

# **Adapting to climate change through land use planning and nature management: Obligations, rights, and risks.**

## **1. Relevance**

The project seeks to strengthen national legal competence related to policy and measures to adapt to effects of climate change. It will address some of the most relevant legal issues and problems which the Norwegian society will face in meeting this challenge. An important objective of the NORKLIMA programme is to build strong national research groups and cooperation between Norwegian institutions. In the actual invitation and call for project proposals there is explicit reference to “legal questions as regards consequences of and adaptation to climate change”, and “responsibility and rights in the short and long term” is mentioned as relevant issues. The project will cover parts of this broad topic. It will be carried out by the Natural Resources Law Group at the Faculty of Law, University of Oslo, in cooperation with other research groups in Norway and internationally.

## **2. Substantive part**

### **2.1 Background and status of knowledge.**

#### *2.1.1 General background*

Ever since the problems of climate change appeared on the international agenda in the late 1980s, it has been recognized that the challenge is two-fold: “mitigation” and “adaptation”. It is now beyond doubt that serious effects of climate change must be expected regardless of international and national mitigation efforts. Adaptive measures will be necessary, although to a varying degree in different parts of the world and in different countries. This challenge raises a number of fundamental legal issues related to international responsibility for prevention and restoration measures, and the obligations of states and the international community towards people that are the hardest hit by these effects.

This project proposal does not address these global issues directly but it has an international dimension. Many countries are faced with the same type of challenges and have to develop their legal framework and institutions to better cope with climate change. It is likely that some of the analyses and findings in the project are relevant for adaptation work elsewhere, including in developing countries.

The concept of “adaptation” to climate change covers many different types of challenges and tasks. Some effects of climate change may be positive. In this project, however, we are concerned with certain expected *negative* effects such as increased risks of floods, landslides, sea level rise, and changes in natural conditions that may disturb and threaten biodiversity and other natural values. Important parts of the overall challenge are to take measures to *prevent* such negative effects, and to *counteract or restore* the situation when the effects have occurred.

Law is crucial for the efficiency and effectiveness of prevention and restoration measures as it defines the obligations and rights of the various actors and stakeholders and thus indirectly allocates risks and costs. It essentially creates the basis for both distributive and corrective justice – or injustice – in the field. If the law is unclear, or seen as unjust by key actors, adaptation measures become difficult.

It should be underlined that many of the problems we are faced with here are not really new. In Norway there have always been landslides, floods, hurricanes, and spring tides. However, it is expected that such natural events will occur more often and be more forceful and destructive in the extreme cases. In many ways, society’s vulnerability has also increased. Also in a legal perspective many of the issues and problems are well known. There are several relevant laws and court cases in the field which the project will explore. However, the prospects of increasing risks

of extreme incidents and damage bring the legal issues to the fore. Clarifications and critical analyses are required in order to ensure that the system is both as effective and fair as possible.

### 2.1.2 *The project seen as part of four broad legal topics.*

The legal issue of prevention and restoration of damage due to climate change, and related research, may be defined in a rather narrow sense or as very broad and fundamental topics. This project will focus on more limited questions related to Norway's legislation to prevent negative effects through land use planning and nature management. However, several broad legal themes will serve as backdrop and inspiration for the research.

One such broad theme is the objective and principle of *sustainable development* in law. At the general level, policy and law for sustainable development will serve both to prevent climate change and to reduce and counteract the negative effects of it. Much research has gone into the issue of developing sustainable development as a principle of international and national law (Bugge and Voigt). Adequate adaptation to climate change is also a necessary part of a policy of sustainability, and it may well become an important part of a future agenda of sustainable development law.

Within sustainable development the *protection of biodiversity and nature's ecological services* is particularly important in relation to climate change adaptation. Here we are faced with mutually strengthening trends. On the one hand, global biodiversity is threatened by climate change. On the other hand, disturbance and loss in biodiversity is likely to weaken such ecological services as may counteract negative climate effects. Typically, in many places, also in Norway, is the protection of forests essential to prevent such effects of extreme rainfall as floods and landslides. Prevention and restoration thus become part of the broader agenda of environmental protection law.

