs associated with better technologies?

This sub-project will seek to analyze empirically such two-way causality effects between environmental policies and technological change for Norway. Ph.D student Marit Klemetsen at SSB will work on this project. Klemetsen is partly financed by CREE.

3. Strategic choices for energy infrastructure innovation

This sub-project will be an extension of the ongoing project “Diffusion of climate technologies”, see below, which studies the dependency between the market for private cars with petrol combustion engines and the market for petrol stations under the assumption of a fixed technology. Under CREE we will assess the need to steer the direction or choice of innovation. That is, we will depart from given technologies, and ask whether the connected markets for transport lead to specific distortions in the innovation market for the development of new clean energy infrastructure/technologies/platforms.

4. Behavioral economics

Recent studies have demonstrated that individuals may fail to respond to economic incentives in the expected way, and that these failures seem to display regularities that make them likely to appear in the context of consumers’ investments in energy-saving equipment. The energy required to heat a house is only one aspect to consider when buying a house, and for many consumers this will be subordinate to other characteristics such as location, size and appearance. Moreover, most households buy houses infrequently and are inexperienced with the decision; consequently the bidding is often a stressful situation in which decisions have to be made with a short period of time. Similar arguments apply to many energy saving technologies. Governmental policies such as public purchases and provision of free public consulting services may be designed to overcome such market failures. We will study these problems over the next years. In 2012, the main activity will be to write a survey on the literature to get a better understanding of the state of the art in this field. After this survey is written, we plan to discuss it with researchers from Department of Psychology (UiO) to see if there is some common ground for joint research.

Related activities in the CREE group:

- *Diffusion of climate technologies*. This is a joint project between Statistics Norway and Tilburg University, financed by the RCN. The aim is to study the dependency between the market for private cars with petrol combustion engines and the market for petrol stations. These two markets can be understood as different sides of a shared infrastructure/platform. The development of electric transport, or hydrogen based vehicles, requires a simultaneous change on both sides of the market. The project will compare the social optimum and market outcomes, and also assess optimal public policy under the assumption that the state of technology as given.

- *Investment in clean energy under uncertainty.* This project, which is financed by the RCN, studies the impact of different sources of uncertainty - climate, fossil fuel prices, future income and climate policy - on energy investment. The present project will be terminated this year, but we applied for a grant from the RCN to use the model/apparatus in a new climate related project.
- *Petroleum industry research in economics and economic management.* This is another RCN project. One key question is how climate policy and technology advances create dynamic supply side effects for fossil fuel producers, which have feed-back effects on present and future extraction and emission.

Table 3: Planned work-months WP2 in 2012

Topic	Primary institution	Total	Of which CREE-financed
Project administration	Frisch	0.5	0.5
R&D in CCS technologies	Frisch SSB	5,5	1.75 1
Profitability of environmental R&D	SSB	10	4
Strategic choices for energy infrastructure innovation	Tilburg	2	2
Behavioral economics	Frisch	2	2
Sum		20	11.25

Table 4: Budget for CREE-financing by research institution on WP2 (in thousand NOK)

<i>Institution</i>	<i>2012</i>
Frisch	
- Internal researchers	570
SSB	
- Researchers	110
- PhD project (4 months)	340
Tilburg	250
Total	1.270

WP3: Regulation and Market

In this work package, the main question is how regulation of energy markets affects the development of green energy, and how measures to promote green energy impact on the

functioning of energy markets. It is of particular interest to study the implication of regulation across national borders, especially with respect to infrastructure, since an international regulatory framework is crucial for the exploitation of Norwegian energy and environmental resources, both in traditional areas and in new areas like capture and storage of CO₂. The work is planned mainly as theoretical and empirical studies, but numerical models, either already existing or developed in other work packages, will be utilized also. As such, part of the work within this package will be conducted in cooperation with or as part of Working Packages 4 and 5.

Work in 2012 will consist partly of continuation and finishing of on-going projects and partly of starting up of new projects. Below we describe plans for core projects.

