Meeting the climate challenge: New legal instruments and issues in national and international energy and climate law.

1. Objectives and main lines.

The *principal objective* of the project is to develop and maintain, at the Faculty of Law, University of Oslo and for a period of 5-6 years, a robust research group in the intersecting fields of national and international energy and climate law.[1] It combines competence in environmental/climate law and energy law at the faculty. The interplay of climate law and energy law mechanisms is a governing theme.

The group will serve as a national focal point in this dynamic area of law. It shall follow closely the developments in climate and energy policy and law at international, EU/EEA, and national level, as well as the extensive international legal discussion. Its aim is to contribute to the legal theory and analysis, and to the further legal development in the field. It will collaborate broadly with national actors and recognized international partners and networks in order to serve government and industry, and offer advanced, updated teaching to law students.

The *subgoals* of the project are to develop updated and new insight into the legal issues raised by the emerging demand and markets for renewable energy, the complex interplay between energy law and climate law at the international and national level, and the implementation and further development of the Kyoto mechanisms and their environmental integrity, with a view to the post Kyoto phase and with CDM as case.

The project will be organized within the Natural Resources Group at the Faculty and will build upon the interdisciplinary competence of this group (see below).

The core of the project consists of three main studies at the post doc./PhD level, carried out in parallel. They will address the following issues:

- existing frameworks and new instruments in promoting "green energy",
- ensuring coherence and synergies between climate and energy law: the international development and impacts on Norwegian law,
- the environmental integrity of CDM and its post-Kyoto potential.

In addition, more limited studies will be carried out by graduate students, through 2 student grants of one year each, annually over the project period. Some possible topics are mentioned below, while others will be identified in the course of the project.

It should be underlined that these topics, as presented below, are rather broadly described at this stage and will be further amplified in the early stage of the project in collaboration with the national and international partners.

There are important linkages between the three main studies, and some possible overlaps. The project seeks to develop a coherent insight into the various elements of climate and energy law. To this effect, close cooperation between the researchers and special coordinating activities are foreseen.

[1] By climate law is here understood the parts of international and national law that directly addresses the problem of climate change. Within national law, emission of greenhouse gases (GHG) is mainly regulated by pollution control law besides special climate-related legislation such as the Act on Trade in Emission Quotas. By energy law is meant international and national law that regulates energy production, operation, transmission and consumption. As a matter of course, energy law may be constructed and applied in such a way that it contributes to the reduction of GHG, which is the case *i.a.* with parts of the secondary EC legislation in the energy field.

2. Background.

There is an intrinsic link between the stability of the climate system and global energy security. Global energy demands are expected to grow by 60% over the next 25 years. This has the potential to cause significant increases in greenhouse gas emissions. Given the demand for secure, reliable and affordable energy, a carbon-reduced, global economy needs alternative energy sources. From a climate perspective, the limits for the output of greenhouse gases (GHGs) are defined. Atmospheric CO2 eq concentrations below 400 ppm are generally regarded as 'safe'. Within this frame, energy and climate measures need to establish a coherent system. In this context, the recent G8 Summit in Gleneagles, State representatives concluded that "[t]ackling climate change and promoting clean technologies, while pursuing energy security and sustainable development, will require global concerted effort over a sustained period of time."

The Framework Convention on Climate Change (FCCC) and the Kyoto protocol with its various flexible mechanisms is the main international set of instruments for combating climate change. The application, enforcement and further development of this regime, and its implementation in national policy and law, have already major influence on energy policy around the world. Within this framework, EU is developing and applying major new policies in the energy field with its main objective to meet the Kyoto targets, and the development and promotion of renewable energy is central in this effort.[2] These international regimes increasingly influence many parts of national policy in the industrial countries. As a party to FCCC and the Kyoto protocol, and as a member of EEA, Norway is to a large extent framed by them in its climate an energy policy. The energy sector is crucial in Norway's effort to comply with its Kyoto commitment. The fact that there is a common Nordic electricity market, with direct links to the European market, emphasizes the international character of the issue and the importance of updated knowledge and close international cooperation in the legal field.

Thus, climate law and energy law, although with formally different origins and objectives, and different instruments and administrative solutions, are mutually dependent and increasingly intertwined. There is a clear need for better insight into the many intersections of these two areas of law, and how they are implemented and function. The complexity of the issue becomes clear by the fact that both energy and climate law constitute the sum of diverse parts, and many types of instruments: both public and private law, international law, EU law, and is influenced by such fields of law as trade and investment law, project financing mechanisms, intellectual property, tax law, company law, competition law etc.

The last G8 summit placed a warning note by stating: **"**We face serious and linked challenges in tackling climate change, promoting clean energy and achieving sustainable development globally." Synergies in climate and energy responses could provide opportunities and optimism for a more secure and sustainable world, moving away from the severe dependency of and conflicts over oil. This project is subordinated to this general goal.

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[2] Directive 2003/87/EC of 13 October 2003 and Directive 2004/101/EC of 27 October 2004. Energy law issues are for example included in: 1994 Energy Charter Treaty, EU primary legislation with regard to free movement of goods, competition rules etc. and secondary legislation, e.g. Directives on electricity and natural gas 96/92/EC and 98/30/EC, Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market, Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC. Other sources include: Green Paper: Towards a European strategy for the security of energy supply, November 2000 (COM(2000) 769) final and its recent report of June 2005, Green paper on energy efficiency or doing more with less, Brussels, 22.6.2005 COM(2005) 265 final. For information on the Intelligent Energy for Europe (EIE) Program, see http://europa.eu.int/com/energy/intelligent/index en.html

3. The project as part of the research agenda of the Natural Resources Group.
The research group in Natural Resources Law at the Faculty of Law was established in spring 2005. Its objective is to ensure research quality, and stimulate new research, seeking to treat topics across the disciplines of natural resources law, energy law, environmental law, and property law. It integrates the research groups of Energy law (of the Petroleum and Energy Law Department of the Scandinavian Institute of Maritime Law), Environmental Law (of the Department of Public and International Law) and Property Law (of the Department of Private Law, herein scholars in law-and-economics, and at the Norwegian Centre for Human Rights).