One rather new approach is expressed through the concept of *resilience*, defined as the capacity of a social-ecological system both to withstand perturbations from such events as climate change and economic shocks and to rebuild and renew itself afterwards. The resilience lens provides a new framework for analyzing social-ecological systems in a changing world facing many uncertainties and challenges.<sup>1</sup> Here also the protection of life support systems is one of the core challenges. A fundamental issue is how the legal order and specific laws work when measured against criteria of resilience.

A fourth broad area of law that frames the issue and receives increasing attention is named *disaster law*. In the aftermath of the hurricane Katrina in 2003, American academic lawyers in particular have focussed on the complex legal issues that emerged as a consequence of the disaster (Farber). These relate to such topics as responsibility for prevention, preparedness, emergency actions, the rights and obligations of victims, issues of compensation, insurance, etc. One aspect here is the apparent social injustice inherent in part of the legal and political system related to disasters, which came into the open in the Katrina disaster. This raises the question of *distributional effects* of rules in this field of law.

### 2.1.3 *The Norwegian background.*

Direct and indirect effects of actual climate change are already present in Norway, and are expected to influence land use in Norway in many ways in the future. The main effects are expected to be increased temperature with changes in patterns of vegetation and fauna, increased precipitation in parts of the country, more frequent instances of extreme weather conditions with such effects as floods, landslides, erosion, storms and dry periods, and increase in sea level. The effects are likely to differ considerably between the different parts of the country.<sup>2</sup> Many cities and scattered settlements are situated by the sea, and a rise in sea level will affect ports and urban centres and the further urban development, as well as the possibility to build close to the shore in

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<sup>1</sup> Source: Home page of Stockholm Resilience Centre.

<sup>2</sup> Klimatilpasning i Norge. Regjeringens arbeid med tilpasning til klimaendringene.

rural areas. Similarly, many areas in Norway are exposed to risk of floods and landslides. Development and construction may have to be restricted or prohibited in areas that until now have been regarded as suitable. New infrastructure may have to be located differently. Increased risks may threaten existing built-up areas, and even make it necessary to remove or close down industrial activities or housing areas.

A somewhat different and even more complicated challenge is the consequences for fauna and flora, and the ecosystem in general, due to higher temperatures. In valuable landscapes and protected areas important natural values may be at risk.

The Norwegian government has only recently started a systematic work with adaptation issues.<sup>3</sup> However, during the last couple of years, several important aspects have been studied and reported on by public authorities and organizations. In these reports also issues of responsibility for prevention and restoration through land use planning and nature management have been dealt with in brief. Recent examples are studies on effects of climate change and adaptation measures made by the Directorate for Nature Management<sup>4</sup>, , and Norwegian Public Roads Administration<sup>5</sup>, Norwegian Pollution Control Authority<sup>6</sup>, the Norwegian Water Resources and Energy Directorate<sup>7</sup> (which has recently been given national responsibility for assessing risks of floods and landslides), the Directorate for Civil Protection and Emergency Planning<sup>8</sup>, and the Norwegian Association of Local and regional Authorities (KS)<sup>9</sup>. Only to a limited extent do these reports look into legal issues, but they illustrate, inter alia, a rather fragmented pattern of responsibility for prevention and restoration.

The 1985 *Planning and Building Act* is the most important instrument for land use planning and nature management. The planning system makes it possible for the authorities to ensure, in general, a land use policy which takes future climate effects into account. It gives the state and local authorities several important tools to this effect. To some extent, the act lays down an obligation for the planning authorities to take preventive measures such as prohibiting building and development in risk areas. A new Planning and Building Act was adopted by the Parliament, Stortinget, in June 2008. It introduces some new instruments for the planning authorities to prevent new developments in risky areas. In addition it establishes a new explicit obligation for the municipalities to carry out general assessments of risks and vulnerabilities as part of municipal planning, in addition to the normal assessment of environmental effects of plans and projects.

However, a number of other *sector laws* also provide the authorities with relevant tools, which supplement the land use planning system pursuant to the Planning and Building Act. Important examples are the 1917 Watercourse Regulation (Hydropower) Act, the 2000 Water Resources Act, the 1995 Agricultural Land Act, the 2005 Forestry Act, the 1970 Nature Conservation Act/ the Act on Nature Diversity (under preparation), the 1981 Pollution Control Act, the 1963 Road Act, and the new Harbour Act<sup>10</sup>. To mention just one example, the Water Resources Act regulates all types of construction works in rivers and lakes through a permit system, it lays down obligations for private parties in case of risks and emergencies, and it requires that natural vegetation belts are kept along all water courses.