Integration of Wind Power in the Northern-European Power Markets

Wind power, on-shore as well as off-shore, has been identified as a key technology for renewable energy, where the EU has an ambition that Europe should become a global leader and where countries like Denmark, the United Kingdom, Sweden and Germany already invest heavily in wind mills, or have concrete plans to do so. Short-term variation in the availability of wind makes it difficult to integrate wind power on a large scale in conventional energy systems, but with access to sufficient amounts of storable hydro power, the potential for wind is substantially larger. The idea that Scandinavia may become an electric battery - a "blue battery" - for Europe has therefore attracted considerable interest, both academically and politically. In this project we ask to what extent the existing hydro capacity can accommodate a large-scale expansion of wind power in and around the North Sea, taking account of the possibility of building pumped storage and the cost of constructing large international interconnectors that will provide back up and balancing capacity for the countries both inside and outside of the Nord Pool area.

Work in this project is in the startup phase, but builds on our earlier work in this and related fields.

Green Certificates and Competition in Electricity Markets

A number of studies have analyzed how green certificates affect the functioning of electricity markets, both with respect to short-term price formation and long-term investment. One result is that green certificates may undermine the efficiency of energy markets by increasing price

volatility. In addition, green certificates may provide market participants with the possibility of exploiting market power by imposing so-called "margin squeezes". In this project we study the importance of green certificates for electricity markets, and analyze how potentially negative effects may be counteracted by suitable regulation.

We are about to finalize a first draft of a theoretical paper that will soon be published as a working paper. We are currently considering how to take the analysis further, specifically by considering alternative ways of modeling competition among generators.

Quantifying Market Effects

Theoretical analyses are important for isolating and understanding economic relationships, but quantification requires numerical modeling. This is especially true where different markets interact (such as between those for electricity and other types of energy) and where regulations may have effects across different markets. In this project we use numerical simulation models to produce long-term scenarios for the development of the electricity market (incl. demand, transmission and supply) under alternative assumptions about technological development and regulation in Norway as well as in the rest of Europe.

In 2012, we will study numerically possible impacts of reduced nuclear capacity in Europe, as this is a topic of a lot of interest these days. The nuclear crisis at Fukushima, Japan, in 2010 has affected nuclear policy in several countries. For Europe the most important policy change is the announcement of the German government to phase out all nuclear power plants by 2022. Nuclear power in Germany accounted for 23% of national electric consumption before the shutdown of 8 nuclear power plants in March 2011. The shutdown of the remaining plants will have a significant impact on the energy markets in Europe. Will the shortage of supply be met by increased fossil fuels or other renewable energy? How will this affect CO₂ emissions in Europe and from different European countries? How will the trade in energy goods between countries be affected from the shutdown? To study these questions, we will use a large-scale partial equilibrium model for the European energy market (LIBEMOD). The model will be updated when it comes to base year (2010) and when it comes to plans for nuclear (and other energy) investment decisions taken after the Fukushima crisis. We hope to get funding from the EU to partly finance this project (see page 18 below, the ENTR'ACTE project).

Interaction between Electricity and Quota Markets

Prices in the European market for CO₂ permits have varied considerably. These price variations have not only created uncertainty for market participants with respect to the profitability of investments to reduce CO₂ emissions, but have an impact on the cost of producing electricity, and hence electricity prices, which again have affected incentives to invest in generation. In this project, we study how price variations on the permit market affect the electricity market, and how the interaction between these markets impact incentives to invest in generation and measures to reduce emissions.

A paper is forthcoming in *Environmental and Resource Economics*, and we are currently working on how to extend this work.

Natural Resources and Sovereign Expropriation

An important question for governments of countries endowed with large natural resources is how to govern these resources, including choice of ownership structure and rights to exploitation. An example is the Norwegian hydro resources, which, since the introduction of the "panic laws" in the early 20th century, have been governed by a regime in which "national" ownership is combined with leasing of exploitation rights to third parties. Questions of ownership and governance are inherently political and policies may change abruptly, following changes in government, changes in the value of the resources or other events. At the same time, the type and quality of governance is crucial for the efficient exploitation of natural resources. In this project we study such issues, including how the regime governing natural resources depend on political and economic factors, as well as how such factors, through their influence on the regime, affect the efficiency of resource exploitation.

The project is in an early phase, and we are currently concentrating on building a suitable theoretical model to study some of the relevant questions.