Three main perspectives or interplays form the basic structure of the work of the group:

- The interplay between private law and public law regulations.
- The interplay between environmental law and "sectoral" law.
- The interplay between international and national law.

The project will include these perspectives in various ways. The intersections of climate law and energy law are not only an important and highly relevant topic. It is also most suitable to illustrate the issues of principle inherent in the perspectives. As such, the project has the potential to contribute to the development of more general legal concepts and theories.

4. Description of the three main studies.

4.1. Promoting "green energy": legal frameworks and new instruments (PhD project).

Introduction
The purpose of this study is *to describe and analyse some of the legal issues that may arise in the context of promoting "green energy"*. Green energy is a wide concept, which includes various forms of renewable energy (hydro power, solar power, wave energy, biomass energy). By promoting the development of green energy one can achieve two major policy objectives:

(1) Increased security of supply: On the EU level, the policy objective is to increase the production of green energy to 22,1 % of total consumption within 2011, cf. art. 3 of dir. 2001/77/EC (renewables directive). In Norway, there is a policy objective to develop 3 TWh wind energy within 2010, cf. St meld no 29 (1998-99). Both objectives reflect a need to introduce new energy volumes to the market to improve security of supply. In the EU, focus is on a variety of green forms of energy. In Norway, focus is basically on wind energy since Norwegian electricity production already is approximately 99 % based on hydro power.

(2) A decrease in CO2 emissions: In so far as green energy replaces fossil fuels as an energy source – or leads to less increase in the consumption of fossil fuels – it will have a beneficial effect on CO2 emissions. Thus, increased production of green energy will promote the objectives of the Kyoto-protocol.

The study will focus on two main problem areas as regards the general topic of green energy:

- financing of green energy – the subsidy problem.
- the development of a "green certificates" market.

In addition, legal issues will arise related to specific kinds of green energy. For example, the introduction of wind energy to the hydro power system in Norway raises a series of legal (and political) problems related to its inclusion into the general power system, and in the intersection of *i.a.* the Energy Act, the Planning and Building Act (spatial planning), and the Pollution

Control Act. They will not be dealt with here, but may be taken up in part in the study, or in student theses.

Financing of green energy – the subsidy problem.
A basic problem concerns the financing of green energy, including wind energy. Investors have needed – and still need - economic incentives to develop green energy. Traditional incentive mechanisms have been state subsidies, tax exemptions or refunds. These mechanisms are characterized by direct state support (in one form or the other) to promote specific projects. They have been practiced in many states, including Norway.

A more recent mechanism is the "feed-in tariff". Network companies are under a statutory obligation to impose an extra tariff – the feed-in tariff - on the network customers. The extra tariff income is then allocated to producers of wind energy and other renewable energies. Thus, network customers support producers of wind energy through a system managed by the network companies. The extra tariff is fixed in advance. The volumes of renewable energy produced depend on each producer. The feed-in tariff is not dedicated to specific projects. It is practiced in Germany.

A further development is the "green certificates" market. Producers of green energy are granted green certificates. Electricity suppliers are required to deliver a certain amount of green energy, which is verified by the purchase of green certificates. The cost of green certificates is then transferred to consumers as part of the electricity price. In this system, the volume of green energy is fixed in advance (contrary to the feed-in tariff). On the other hand, the price of certificates is formed in a free market. In practice, however, the price is often regulated. For example: the price is only allowed to fluctuate between a fixed "floor" and a fixed "ceiling".

All the above systems reflect subsidies in one form or the other. A general legal problem is *the relationship between various forms of subsidies and the prohibition on state aid*, cf. in particular article 87 EC/article 61 EEA. The traditional mechanisms reflect a more direct state subsidy than the newer ones. Consequently, they are very vulnerable as regards possible violation of EC/EEA-rules on state aid. The ESA has recently initiated a procedure against Enova, the manager of the Norwegian Energy Fund, for possible violation of art. 61 EEA.[3] Enova grants investment aid to producers of wind energy through the Energy Fund. On the other hand, the ECJ has accepted subsidies, which do not directly or indirectly affect state finances. The feed-in tariff in Germany has been accepted as compatible with the general prohibition on state aids, cf. C-189/91 and C-295/97 (PreussenElektra).

There is definitely a need to develop methodologies for granting aid to producers of green energy that are legally robust as regards the prohibition on state aid in art. 87 (1) EC/art. 61 (1) EEA. This study will seek to identify such methodologies. Methodologies for state aid that can achieve a derogation pursuant to art. 87 (3) EC/art. 61 (3) EEA will also be looked into. In the latter context, special attention will be drawn to the Environmental Guidelines of the ESA. The discussions and developments in other EEA countries will be followed. The topic is well suited for comparative and complementary studies.

The development of a green certificates market
In Norway, a working group has presented a proposal for the regulation of a green certificates market to the Ministry of Oil and Energy. The development of a green certificates market will require a lot of regulatory attention. So far only the UK and Sweden have functioning, but not

[3] ESA´s decision of 18 May 2005.

well-functioning, markets. There is considerable scope for comparative studies as regards national regulations of green certificates.

The Norwegian Parliament has called for a common market between Norway and Sweden. The Ministry of Oil and Energy is presently elaborating on the matter. A common market between Norway and Sweden will require a legal harmonization between the two countries. This is a market that is totally designed by Government to promote specific kinds of green energy. Important issues concern what kinds of production that shall be eligible for green certificates, on what terms, and for how long. This artificially created market raises legal questions of both public and private law.