A general conclusion which may be drawn is that Norway has certain legal tools to prevent such negative climate change effects as damage from floods, landslides, and sea level rise. But the allocation of responsibility between the various authorities at state and municipal level is not

<sup>3</sup> Op.cit.

<sup>4</sup> Direktoratet for naturforvaltning: "Klimaendringer – tilpasninger og tiltak i naturforvaltningen", 2007.

<sup>5</sup> Statens vegvesen: "Virkninger av klimaendringer for transportsektoren", Underlagsrapport til Nasjonal transportplan 2010-2019, 2007.

<sup>6</sup> Statens forurensningstilsyn: SFT veileder 2317/2007: "Klimatilpasninger – Veiledning om mulige tiltak i avløpsanlegg".

<sup>7</sup> Norges vassdrags- og energidirektorat: "Planlegging og utbygging i fareområder langs vassdrag".

<sup>8</sup> Direktoratet for samfunnssikkerhet og beredskap: "Samfunnssikkerhet i arealplanlegging. Kartlegging av risiko og sårbarhet", 2008.

<sup>9</sup> Vestlandsforskning *et al.*: "Naturskade i kommunene - Sluttrapport fra prosjekt for KS", 2008.

<sup>10</sup> A proposed new harbour Act (Ot. prp. nr. 75 (2007-2008)) is presently under discussion in the Parliament.

entirely clear. Neither is the division of responsibility between the public authorities on the one side and the landowner and other private parties on the other, and questions of obligations and rights of the potential or actual victim of accidents. There has been little legal research about obligations and rights related to prevention and restoration of damage due to natural accidents in Norway.

The topic has to be seen also in the context of national rules on *compensation for damage* due to natural accidents and disasters. Norway has a system of state compensation for prevention measures and damage caused by natural disasters, pursuant to a particular Act on prevention of and compensation for natural damage.<sup>11</sup> This act is presently under revision partly because of the expected new challenges due to climate change.

Complementary to this there is a system of *mandatory insurance of property* against natural accidents, established by a special act.<sup>12</sup> Norwegian insurance companies have established a special pool for this type of insurance, Norsk naturskadepool. The Norwegian insurance industry, as the international insurance business in general, is becoming seriously concerned by the prospects of a rapidly increasing level of damage due to the combined effects of climate change and increased vulnerability to such changes.<sup>13</sup>

#### 2.1.4 A brief international outlook.

The issues of adaptation have been taken up in policy and research in many other countries. It is a common concern to critically examine the relevant legal rules and their application and the need to clarify rights and obligations in order to improve the system. The project will provide an opportunity to follow the international discussions and development in the field.

*Finland* carried out an analysis of the issue and adopted Finland's National Adaptation Strategy in 2006 as part of the National Energy and Climate Strategy. It presents in detail the anticipated impacts of climate change in different sectors and measures to be taken until 2080. Among the recent legal developments in the country, a new act on compulsory housing insurance is seen as a response to the challenges of climate change. In *Sweden* a very thorough analysis of the issue was carried out in a 2007 public report with several legal proposals.<sup>14</sup> Among many other examples from Europe, *France* adopted a national strategy for adaptation to climate change in 2007.<sup>15</sup> It recommends (Recommendation 17) to carry out an analysis of the relevant legal texts and their application. *Germany* also has adaptation to climate change high on the agenda.<sup>16</sup>

The Commission of the *European Communities* issued in 2007 a Green Paper entitled "Adapting to climate change in Europe – options for EU action"<sup>17</sup> which is now under discussion. It recommends adaptation strategies at regional and local levels within member states, with new requirements for land use planning as an important element. It also discusses how adaptation measures can be integrated into existing and future European legislation and policy in the most important policy areas, including water resources, the marine environment, ecosystems and biodiversity, and other natural resources. A draft *directive on the assessment and management of floods*<sup>18</sup> is expected to be adopted shortly. It requires the member states to assess risks of floods along rivers and low-lying coastal areas, and to adopt flood risk maps and flood risk management plans. This directive is EEA relevant. It will form a basis for Norwegian legislation and policy in the field and will be subject to analysis in the project.

Important legal discussions and developments also take place in many countries outside Europe, not least in USA (see for example Farber, Norton, and Norton and Rodriguez), and in

<sup>11</sup> Lov om sikring mot og erstatning for naturskader of 25 March, 1994 no. 7.