The following table sums up the resources allocated from CREE to this working package in 2012:

Table 5: Budget for CREE-financing by research institution on WP3 (in thousand NOK)

<i>Institution</i>	<i>2012</i>
ØI	
- Part time positions Frisch (von der Fehr, Førsund)	510
- External (Baldursson)	67
Frisch	
- Research assistant (2 months)	189
Total	766

WP4: Evaluation of Environmental and Energy Policy Measures

During the first couple years, the activity on WP4 will be focused on three different research topics:

- i) *Rebound and adverse effects of energy policy:* How does increased energy efficiency affect energy consumption? How do various policy measures to reduce household energy use affect energy consumption in other sectors (spill-over effects)?
- ii) *The households' response to soft policy measures:* Give a description of the historic policy tool use (both soft and hard). Describe the effects of soft policy tools on household energy consumption, and discuss how soft policy tools affect the efficiency of hard policy measures. Will they reinforce each other, or cancel each other out?
- iii) *Environmentally friendly transportation:* How does the policy initiative to increase the number of electric cars in personal transportation affect CO₂ emissions?

Research communities and methods

In the initial phase, the work on WP4 is focused on four research communities: economists from Statistics Norway (SSB), social anthropologists from Centre for Development and the Environment (SUM), and economists from the Frisch Centre/University of Torino. The different research communities will apply a variety of methods to analyze the research questions listed above. The economists at SSB apply micro econometric analysis to estimate how policy tools affect household energy demand based on micro data from the Norwegian Survey of Consumer Expenditures (SCE). The social anthropologists from SUM apply social practice theory to describe how energy is a part of daily tasks, and how policy measures affect

habits and the interrelation between household members, and through this its effects on household energy consumption. The economists at Frisch/Torino will build a micro simulation model for car purchases based on estimations on vehicle purchase data. Based on this model, simulations will be done to analyze how a reduction in mean CO₂ emissions from today's 140 g/km to 120 g/km may be achieved within the year 2020.

During the first couple of years, each research community will apply its own methods to the same research questions. The aim is to learn from the traditional research approaches within each field, discuss differences in results and assess the strengths and weaknesses of each approach. We want to learn from each other's disciplines, with the end goal of combining the analytic approaches. The first collaboration is planned between SSB and SUM, and a joint study is planned to start in 2014. To date, three meetings between researchers from SSB and SUM have been held, and we plan to follow each other's research closely throughout the entire period before we start the collaboration.

Time table, budget and publication plan for 2012

Table 6 gives the planned analysis on the three different research questions in 2012, by research topics and institution. We plan to publish one article for each analysis reported in Table 6, but not all of them will be finished by the end of 2012. SSB plan to publish one article for international publication/Discussion paper on research topic i) in 2012 and a second article on research topic ii) in 2013. SSB will also communicate the main finding from this research through publications in Norwegian popular science journals. Researchers from Frisch/Torino plan to publish on article in 2012 on the research question iii), and researchers from SUM plans to publish two articles on the research questions i) and ii) within 2013.

Table 6: Planned analyses in WP4 for 2012.

<i>Research questions</i>	<i>Institution</i>
i) Rebound and adverse effects of energy policy. <ul style="list-style-type: none"> - The effect on the mix of household energy consumption of investments in air-to-air heat pumps. - Empirically examine and use social practice theory for analyzing rebound effects in relation to heat pumps among households 	SSB SUM
ii) Response to soft policy measures <ul style="list-style-type: none"> - How do soft policy measures affect the efficiency of an increase in electricity taxation? - How do soft policy measures affect practices and attitudes among households? 	SSB SUM
iii) Environmentally friendly transportation <ul style="list-style-type: none"> - How may we reduce the emission per km through changes in the car fleet? 	Frisch/Torino

This research is planned financed through a combination of CREE funds and own funding (other RCN projects). The resource use, share financed by CREE and funding requirements by CREE is indicated in Table 7 (by institution and subject). It is assumed that, what is not financed by CREE is financed by the institutions through own funding.

Table 7: Financing plan by institution for 2012. Moth of labor (month), €

<i>Institution</i>	<i>Resource use (months, €)</i>	<i>Share (%) financed by CREE</i>	<i>Funding by CREE (thousand NOK)</i>
SSB	13 months		110
- Administration	1 months	100%	
- i) - analyses	10 months	0%	
- ii) - analyses	2 months	0%	
Frisch/Torino			
- Professor II	2 months	50%	192
- Programmer	€2500	100%	20
ØI			
- PhD student (50%)	6 months	100%	399
SUM	9 moths, field study, workshop, conferences, travel	60%	500
Total			1.221

Description of the analysis planned for 2012

Statistics Norway: The analysis at Statistics Norway will be focusing on the effects on household energy consumption of increased use of heat pumps for residential heating. We will apply the Norwegian SCE from 2009 and 2006, with additional questionnaire on energy use, to estimate micro econometric analysis of household energy demand. The focus will be on how households change their demand for electricity, firewood and fuel oils after investing in a heat pump. The plan is to write an article for international publication based on this analysis in 2012. We will also write a report in Norwegian describing the history of energy and environmental policy tool use aimed at Norwegian households, and start preparing the data for the analysis on research topic ii).