The green certificates market has the characteristics of a financial market. Today, Nord Pool operates several financial electricity markets. Nord Pool´s main functions are market administration and clearing. Nord Pool executes its functions according to the Energy Act and the Exchange Act. In addition, Nord Pool has developed a comprehensive contractual framework regulating the market participants´ behaviour. Similar regulations and contracts will probably be required for a green certificates market.

The study will follow the establishment and further development of the green certificate market in Norway/Sweden, as well as in other countries. It will describe and analyse the legal questions of public as well as private law, and their intersections. The introduction of green certificates raises several control issues. The authorities must control that suppliers meet their obligation to deliver green energy. In this connection, the authorities have to device a register for green certificates and procedures to manage that register. Furthermore, the activities in the green certificates market, both as regards the market operator and the market participants, have to be controlled. Sanctions have to be developed as part of the control mechanism.

4.2 Prospects for Synergies in Climate and Energy Responses, and impacts on Norwegian Climate and Energy Policy and Law (post doc. or PhD project).

The aim of this study is to provide *an overview of the interface between climate and energy related legislation* in international and EU law, and its impacts on Norwegian climate and energy policy, and on the application and development of Norwegian law. Its perspective is the problems and prospects for coherence and synergies between the two regimes.

Potential for Synergies.
The Kyoto Protocol has succeeded in setting up market-mechanisms, such as Emissions Trading or CDM and JI under an overall emission cap for a number of States. These measures have started to enhance private investment and transfer of technology into developing countries. At the same time, energy policies start to focus on reducing or eliminating reliance on fossil fuels for reasons of security and reliability. Measures that promote innovation, energy efficiency and renewable energy sources deal indirectly with climate change.

However, in order to tackle the problem of human-induced climate change, climate concerns need to have a much stronger, direct(ing) influence on energy policies. Synergies between international climate and energy law could therefore play an essential role. An analysis of the climate and energy-related international and EU-legal framework, including regulatory, fiscal, and other measures, is needed to discover and enhance the full potential of climate and energy synergies.

Defining Similarities, Differences and Potential Synergies.
Dealing with climate priorities and energy security happens largely in separate international fora. Despite the differences, they accord to comparable requirements and consist of similar components. This study will assess these similarities, including possible differences and shortcomings of climate and energy law.

An analysis of the international and EU legal framework has direct consequences for the design of the Norwegian legislation in the fields of energy and environmental protection. Therefore, intersections between energy and climate related Norwegian law will be described and analysed with a view to improving coherence and obtain synergies. Furthermore, this analysis will also indicate the direction future national regulatory measures need to take in order to deal coherently with energy regulation within the requirements of climate change mitigation. Accordingly, changes will be suggested.

Topics of synergy between climate and energy law.
This study raises a number of possible topics for legal research. The following list shows some of the questions and aspects that may be addressed. It is the intention to include many of them in the study. However, to what extent the different topics can and should be addressed in depth will be a matter for further discussion. Consultations with our national partners and contacts will play a crucial role, as well as the collaboration with our international partners. Together we will explore possibilities for comparative as well as complementary studies, in order to get results of broad relevance and impact. This will influence the choice of topics within the study.

We envisage a series of articles and reports on limited topics within this study, under the common theme of "coherence and synergy". Some topics may be suitable for graduate student theses. The following is a list of possible themes and approaches:

- *The mix of different instruments.*

The extensive mix of different climate measures and policies, both at the international and national level, raises the question of consistency between the parts. The mix does not only jeopardize the economic efficiency, effectiveness and legitimacy – and possible future support - of the climate/energy system. It also threatens its environmental integrity; the contribution to the ultimate objective of stabilizing greenhouse gas concentrations in the atmosphere. Both regulatory and economic instruments require a set of legal rules. One possible approach is to identify gaps and inconsistencies in the legislation, and assess possibilities for improvement.

- *Developing and linking energy and climate "markets".*

The involvement of private enterprises is pivotal, and the current legal climate system provides incentives for private participation. Market-based mechanisms, e.g. example emissions trading, open for private involvement to sort out cost-effective responses. Similarly energy law opens for market-based incentive structures, such as 'green certificates'. Linking these emerging markets may be desirable as it will increase liquidity. Here, issues of legal design, coherence and compatibility of the respective Norwegian legislation will be assessed. As part of this, the functioning and legal development of Norway's emission trading system will be closely studied.

- *Conflicts, coherence, and credibility.*

In order to obtain reduction of GHGs emissions, in particular in the energy sector, it is important to understand how international and national measures interact with other regulatory fields, and to consider which alternatives exist to avoid conflicts and ensure credibility. Relevant issues here are the relationship to international and national pollution control law

including the principles of Polluter Pays (PPP), Best available technology (BAT) and Best environmental practice (BEP), international and national nature and biodiversity protection law, etc. At the national level, interaction with spatial planning legislation, neighbour law, etc. also poses problems. (The limitations set by international and EU trade and competition law will mainly be treated under study no. 1 (see above).)

- *The financial perspective.*

Of fundamental importance for both the energy and the climate field is the ability to attract financial support and harness private investment power. Synergies could arise in particular with regard to incentives for investments. Furthermore, State - Private partnerships could provide for larger scale and long-term projects that combine new energy solutions within the limits set by climate demands. The relationship between international investment law and climate/energy projects thus demands thorough analysis and could map out additional investment possibilities.

- *Technological development: a vehicle to future global participation.*

Stimulation of technological development is required. Future climate agreements are expected to rely stronger on technological advances than the present. This will have implications for energy projects. Mutually supportive climate and energy 'deals' and technology transfer might increase worldwide acceptance. This could break the deadlock of non-participation of various industrial and developing countries in climate agreements. Again it will be essential to assess the legal framework, both existing and evolving.