<sup>12</sup> Lov om naturskadeforsikring of 16 June 1989 no. 70.

<sup>13</sup> See presentations at a recently held conference in Oslo on <http://www.climateinsure.no/presentations.htm>

<sup>14</sup> SOU 2007:60 "Sverige inför klimatförändringen – hot och möjligheter".

<sup>15</sup> Stratégie nationale d'adaptation au changement climatique, La documentation Française, 2007

<sup>16</sup> See Umweltbundesamt: "Klimafolgen und Anpassung an den Klimawandel in Deutschland – Kenntnisstand und Handlungsnotwendigkeiten, Hintergrundpapier, Sept. 2005, and [www.umweltbundesamt.de](http://www.umweltbundesamt.de)

<sup>17</sup> COM (2007) 354 final.

<sup>18</sup> COM (2006) 15 final.

Australia (where two recent court cases on restriction of land use due to climate change have created much discussion). Increasingly, it is a topic of international meetings and conferences.<sup>19</sup>

## 2.2. Objective

The objective of the project is described in the application form.

## 2.3. Problems, hypotheses and methods.

### 2.3.1 Problems and hypotheses.

The project will address the following two general questions which are interlinked:

*What are the legal obligations and possibilities for various public authorities in Norway, through land use planning and nature management, to take or to order necessary measures to prevent and restore damage caused by natural phenomena which are due to extreme weather and climate change, and are the rules adequate to effectively meet the challenges?*

*What are the legal rights and obligations of landowners and other holders of rights and potential victims in areas which are subject to new risks and possibly preventive restrictions, and are the rules adequate and generally fair?*

Within these topics the intention is to look fully or partly into the following issues:

- a) The legal obligation for municipalities, various state authorities and private developers to carry out assessments of risks and vulnerability, and environmental impacts, related to plans and projects pursuant to the 2008 Planning and Building Act, in particular its chapter 4, and other relevant acts. Issues here will be what situations and conditions that require these types of assessments, the main procedural rules, and requirements of content. The EC directive on floods and its interpretation and application will be relevant here.
- b) The legal situation (rights and opportunities) of land-owners and other rights holders of land that is classified as risk area and possibly subject to restrictions, and of potential victims.
- c) The legal obligation and possibility for municipal and state planning authorities to prevent new development and building in risk areas through land use planning, pursuant to the 2008 Planning and Building Act and other acts. This is particularly relevant along parts of the Norwegian coast, along parts of important rivers, and in steep hilly areas.
- d) The legal obligation and possibility for municipal and state planning and building authorities to order removal of settlements and buildings and other measures and actions by private actors in order to avoid damage.
- e) The legal possibility of nature protection authorities to carry out measures to counteract damaging effects on valuable landscapes and biotopes due to climate change, and/or to order the land-owner to carry out such measures.
- f) The legal obligation and possibility for various sector authorities to regulate the use of land and natural resources and other activities in order to prevent or repair negative effects of extreme natural conditions and climate change. Relevant sector authorities and legislation are, among others, the water management authorities, the agriculture and forestry authorities, and the harbour

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<sup>19</sup> See as an example [http://www.unece.org/env/water/meetings/water\\_climate\\_workshop.htm](http://www.unece.org/env/water/meetings/water_climate_workshop.htm)

authorities. On the basis of such studies, an evaluation may be made of whether the division of rights and responsibilities are clear, and the necessary cross-sector coordination is secured.

g) Based on the findings an assessment will be made of whether the rules are adequate and well coordinated and whether they treat landowners and other stakeholders in a generally fair way.

Although these issues to some extent may seem straightforward, they also raise *theoretical and more fundamental questions* of principle as regards the distribution of obligations and rights in this field, and final allocation of costs. As an illustration professor Daniel Farber at the University of Berkeley takes up these issues in a recent paper (Farber). He considers four possible allocation principles: "Adaptation Beneficiaries Pay," "Emitters Pay," "Public Pays," and "Climate-Change Winners Pay." Other principles and combination of principles could also be discussed. The project will seek to include this type of theoretical discussions as a basis for the analysis of existing rules and how they may be improved. Criteria of both economic efficiency and fairness are relevant in this discussion. To some extent we are here faced with similar questions as with allocation of costs of pollution abatement, and the discussion of Polluter Pays Principle (Bugge 1996, Bugge 2008).