SUM's overall ambition is to apply social practice theory (sociology, ecological and behavioral economics, social anthropology and social psychology) to understand domestic energy consumption and the promotion of energy savings to reduce CO₂ emissions. We will review and integrate economic literature on the rebound effect and soft policy measures with the social theory. Empirical studies include collecting qualitative data among Norwegian households through interviews and observation. In 2012, SUM's research activities include: a) review relevant literature on the rebound effect, b) recruit a master student, c) study the system of provision surrounding domestic heat pumps in Norway, d) plan and conduct a field study (interviews and observation), e) engage in dialog with the partner institutions regarding plans and results (e.g., provide input to SSB's study) and f) write one academic paper

Frisch/Torino/ØI: In 2012, data for purchases of cars in Norway will be acquired and the quality of the data will be assessed. The data contains all vehicles sold in Norway in the period of January 2004 to December 2011. They will be analyzed applying discrete choice models; where the first choice is between different types of cars (sports cars, SUV, small cars, etc), and the second choice is between different labels. Each car is characterized by effect, weight, volume and CO₂ emissions. Also, whether the car runs on diesel or petrol, and prices and taxes are included in the analysis. The analysis is conducted on the basis of monthly sales on different vehicle models within each segment, and it is estimated how the market share is affected by prices and taxes. The estimation will be used as a foundation to simulate how differences in the design of the taxation system may help achieve a reduction in CO₂ emissions per g/km from today's level of about 140 g/km to 120 g/km, and at the same time

keep the revenues from car purchases unaltered. Alice Ciccone, PhD student at ØI and funded by CREE, will spend half her time on this project.

WP5: The Next Generation of Numerical Models

To analyze policies that stimulate innovation and diffusion of new environmentally friendly technologies, integrated economy-energy-environment models are a necessary tool. We will in 2012 continue to develop our energy market models and our integrated macroeconomic Computable General Equilibrium (CGE) models to make them well suited for our analyses.

We have started working on all five main topics in WP5 as described in the project application, see table 8 for detailed plans. Table 8 also includes activities under the other WPs that are especially relevant for WP5.

National and international integrated models:

We will continue our work on updating, extending and modeling new energy technologies in our energy market model LIBEMOD in 2012. In the fall of 2011 we hired a research assistant (Hilde Hallre) that will continue her work on programming and updating the model in 2012. The new updated model will be available for analyses in 2012. We will cooperate with SINTEF Energy to improve the data and modeling of the power market, especially the transmission mechanisms and corresponding costs, by performing comparative analyses of the two models LIBEMOD and The Power Market Simulator.

Policies towards improving energy efficiency are widespread, but analyses that compare such policies with other environmental and technology policies, are rare. Together with IFE we will utilize information from IFE's bottom up energy models on what kind of energy efficiency measures for buildings are available, and at what costs. Modeling energy efficiency costs and corresponding measures will be an important part of our new CGE model for Norway for energy and environmental policy analyses that will be established in 2012, based on a GTAP database structure. The model will be programmed in GAMS. GAMS is used for CGE modeling and energy market modeling all over the world, and is considered more user friendly than the programming language we currently use in our CGE models. To establish a new and improved macroeconomic CGE model in GAMS will make it easier to link the model to our energy market model LIBEMOD, and to other global models in the GTAP system. This work will be in cooperation with Christoph Böhringer (University of Oldenburg)

who is also funded by CREE. At present Norway is represented by a simple structure within the GTAP system. We will use a global model where Norway is represented to analyze efficient carbon and leakage policies for the small open economy Norway in a global framework, see WP1.

Identification and quantification of policy effects

See table 8.

Electricity market models

See the above mentioned project where SINTEF will contribute.

Model Forum and Scenarios –

We plan to have our first model forum in February 2012. The topic for the forum is: Effects of climate changes on power markets. IFE, SINTEF and CREE will all present relevant model analyses, and we will discuss how the different model/analysis designs contribute to different results.