- *Public participation as a prerequisite.*

Governance structures that allow for public participation are required in both fields. Public access to, and engagement in decision-making that affects such public goods as climate and energy security enhance the success, sustainability and accountability of policies and projects. Again, in both fields are international rules of public participation in early states of development. An analysis of these rules will show room for improvement.

4.3 Safeguarding the Environmental Integrity of the Present and Future Climate Regime - the Example of CDM (post.doc. project).

The purpose of this study is *a legal analysis of environmental safeguards in the Clean Development Mechanism (CDM), and its post-Kyoto potential*.

This analysis will first assess the primary requirements formulated in the UNFCCC, Kyoto Protocol and the Marrakech Accords. Second, it will explore how environmental integrity is further defined and expressed in secondary documents e.g. of the Executive Body, the Panels and Working Groups and Designated Operational Entities. As far as available, work of the facilitative and the enforcement branch of the Compliance Committee will be included. Third, on at least two case studies (e.g. one hydroelectric project and a landfill or wind project) the practical implementation of environmental safeguards will be explored. Particular interest will be given to the contractual design and effective implementation of these safeguards. In this context, the insurance of environmental integrity in state-private parties' relationship is relevant.

Environmental Integrity creates Credibility. The international climate regime is in a state of transition. While the Kyoto Protocol that covers the time period 2008-2012 and contains quantitative emission reduction obligations for a limited number of states has entered into force, the future of the regime is still uncertain. Willingness of the international community of states to agree on further climate 'deals' depends on the credibility of the environmental performance

of climate measures. Credibility requires that the environmental integrity of the respective measure, and eventually of the entire regime, is ensured. Environmental integrity is understood as the demonstrated ability of a measure to initiate projects and to certify emission reductions that are additional to what would otherwise have occurred, and contribute to the long-term reduction of greenhouse gas concentrations in the atmosphere.

Ensuring Flexibility and Safeguarding Environmental Integrity. The Conference of the Parties of FCCC emphasized that "environmental integrity is to be achieved through sound modalities, rules and guidelines for the mechanisms, sound and strong principles and rules governing land use, land-use change and forestry activities, and a strong compliance regime".[4] These mechanisms are generally referred to as 'safeguards'.

Safeguarding environmental integrity is particularly crucial with regard to the Clean Development Mechanism (CDM), Joint Implementation (JI) and Emissions Trading. These climate instruments were included in the international climate regime to accommodate Annex I countries' demands for flexible and cost-effective implementation of their commitments. The increase in flexibility, however, demands stronger protection of the overall environmental performance. The CDM is unique among these mechanisms. While Emissions Trading and JI are based largely on domestic regulatory schemes, none of these exist for CDM. Furthermore, CDM allows 'capped' Parties to obtain emission credits in 'uncapped' - non-Annex I - parties. These aspects raise a number of legal questions as regards the overall environmental performance of CDM.

This issue is not only relevant for the present climate regime. It is also of crucial importance for *post*-Kyoto climate responses. So far, the CDM is the only means to engage developing countries in climate mitigation. Universal participation will be an important criterion for the success of any future strategy. Therefore it has been assumed that the design of a post-Kyoto regime is likely to be based on 'CDM-like' structures. Given the strong interest in CDM and the importance this mechanism might play in the next commitment period, its environmental integrity is essential to the overall environmental performance and credibility of the present and any future climate regime.

Challenges to Integrity. Each additional 'carbon-tonne' of Certified Emission Reductions (CERs) transferred under CDM will entitle an otherwise 'capped' party to an equivalent increase in emissions within its territory while remaining in compliance. In order to avoid overproduction of CERs, it is crucial to ensure 'additionality' of emission reductions, i.e. reductions that are environmental, financial and *de facto* additional compared to the scenario that would likely have occurred in the absence of the investment. Because on both sides of the transaction are parties with short-term interests in certifying large quantities of CERs, the control of baselines is a central issue. Also, the role that energy efficiency standards or best technology requirements play in this regard has not been sufficiently assessed.

Another aspect concerns the applicable law in ensuring integrity of these projects. The fact that governments play the role of ultimate buyers, sellers and regulators of the emission trading market (including CERs) raises issues of state sovereignty, bias and economic freedom. This is further complicated by the different obligations that 'capped' and 'uncapped' states have. Finally, the CDM seeks to integrate the private sector into the state-based compact of the Kyoto Protocol. The engagement of the private sector triggers the application of domestic regulatory frameworks, private international law and domestic law generated by commercial contracts. Still, these have to be linked to the traditional state-to-state accountability under public

[4] FCCC/CP/2001/13/Add.2, Draft decision -/CMP.1 (*Mechanisms*), Principles, nature and scope of the mechanisms pursuant to, Articles 6, 12 and 17 of the Kyoto Protocol.

international law of which the Kyoto Protocol is a part. Major legal gaps exist in these innovative structures.

Legal Safeguards. Certain safeguards have been set up to address a number of concerns with respect to environmental integrity, e.g. calculation standards for baselines, processes for encouraging technical assessments, transparency and public scrutiny, eligibility and participation, mechanisms for rejecting or discounting CERs. Also a set of institutions has been created to oversee the procedures that apply to the creative mix of relationships between states, private actors, and international institutions.

It has been suggested that a close partnership between states and private entities that combines the strengths of an innovative market and of a more traditional regulator could be the best way to safeguard environmental integrity. However, the innovations introduced by the CDM raise more questions - in particular for lawyers - than what practice could answer so far. Given the importance of certainty and predictability to the attraction of investment capital and the creation of new markets, concerns about safeguarding environmental integrity need to be eliminated by robust legal structures. If the private sector shall function as a source of finance, innovation, monitoring and evaluation of climate measures or projects based on CDM, ensuring environmental integrity is an absolute priority. The fate of the CDM - and possibly of any new climate agreement - depends on its positive environmental performance.