A promising focal point for integrating theoretical and practical/dogmatic legal perspectives seems to be principles of nuisance law (liability for breach of threshold levels of harm) in general and the *doctrine of public nuisance* in particular. US experience and serious legal debate show that the state might have nuisance-based rights on behalf of its citizens, e.g. to recover expenditures for reducing and restoring harm due to proven weather deteriorations (see e.g. Zasloff 2008). Thus, an interesting research question is whether and how nuisance principles are or should be of practical importance in Europe and Norway.

The project may to some extent take up legal issues related to *insurance* against climate related damage. There are several possible relations between insurance and the rules on responsibilities. For example, in Norway there is a certain division of responsibility for damage between the private insurance market and compensation from the state nature damage fund. Or, if building in a risk area has been accepted by the planning authority, a question is whether the insurance company that has insured the house may claim recourse against that authority.

The project will not go deeply into issues of *damage compensation* to landowners and other stakeholders from the various possible sources. This topic is already partly covered by a PhD project in law at the Norwegian University of Life Sciences which cooperates closely with the Natural Resources Law Group (see below). The core issue of that project is compensation for flood damage, including damage caused by sewers, and the various types of liability and mechanisms of compensation such as insurance and public funds. That project will be supplemental to our project.

### 2.3.2 Method

The main part of the study will be an analysis of the rules *de lege lata*. The study will be based on analysis of relevant texts, and how the texts are interpreted in preparatory works, court cases, legal theory, and in practice. The relevant sources are, however, scarce in this field. Hopefully, the project will also be able to identify strengths and weaknesses of the present rules and suggest possible improvements. The aim is thus to include discussions *de lege ferenda*. In *de lege ferenda* discussions, several theoretical approaches and methods may be applied. One approach may be to analyse various possibilities in light of economic efficiency theories and apply methods of *law-and-economics*, as well as the above-mentioned doctrine of public nuisance.

Some *comparative studies* will be considered. It is foreseen that the project will look into the legal situation and solutions in some other countries, such as other European countries which have systems similar to Norway for spatial planning and nature management. As mentioned, the European policy and legislation in the field, such as the new directive on prevention of floods and its implication for Norway, is a topic to be looked into. The ongoing discussions in USA and Australia are also relevant.

Also, *contact with other disciplines* will be useful. In particular, cooperation is foreseen with researchers in sociology, social geography and planning theory. This may serve to clarify how the rules are applied and deepen the understanding of how the system works and possible problems of implementation. For this purpose the project will be linked to the interdisciplinary project “Responding to Climate Change: The Potential of and Limits to Adaptation in Norway (PLAN)” which is funded by NORKLIMA. Presumably, this will be mutually useful. In addition the Natural Resources Law Group takes part in a new interdisciplinary programme at the University of Oslo, “Miljøendringer og bærekraftig energi” (Environmental change and sustainable energy). This will offer opportunities to link the project to related research in other disciplines.

The project will seek information about *how the rules are applied*. Cooperation is foreseen with relevant authorities. In particular, the work of Vestlandsforskning in cooperation with some municipalities and other authorities through the project “Community Adaptation and Vulnerability in Norway” (NORADAPT) is of interest, and mutual information and cooperation with this project is foreseen.

#### **2.4. Project plan**

The core element of the project will be a PhD thesis covering the main parts of the described topics. The PhD student will be recruited as soon as possible and is expected to start early autumn 2009. An initial work-shop will be held in June 2009 with the purpose of deepening the understanding of the topic and methodological challenges. This work-shop will be the first opportunity to establish contact with relevant public authorities in Norway as well as with researchers in the other Nordic countries.

Budget is also allocated for research assistant work (one master thesis per year, on average), and more limited studies carried out by members of the research group.

At least once a year a meeting will be organized with Norwegian authorities and other researchers for mutual information and discussion.

The field creates much interest and seems to be rapidly developing in many countries. It is likely that several international seminars and conferences on relevant topics will take place in the coming years, both in our part of the world and in developing countries. It is foreseen that the PhD student and other members of the Natural Resources Law Group will attend such events throughout the project period. An international gathering is planned to be organized by the project twice during the project period, at mid-term and towards the end, to present project results.

#### **2.5. Budget**

The total budget for the 4 year period is NOK 4,442 mill. (For details, see the application form.)