Table 8 describes our plans for the coming years, while table 9 describes the amount of resources spent on each project in 2012 and how they are financed. Table 10 presents the cost scheme for WP5 in 2012 for that part of the project that is 100% financed by CREE.

Table 8: Time schedule for projects, WP5, period 2012 – 2013, (other related WPs are given in parentheses).

<i>Topic</i>	<i>2012</i>	<i>2013</i>	<i>Institution</i>
i) National and international integrated models			
a. Updating/expanding LIBEMOD			
i. Including new countries/regions in Europe	X		SSB and Frisch
ii. Updating technology data	X		
b. National and international energy- and climate policies effects on the energy markets using LIBEMOD (WP1)	X	x	SSB and Frisch
c. National and international climate policies; welfare and carbon leakage effects (WP1)			
i. National and global CGE-analysis	x	x	SSB
ii) Innovation and diffusion of technologies			
a. Modeling and empirical specification of (WP2)			
i. Innovation processes for new energy- and climate technologies	x	x	SSB
ii. Diffusion processes for new energy- and climate technologies in general equilibrium models with special emphasize on transport technologies (MSG-TECH/ITC)	x	x	SSB
iii) Identifying and quantifying effects of regulations in the climate policy			
a. Incorporating new parameters from quantification studies (WP4)		x	SSB
b. Modeling of policy measures		x	SSB
iv) Modeling of the Norwegian, Nordic and European electricity markets in LIBEMOD and The Power Market Simulator (WP2)	X	x	SSB, Frisch and SINTEF
v) Model forum and scenarios			
a. Meeting point for development of integrated environmental- and economy models with a rich presentation of energy- and environmental technologies	x	x	SSB, Frisch, SINTEF and IFE
b. Presentation of empirical model analyses of energy- and environmental policies	x	x	

Table 9: Time schedule and financing, WP5, by institutions, months

<i>Institution</i>	<i>2012</i>	<i>Financed by CREE</i>
SSB		
Administration	1 month	1 month
MSG/ITC	5 months	2 months
LIBEMOD	6 months	3 months
Externals (Böhringer, Liski)	5% positions	100%
Frisch		
LIBEMOD	6 months	6 months
IFE and SINTEF	2 months	2 months
Total, WP5	23 months	17 months

Own funding consists of other Research council funding (primarily RENERGI) and some governmental funding at SSB. Both Frisch and SSB have several other relevant projects financed outside CREE.

Table 10: Cost plan for CREE funding, WP5, by institution (1000 NOK)

<i>Institution</i>	<i>2012</i>
SSB	
Administration	100
MSG/ITC	202
LIBEMOD	315
Externals (Liski)	67
Frisch	
LIBEMOD	627
IFE and SINTEF Energy	600
Total	1.911

Total funding for all 5 work packages

The following table summarizes the total funding for all 5 working packages in 2012:

Table 11: Cost plan for CREE funding 2012, by working package (1000 NOK)

Administration	1.493
Conferences	300
New Post doc	348
MILEN's research school	100
Scholarships for students	60
WP1	2.199
WP2	1.270
WP3	766
WP4	1.221
WP5	1.911
	9.668

Table 12: Cost plan for 2012 distributed to institutions (1000 NOK)

Administration	1.493
Conferences	300
MILEN's research school	100
Scholarships for students	60
Frisch	2.382
SSB	1.641
ØI (including PhD and Post doc)	2.242
Tilburg	250
Subcontractors	1.200
	9.668

Recruitment:

We will recruit a post doc in 2012, starting in the summer, see table 11 above. This position has already been announced. In addition to this we plan to recruit master students and we have set up three grants of NOK 20,000 each that will be advertised in the spring.

Possibilities for additional funding:

CREE is part of a consortium that has applied for a EU project under FP7-Env-2012. The name of the project is Economic iNsTRuments to Achieve Climate Targets in Europe (ENTR'ACTE). If we get funding, the CREE activities will expand.

Other activities:

CREE will organize a series of meeting, seminars and conferences in 2012. So far, the following dates are decided:

The first *model forum meeting* will be on 2 February.

The *user conference* will be on 17 April.

The *research workshop* will be on 24-25 September.

In addition to this we organize a seminar series, see

<http://www.frisch.uio.no/cree/seminars.html>, and we plan to organize the user party activities as visits to all user partners in 2012.

In addition to these activities, dissemination of research will also happen through popular articles in newspaper and other media. The aim is to have at least one each month, or at least 12 articles in 2012.