Within the general approach to analyse environmental integrity as outlined above a number of sub-topics will be explored. These include:

- Extension possibilities of CDM and supplementarity to domestic action,
- Technological innovation, investment in, technology transfer to and benefit sharing with developing countries under the CDM (in particular with regard to alternative energy sources and energy efficiency)
- Safeguards under the CDM and relation to the compliance system under the Kyoto Protocol,
- Legitimacy of Executive Body (EB) decisions and the EBs role for ensuring integrity of the CDM,
- Interaction between CDM instruments that promote objectives of economic liberation, prohibit non-discrimination between foreign and domestic investors, and regulate the expropriation of investments (incl. relation to foreign direct investment and private investment law as expressed in Bilateral Investment Treaties).

This study is intended as a post doc. project for PhD student *Christina Voigt* (see CV attached) who finishes her PhD thesis mid-2006.

5. Project organisation.

The project will be organised within the interdisciplinary Natural Resources Law group of the Law Faculty, University of Oslo. The group chairman, professor Hans Chr. Bugge (CV attched), will be the project leader, with main responsibility for ensuring general research quality, for the interlinking and synthesis activities, and for cooperation with national and international partners. In leading the group he will collaborate closely with professor of Energy Law, Ulf Hammer (CV attached). Responsibility for the supervision of the post doc. and PhD students will be divided between Bugge and Hammer.

The Natural Resources Law group as such will contribute to the project through regular work-shops and seminars. All members of the group, as well as other faculty members, will be available as resource persons for the project researchers. A list of the members is attached.

The Natural Resources Group is administratively attached to Scandinavian Institute of Maritime Law at the Law faculty. This institute will administer the project.

6. Collaboration with users and researchers at the national level.
The research group will work in current contact with the relevant authorities, industry and NGOs, with a view to establish *a forum* for mutual information and dialogue about the developments in national and international climate and energy law. The forum will serve as an informal reference group for the project. Enova (Norway's public enterprise for the promotion of alternative energy), and Norway's Pollution Control Authority (SFT) are formal partners and prepared to contribute financially to the project (letters attached). In addition, it is expected that the Ministry of Oil and Energy, the Ministry of the Environment, and Norway's Water Resources and Energy Directorate (NVE) will express interest and attend such a forum. Several important industrial actors in energy production and consumption, and relevant NGOs, will also be invited.

The project leaders have on earlier occasions collaborated well with researchers at the Centre for International Climate and Environmental Research (CICERO), University of Oslo, and – to a lesser degree - the Fridthjof Nansen Institute. We intend to develop further contact with these and other research groups in Norway working with related issues from different perspectives.

7. International partners and networks.
As the issues at stake are truly international and common to most industrial countries, international collaboration and contacts will form an important part of the project. The project will collaborate in particular with four highly recognized research groups in energy and environmental law who have confirmed their willingness to stand as partners in the project. They are listed in the application form, together with main international networks.

The collaboration with these partners and networks will inspire and facilitate comparative as well as complementary studies. The project will benefit greatly from the legal discussions and research on the introduction of renewable energy, and the intersections of climate and energy law in general, that take place in the context of the European Union, and in Germany, Canada and USA. International exchanges, visits of researchers, and seminars and workshops will be organized.

8. Publications and teaching.
It is the aim of the project to publish at least 2 major books, based on the findings in study no. 1 and 3, and a number of articles in Norwegian and international journals based in the findings mainly in study no. 2, but also in studies 1 and 3. It will be considered whether the planned international seminars in 2007 and 2010 may result in separate publications.

Furthermore, it is foreseen that the researchers will contribute short articles and reports on questions which may be raised by the public authorities or industry in relation to current and new political or legal developments in the field.

The new insight from the project will be used *i.a.* in the student courses in International Environmental Law, (Norwegian) Environmental Law and other teaching at the faculty.

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Natural Resources Law Group

Research group in Natural Resources, Energy, Environmental and Property Law

Hans Chr. Bugge, chair, Professor of Environmental law, dr. juris, and docteur de spécialité, Department of Public and International Law (CV attached)

Ulf Hammer, Professor, dr. juris, Department of Petroleum and Energy Law, Scandinavian Institute of Maritime Law (CV attached)

Kirsti Støm Bull, Professor dr. juris, Norwegian Center for Human Rights (property law, family law, indigenous peoples' rights)

Erling Eide, Dr. philos, Professor of Economics at the Department of Private Law

Professor Eide has published books on production theory, economics of crime and law-and-economics. His articles include topics like ends and means in environmental policy; effects of the use of the government's income from oil production; regulations, taxes, and tort law; money claims and inflation; tax evasion; and behaviour under uncertainty. His (partly co-authored) textbooks in law-and-economics concentrate on analyses of the effects of various rules and regulations, with emphasis on environmental law including environmental taxes. He has been visiting scholar *i.a.* at Clare Hall in Cambridge, UK (Hambro Fellowship). In 1994-95 he headed an international research group in law-and-economics at the Center for Higher Study at the Norwegian Academy of Sciences and Letters. There, based on work in the group, he co-edited the book "Law and Economics of the Environment".

Nicolas de Sadeleer, dr., guest professor in 2004 and 2005 at the Department of Public and International Law, as one of 10 holders of a Marie Curie Chair of the European Union, and professor at Facultés universitaires Saint-Louis, Brussels.

Professor de Sadeleer is a leading European expert in international, EU and national environmental law, with several books and numerous publications in international law journals. His latest major works are "Environmental Principles: From political slogans to legal rules", Oxford University Press 2003, and (with Charles-Hubert Born) "Droit international et communautaire de la biodiversité", Dalloz, Paris 2004). As guest professor at the Law Faculty in Oslo he teaches extensively graduate and postgraduate student, provides supervision and courses to PhD students in all Nordic countries, and edits a book on the Precautionary principle in the Nordic countries (forthcoming). He will keep continued contact with the group after 2005.