#### **2.6. Project management, organisation, and cooperation.**

The project will be carried out by the Natural Resources Law Group at the Faculty of Law, University of Oslo. This is an interdisciplinary research group comprising 7 professors, 7 post doc. and PhD students, and researchers and research assistants, in the fields of property law, environmental law (including land use law), energy law, and law-and-economics. Its objective is to develop new research and research methods concerning management of natural resources and the environment, across traditional legal disciplines.

The group is chaired by professor in environmental law dr. juris Hans Chr. Bugge (CV attached), who will be project leader. Other professors in the group are:

- professor dr. juris Kirsti Strøm Bull (property law, indigenous people’s law)
- professor dr. oecon Erling Eide (law-and-economics)
- professor dr. juris Ulf Hammer (energy law)
- professor dr. juris Ole Kristian Fauchald (international law, environmental law)
- associate professor dr. juris Endre Stavang (property law, law-and-economics)
- professor em. dr. juris Thor Falkanger (property law, water resources law, maritime law).

On issues of insurance law, support will be provided by professor Hans Jacob Bull (insurance law and maritime law).

The group runs several projects which are partly funded by Norway's Research Council and with topics that are closely connected to the present project proposal:

- “*Meeting the climate challenge: New legal instruments and issues in national and international energy and climate law*” studies new instruments for mitigating climate change, namely the flexible mechanisms of the Kyoto Protocol, in particular the CDM, and the various instruments to promote renewable energy and energy efficiency in European law. This will link the project to the broader field of international and European climate law.
- “*Rights to uncultivated land and social change*” looks into rights, organisation and regulation in uncultivated land in Norway in the face of economic changes and environmental problems in rural areas. A main issue here is the fragmented system of private and public law rules which makes a coherent land use planning and management difficult. This will link the project to general research in Norwegian land use planning law.
- A new project, “*Consistency in Environmental Law*”, will analyze how environmental interests - and namely ecological services - are valued in *ex ante* and *ex post* decisions across sector legislation and levels of authority, and the relationship between European and Norwegian environmental law in selected areas. This will provide useful background knowledge.

The research group is administered by Scandinavian Institute in Maritime Law, Faculty of Law.

#### *National cooperation*

One partner in the project will be the legal unity at Department of Landscape Architecture and Spatial Planning at the Norwegian University of Life Sciences. The legal researchers there work already closely with the Natural Resources Law Group.

As mentioned, the project will also be linked to the PLAN project, and in particular its sub project 4 “Adaptation and Mitigation in Urban Planning and Waterfront Development”, and it will develop cooperation with Vestlandsforskning and the NORADAPT project.

#### *International cooperation*

Through its many projects the Natural Resources Law Group has developed a considerable network of international contacts and partners which will be useful for the project.

At the Nordic level, the new *Nordic Environmental Law, Governance and Science Network* will be central. Funded by NordForsk this builds on and expands the former Nordic Environmental Law Network by including researchers in the field of political science, economics, and natural sciences. Altogether 10 institutions are formal partners, among these are most of the Law faculties in the Nordic countries. The *Stockholm Resilience Centre* also participates in this network.

In the context of other projects the Natural Resources Law Group has cooperation agreements with environmental law researchers at the University of Helsinki and the University of Juensuu, Finland, Stockholm University, Sweden, University of Bremen, Germany, the Catholic University of Leuven, Belgium, Pace University Law School, New York, and University of Arizona, USA and the University of Calgary, and the Institute for International Sustainable Development Law, Canada. We will benefit from these contacts in the project.

For this project in particular, environmental law professors at the universities of Uppsala (Jan Darpö) and Århus (Ellen Margethe Basse and Birgitte Egelund Olsen), and the University of Sydney, Australia (Ben Boer) have expressed a strong interest in participating. Good relations have also been established with two leading American scholars in the field, professor Daniel Farber at Boalt Hall, Berkeley (see Farber), and professor John R. Nolon at Land Use Law Center, Pace University School of Law (see Nolon and Nolon and Rodriguez), and with Dr Paul Babie., School of Law, The University of Adelaide, Australia. A central German researcher in the field, professor Wolfgang Köck, Helmholtz-Zentrum für Umweltforschung, Leipzig (see Köck) will be the project's contact person in Germany.