Daniel Rogstad, professor dr. juris, University of Environmetal and Biodisciplines (property law, land use planning and building law)

Thor Falkanger, professor emeritus, dr. juris, Scandinavian Institute for Maritime Law (maritime law, property law, water resources law)

Ole Kristian Fauchald, associate professor, dr. juris, Department for Public and International Law (international law, international and national environmental law, trade law)

Professor Fauchald is responsible teacher for International Law at the faculty, and teaches also Environmental Law. His main work is "Environmental Taxes and Trade Discrimination", Kluwer Law International, 1998.

Gert-Fredrik Malt, assistant professor, Department for Private Law (legal theory, property law, housing law)

1 post doc. and 8 PhD students in the fields of national, EU and international energy law, property law, and environmental law.

Curriculum vitae

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Education:

1968: Graduate in law, University of Oslo

1972: Doctor's degree in Regional Planning and Economics (Docteur de Spécialité en Aménagement du Territoire et Économie Regionale), University of Paris II. Dissertation on French environmental law.

1998: Doctor juris, University of Oslo. Dissertation on responsibility for pollution and the Polluter Pays Principle in Norwegian Law.

Professional experience:

1969-70: Assistant judge, Northern Norway (Senja)

l972-82: Leading positions in the Ministry of the Environment and the Ministry of Finance, i.a.:

- 1973-76: Deputy Director, Department for Pollution Control, Ministry of the Environment,
- l976-77: Deputy Director, Economic Planning Department, Ministry of Finance,
- 1977-78: Director General, Norway's State Pollution Control Authority,
- 1978-82: Director General, Department for Urban and Regional Planning, Ministry of the Environment.

Head or member of a number of commissions and committees in the field of environmental and spatial planning policy and law.

1982-91: Secretary General of the Norwegian development NGO Redd Barna (Save the Children Norway), running development programs in 12 countries in Asia, Africa and Central America. Executive officer of the International Save the Children Alliance.

l986-87: State Secretary (Deputy Minister), Ministry for Development Cooperation, and personal advisor to Prime Minister Gro Harlem Brundtland in her work as chair of the World Commission on Environment and Development (the "Brundtland Commission").

l991-98: Associate Professor of Environmental Law, Faculty of Law, University of Oslo, doing teaching and research in Public Law and National and International Environmental Law

1998- Professor of Environmental Law, University of Oslo, with a broad field of interest within national and international environmental law, in particular

- Spatial and land use planning law.
- Pollution control, and liability for environmental damage; the "Polluter-Pays Principle".
- European environmental law.
- Legal protection of biodiversity, and access to genetic resources.
- Legal issues related to the implementation of the Climate Convention and the Kyoto Protocol
- Environmental impact assessment.
- Human rights and the environment.
- Law and Economics of the environment.

Responsible for the teaching of students in Environmental Law and International Environmental Law at the faculty. Supervisor of several PhD students in environmental law.

Consultancy work for Norway's Ministry of the Environment.

Advisor on environmental legislation to the Ministry of Environment and Tourism, Namibia.

1998-2003: Chair, National governmental commission on regional and land use planning legislation, see National commissions report (NOU) 2001:7 and 2003:14.

Research Policy:

1979-83: Chairman of the Norwegian Council for Societal Research.

1988-92: Chairman of the national Steering Committee for Environment and Development Research.

1992-96: Member and Vice-Chairman of the Board of the national Research Council of Norway.

1998- : Chairman of the Board, Centre for Development and the Environment, University of Oslo.

Publications:

Books

Bugge, H. C.: Norway. Norway's Environmental Law, in the International Encyclopedia of Law Series, Kluwer Law International (general editor prof. dr. R. Blanpain), The Hague 2004, 302 pp.

Bugge, H. C.: Forurensningsansvaret. Det økonomiske ansvaret for å forebygge, reparere og erstatte skade ved forurensning (Pollution responsibility. The economic responsibility to prevent, repair and compensate pollution damage), Oslo 1999, 740 pp.

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Reports

Ulfstein, G., H. C. Bugge, O. K. Fauchald and I.-J. Sand: Folkerettslige rammer for norsk miljøpolitikk (The International Legal Framework for Norway's Environmental Policy), Makt- og demokratiutredningens rapportserie nr. 18, 2000 (in particular chapters 3 EEA, 4 Climate and 8 Chemicals), 148 pp.

Bugge, H. C. and L. M. Løvold Ihle: Rettslige spørsmål ved innføring av et norsk kvotesystem for klimagasser (Legal issues related to the introduction of a Norwegian emission trading system for GHGs) report to the governmental Commission on emission trading (Kvoteutvalget), Oslo 1999, 150 pp.

Selected articles.

Bugge, H. C.: Norway's new system for emission allowance trading (answers to questionnaire) http://www.avosetta.org/ 2005.

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Bugge, H. C.: The Kyoto protocol and the International Energy Industry: The Norwegian Perspective, in P. Cameron and D. Zillman (eds.) Kyoto: from Principles to Practice, Kluwer Law, The Hague, London, New York, 2001, 39-48.

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Bugge, H.C.: Eldre miljøskader - er noen ansvarlige i dag? (Who is responsible for old pollution damage?), in Forhandlingene ved det 35. nordiske juristmøtet, Oslo 1999, 329-348.

Bugge, H.C.: Legal issues in Land Use and Nature Protection, in H. T. Anker og E. M. Basse (eds.): Land Use and Nature Protection. Emerging Legal Aspects, DJØF København 2000.

Bugge, H. C.: og M. W Tvedt: A legal look at Article 15 in the Convention on Biological Diversity: Access to genetic resources, in H. Svarstad og Shivcharn S. Dhillion (eds.): Responding to Bioprospecting, Spartacus forlag, Oslo 2000, 169-192.

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Bugge, H. C: Human rights and Resource Management - an overview, i Berge, E. og N. C. Stenseth (eds.): Law and the Governance of Renewable Resources, ICS Press, , Oakland, California 1998, 93-122.

Bugge, H. C.: General principles of international law and environmental protection - an overview, i Basse, E. M. (red.): Environmental Law from International to National Law, GadJura, København 1997, 53-72.

Bugge H. C.: The new Article on Environmental Protection in Norway's Constitution, i Caravito di Toritto, B. (ed.): Rapporto Mondiale sul Diritto dell'Ambiente/A World Survey of International Law, Guiffré Editore, Milano, 1996, 315-327.

Bugge, H.C.: The Principles of "Polluter-Pays" in Economics and Law, i Eide E. og R. van den Bergh (eds.): Law and Economics of the Environment, Juridisk Forlag, Oslo 1996, 53-90.

Bugge, H. C.: International Environmental Law – Status and Challenges, i Selvig, E. og H. C. Bugge (eds.): International Environmental Law, Juridisk forlag, Oslo 1995, 53-60.

Bugge, H. C.: The ethics of sustainable development – a challenge to the legal system, i Basse, E. M. (red.): Bæredygtighed – en retsteoretisk begrebsanalyse, GadJura, København 1995, 27-38.

Bugge, H. C.: Complementary sources to old constitutional texts: the case of Norway, i Smith, E. (ed.) Constitutional Justice under Old Constitutions, Kluwer Law International, Haag 1995, 293-310.

Bugge, H. C.: Miljørettens rammer i EU og EØS – en innføring, (The framework of environmental law in EU and EEA) in Basse, E. M. (red.) Miljørettens grundspørgsmål, GadJura, København 1994, 207-251.

Bugge, H. C.: Rio-konferansen i rettslig lys (The Rio Conference in a legal perspective), Lov og Rett 1993, 469-485.

Bugge, H. C.: "Bærekraftig utvikling" og andre aktuelle perspektiver i miljøretten ("Sustainable development" and other perspectives in environmetnal law), Lov og Rett 1993, 485-498.

Bugge, H. C.: How to assess and account for "effectiveness" in environmental and resource agreements among states. Review of the Current Scientific Discussion of Environmental Agreements: The Legal Approach, Fridtjof Nansen Institutts tidsskrift "International challenges" vol 3 no 2 1993, 47-60.

Books edited:

Selvig, E. og H. C. Bugge (eds.): International Environmental Law, Juridisk forlag, Oslo 1995.

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Education

1983: Cand. Jur. University of Oslo

2000: Dr. jur. University of Oslo

2004: Professor competence University of Oslo

Academic background

Leading expert in the field of petroleum law and energy law at the University of Oslo. Hammer´s doctoral thesis (Tilrettelegging av kraftmarkedet, Oslo 1999) concerned the organization and regulation of the Norwegian electricity market after liberalization. He has since then published a series of international articles dealing with aspects of Norwegian and European regulation of energy markets.

Formal positions

1983 - 1988: Senior Executive Officer, Ministry of Petroleum and Energy

1988 - 1990: Assistant Judge, Ytre Follo

1990 - 1995: Attorney of law, Norsk Hydro

1995 - 2003: Researcher, Scandinavian Institute of Maritime Law

2003 – 2004: Associate Professor, Scandinavian Institute of Maritime Law

2004: Professor, Scandinavian Institute of Maritime Law

Other academic positions

Since 2001: Leader of Department of Petroleum and Energy Law at the Institute of Maritime Law

Since 1996: Member of the Academic Advisory Group (AAG) associated with the International Bar Asssociation (IBA), Section on Energy and Natural Resources Law. The AAG has published several books in connection with seminars organized by the IBA. The latest book by the AAG (with a separate chapter by Hammer): Energy security. Managing Risk in a Dynamic Legal and Regulatory Environment. Oxford University Press, 2004.

Since 2004: Co-editor of the yearly European Energy Law Report (Antwerp-Oxford). The European Energy Law Report presents an overview of the most important legal developments in the field of EC and national energy law as discussed at the European Energy Law seminars, yearly held at Noordwijk in the Netherlands.

Selected bibliography

1 Ulf Hammer, Tilrettelegging av kraftmarkedet (Framing of the electricity market) 487 p., Cappelen, Oslo 1999.

2 Ulf Hammer, Kraftmarked og nettmonopol (Electricity market and network monopoly), in: Falkanger og Haagensen (red), Vassdrags- og energirett, p. 654-747, Universitetsforlaget, Oslo 2002.

3 Ulf Hammer, Stortingsbestemte industrikraftkontrakter: Forholdet til EØS-avtalens regler om statsstøtte (Electricity contracts decided by Parliament to power intensive industries: The relationship to the prohibition on state aids in the EEA agreement), in: Hammer, To EØS-rettslige studier fra kraftmarkedet, Iusef nr. 35, s. 1-28.

4 Ulf Hammer, The effect of the Electricity Directive on the Norwegian regulation of long term electricity exchange agreements between Norwegian producers and Continental utilities, in: Müller-Graff/Selvig (eds.), European Law in the German-Norwegian Context, p. 137-148, Berlin Verlag 2001.

5 Ulf Hammer, EC Secondary Legislation of Network Markets and Public Service: An Economic and Functional Approach, Journal of Network Industries 1 (2002), p. 39-75.

6 Ulf Hammer, Norway: Security of supply in liberalized energy sectors: a new role for regulation, in: Energy Security: Managing Risk in a Dynamic Legal and Regulatory Environment, p. 307-336, Oxford University Press 2004

7 Ulf Hammer, The Relationship between Capacity Markets and Spot Markets in the Gas Sector, in: Roggenkamp and Hammer (eds.), European Energy Law Report II, p. 229-241, Intersentia 2005.