### 3. Strategy.

#### 3.1. Strategic basis

The project fits well into the strategy of the University of Oslo, the Faculty of Law and the Natural Resources Law Group.

The *University of Oslo* has recently decided to develop several interdisciplinary research programmes with participants from several faculties. One of these is “Environmental change and sustainable energy” in which the Natural Resources Law Group take actively part.

The *Faculty of Law* has defined “Law and the Environment” as one of four topics of priority for its research activity. This is a result of the prioritizing process carried out at the University of Oslo over the last couple of years. Another important objective is to strengthen international cooperation and networks in research. The project will contribute to this.

As far as the *Natural Resources Law Group* is concerned, the project is well related to its strategy and other ongoing projects and will be a good supplement to them.

#### 3.2. Societal relevance

With the risk of more extreme weather and other consequences of climate change, there is general agreement that Norway has to develop and improve its adaptation capacity. As several of the abovementioned public reports indicate, the legal framework for prevention and restoration of damage due to extreme natural conditions is not quite clear and consistent. The aim of the project is to clarify the content of the rules, and identify weaknesses to the extent possible. In particular, it will clarify the obligations of the relevant private and public actors to take precautionary and preventive measures. It will also serve to clarify the issue of compensation for damage. In short, it will - if successful - contribute to a better and more robust system for prevention and restoration, by clarifying obligations, rights, risks, and allocation of costs.

#### 3.3. Environmental perspectives, etc.

The project deals with effects of climate change. Its aim is to reduce the risk of serious damage to both property and the environment. Hence, it is presumed that it will have a positive environmental effect. However, a more precise assessment of this will depend on the outcome of the research. The project does not raise particular *ethical* issues or issues that affect *equality* between the sexes.

### 4. Communication with users and presentation of results

#### 4.1 Communication with user groups

There are several relevant user groups, such as the responsible ministries, other responsible state authorities such as the directorates for social security, water resources management, and nature management, and the planning authorities at the state, county and municipal levels. Important national organizations are also very interested and active in the field, such as Norwegian Association of Local and regional Authorities (KS) and the Confederation of Norwegian Enterprise (NHO). The project will also be of interest to organisations of landowners, environmental groups, etc. The project will establish contact with the relevant authorities and organisations, and we foresee to organize a gathering of relevant stakeholders once a year. Certain groups within the Norwegian society are more vulnerable and may be more affected than others. In the communication a special attention will be given to such groups.

The project will organize at least one major seminar each year with participants from relevant authorities, organisations and research institutions. Here, results from the project will be presented and discussed.

#### 4.2. Communication plan

It is a goal to publish articles from the project in national and international law journals with referees. The main outcome of the project will be the PhD thesis, which most likely will be published as a book (monograph). During the project period, it is expected that the PhD student will publish several articles, as a minimum as required by the PhD programme. Furthermore, all the master theses will be published. Other members of the group are expected to present articles in international peer reviewed journals. Presentations at national and international seminars may also result in articles, and will in any case be presented at the website of the National Resources Law Group. At least one book based on such papers and master theses will be edited. The topic is also well suited for articles aimed at the public at large.

The following is a tentative communication plan (Tatt inn i selve søknaden):

- 2009: Articles aimed at the public at large.
- 2010: National seminar, with possible publication of papers. Master thesis published. Articles aimed at the public.
- 2011: National seminar with possible publication of papers. International seminar, with possible editing of a book and/or 1-2 peer reviewed articles in national and/or international journals. Master thesis published. Articles aimed at the public.
- 2012: National seminar. 1-2 peer reviewed articles in national and/or international journals. Master thesis published. Articles aimed at the public.
- 2013: Publication of PhD thesis. Domestic and international seminar to present and discuss the main findings and related topics, with possible editing of a book. Peer reviewed articles. Master thesis published.

> 2012: National seminar with possible publication of papers. 1-2 peer reviewed articles in national and/or international journals. Master thesis published. Articles aimed at the public.

(4) Forutsetter seminar i første halvår.

> 2013: Publication of PhD thesis. Domestic and international seminar  
> to present and discuss the main findings and related topics, with  
> possible editing of a book. Peer reviewed articles. Master thesis published.

(5) Se (3).

### **Selected bibliography**

#### *Norwegian public reports*

- CICERO report 2007:3: "Utviklingen av naturulykker som følge av klimaendringer" (Development of natural accidents due to climate change).
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