8 Ulf Hammer, Forsvarlig utnyttelse av petroleumsforekomster (Rational exploitation of petroleum resources), MarIus nr. 75, Oslo (149 pages).

9 Ulf Hammer et al., Petroleum Law Compendium Book 1, Oslo 2003:

- Ulf Hammer, Introduction, p. 3-21.
- Ulf Hammer, System Operation, p. 47-59.
- Ulf Hammer, The Abandonment Phase, p. 171-181.
- Ulf Hammer, Liability, p. 183-193.

10 Lasse Hagen, Ulf Hammer, Thomas Michelet og Trond Stang, Petroleumsloven med kommentarer (Commentary to The Petroleum Act), Tano, Oslo 1989. 672 pages. Ulf Hammer is responsible for the comments on section 15 (royalty and area fee), sections 31 – 36 (registration and mortgaging of licences), sections 37 – 44 (liability for pollution

damage), section 47 (safety zones), section 60 (the vicarious liability) and section 67 (entry into force). Hammer´s contribution represents 224 pages.

11 Ulf Hammer, Kollisjon mellom undervannsrobot og fisketrål: Hvem er erstatningsansvarlig? (Collision between subsea remote operated vehicle and fishing trawl: Who is liable?) Marius nr 320. 39 pages.

12 Ulf Hammer, Kraftlevering i et kontraktsrettslig perspektiv: Hvem er ansvarlig overfor sluttbruker? (Delivery of electricity in the perspective of contract law: Who is responsible towards the end consumer?), TfF nr. 3 2002, p. 361-379.

Curriculum Vitae

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II. Education

01/09/2002 – 01/09/2006	**Dr. juris candidate** **The doctorate thesis concerns the relationship between international climate change law and international trade law with regard to the market-based mechanisms of the climate regime. The thesis specifically focuses on questions related to the use of public international law principles of interpretation and conflict resolution, as well as newer international legal principles - in particular the principle of sustainable development - to create coherence within the international legal system**. Funded by a scholarship from the Research Program SAMSTEMT, Research Council of Norway and the University of Oslo, Department of Public and International Law, Oslo, Norway
02/01 – 07/02	**Master of Laws in Environmental Law, *LL.M.*** *(Hons.)* Major: International Environmental Law University of Auckland, New Zealand
07/07/99	**Second Legal State Examination, *Assessorin*** Bavarian State Ministry of Justice, Munich, Germany
11/07/96	**First Legal State Examination** University of Passau, Germany
11/91 - 07/96	**Law School**, University of Passau, Germany
09/88 - 06/90	**High School,** Halle/ Saale, Germany
09/78 - 06/88	**Primary School**, Landsberg, Germany

III. Professional Experience

09/02-current	**University of Oslo**, Department of Public and International Law, Research Fellow and Reader (Public International Law, International Environmental Law)
02/00 – 01/01	**MagicDay AG** (Business Relationship Management), CEO
09/99 - 08/00	**JFAX.de GmbH** (Communication Service Provider) In-House Counsel and Authorized Signatory
06/97 - 09/99	**Law Firm Schwarzfischer & Şen**, Regensburg, Germany, Attorney
01/99 – 04/99	**General Consulate of the Federal Republic of Germany,** Post-Graduate Legal Service, Boston, USA
04/97 - 07/99	**Regional Court of Appeal,** Post-Graduate Legal Service, Passau and Regensburg, Germany

IV. Special Skills and Expertise

Administrative Secretary	*Yearbook of International Environmental Law* Oxford University Press, since 09/2002 **Organisation and administrative survey of the 'Year-in-Review' section of the Yearbook, management and text-edition of contributions, contact management with ca. 180 contributors (environmental lawyers and practitioners) worldwide**
Conference Organisation & Management	'*Urban Sustainability*', Auckland, September 2001 '*National Implementation of the Kyoto Protocol*', Oslo, March 2003

V. Internships and Time Abroad

02-04 2005	Visiting Research Fellow at the New Zealand Center for Environmental Law (NZCEL), University of Auckland, NZ
01-04 2004	Visiting Research Fellow at the Center for International Environmental Law (CIEL), Washington, D.C., USA
06/93 - 07/96	Assistant to Prof. Dr. Herbert Bethge, University of Passau, Germany

VI. Languages

- English, Norwegian, Swedish, Danish (conversational level)
- Russian, Spanish, French (general knowledge)

VII. Publications

- *Year in Review, Country Report: Germany*, 2003 Yearbook of International Environmental Law (YbIEL) Vol. 14, 2005, 462-467 and 2004 YbIEL Vol. 15 (forthcoming in 2006),
- *From Climate Change to Sustainability; An Essay on Law, Sustainable Development and Ethical Choices*, Worldviews, 2005, Vol. 9 Nr. 1, 112-137,

- Book Review: Ali Sadat-Akhavi *Methods of Resolving Conflicts Between Treaties* and Rüdiger Wolfrum/Nele Matz, *Conflicts in International Environmental Law*, 2003, European Journal of International Law (EJIL) Vol. 15 (2004) Nr.5, 1067-1071,
- *Conflict and Convergence in International Climate and Trade Law: The Role of the Principle of Sustainable Development*, European Society of International Law (ESIL) official website: http://www.esil-sedi.org/english/papers.html,
- *The Protection of Indigenous Forests on Private Land and the Role of Local Government*, NZJEL, Vol. 7, 2003, 169-202,
- *Environmental Mediation and the RMA: Resolving Resource Management Problems or Compromising the Environment?,* Auckland University Law Review (AULR), (2002) vol.9, No 3, 912-949,
- *The Precautionary Principle and Genetic Engineering in New Zealand,* New Zealand Journal of Environmental Law (NZJEL), Vol. 6, 2002*,* at 43-96
- Environmental Mediation in Germany, Planning Quarterly, New Zealand, Number 143, December 2001, at 27 – 28

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