

Planning for Climate Change: The Adaptation Challenge  
A Nordic Perspective  
Conference Report



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**Nordic co-operation**

takes place among the countries of Denmark, Finland, Iceland, Norway and Sweden, as well as the autonomous territories of the Faroe Islands, Greenland and Åland.

**The Nordic Council**

is a forum for co-operation between the Nordic parliaments and governments. The Council consists of 87 parliamentarians from the Nordic countries. The Nordic Council takes policy initiatives and monitors Nordic co-operation. Founded in 1952.

**The Nordic Council of Ministers**

is a forum of co-operation between the Nordic governments. The Nordic Council of Ministers implements Nordic co-operation. The prime ministers have the overall responsibility. Its activities are co-ordinated by the Nordic ministers for co-operation, the Nordic Committee for co-operation and portfolio ministers. Founded in 1971.

Stockholm, Sweden  
2007

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# Preface

On September 11, 2007, a group of 70 practitioners, policymakers, researchers and other actors met in Helsinki to discuss one of the most challenging and important issues on the current global agenda – climate change, and particularly adaptation to the effects of a changing climate. This conference, entitled, *Planning for Climate Change: The Adaptation Challenge – A Nordic Perspective*, organised by the Nordic Council of Ministers and Nordregio, Nordic Centre for Spatial Development, examined the challenges and opportunities inherent in climate change adaptation in the Nordic Countries and how planning and political processes can deal with these imperatives.

While climate change mitigation, in the form of reduction of greenhouse gas emissions into the atmosphere, as pledged to under the Kyoto Protocol of the United Nations Framework Convention on Climate Change, has long been high on policy agendas of the Nordic countries, adaptation measures are now entering the public discourse. In November 2006, the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change (NWP) was launched as the finalisation of a five-year programme by the Subsidiary Body for Scientific and Technological Advice (SBSTA). The programme specifically aims to assist countries, especially the lesser developed countries, to understand and assess the impacts and vulnerability aspects of climate change and to help them make more informed decisions on practical adaptation measures. The NWP effectively put climate change adaptation measures on the local and national agendas across the globe. Thus all levels of governance have recently plunged into courses of action regarding adaptation. The EU Green Paper, *Adapting to climate change in Europe – options for EU action*, released in June 2007<sup>1</sup>, reiterated the need for adaptation as an “...unavoidable and indispensable complement to mitigation action,” rather than as an alternative to reducing greenhouse gas emissions.

At the same time, the extreme weather events that have plagued Europe in the last few years (ie., the scorching temperatures in the summer of 2004 in Southern Europe, or the winter storms of 2005 in Northern Europe) have served to showcase Europe’s particular vulnerability to climatic changes and to intensify the focus on risk and adaptation measures. The Stern review from 2006 articulated the need for adaptation measures to reduce the socio-economic costs of a global rise in temperature. There is, therefore, an internationally recognised need to “invent our way out of” the negative effects of a changing climate.

While climate change mitigation, in terms of reducing the total amount of greenhouse gases released into the atmosphere, is a global priority implemented at the national level, adaptation to climate change is a very local and regional priority, with the corresponding competencies and responsibilities lying at these levels. Climate change mitigation concerns economic and technical processes as well as individual lifestyle changes, but climate change adaptation is also a social adaptation that involves planning processes.

Actions towards climate change adaptation continue to be a high international priority. Some of the main questions regarding climate adaptation will be discussed in December at the COP-13 in Bali, more specifically within the Subsidiary Body for Scientific and Technological Advice (SBSTA).<sup>2</sup> In their draft synthesis report of the information and views on adaptation planning and practices as submitted by the Parties and relevant organisations of the UNFCCC,

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<sup>1</sup> COM (2007) 354 final. *Adapting to Climate Change in Europe – Options for EU Action* (2007). Green Paper from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions. Brussels, 29.6.2007

<sup>2</sup> Subsidiary Body for Scientific and Technological Advice (2007). *Synthesis of information and views on adaptation planning and practices submitted by Parties and relevant organizations*. Note by the secretariat – draft version. Available at [http://unfccc.int/files/adaptation/sbsta\\_agenda\\_item\\_adaptation/application/pdf/synthesis\\_report\\_submissions\\_app.pdf](http://unfccc.int/files/adaptation/sbsta_agenda_item_adaptation/application/pdf/synthesis_report_submissions_app.pdf)

the subsidiary SBSTA pointed out some of the specific needs and questions for both the developed and developing countries.

The two main needs as seen throughout the national reports on adaptation strategies and practices are for; 1) more coordination across governmental levels and across policy sectors and 2) greater concerted action to build up a common understanding of common climatic data and deal with the scaling problems of models and financial barriers. As is also indicated in this Report from the Nordic conference, *Planning for Climate Change*, these same needs for the Nordic countries were echoed at that gathering, along with the outstanding questions regarding actions that demand coordinated action among countries:

- How to enhance climate adaptation coordination and integration across sectors (mainstreaming)?
- How can local adaptation initiatives be supported by national strategies and sectoral planning?
- How can the flow of bottom-up knowledge be encouraged and increased?
- How can best practices best be communicated and disseminated?
- How can inter-level synergies be better facilitated?

Within the Nordic context, climate change adaptation strategies are being considered in all the Nordic countries. While it is generally assumed that the negative effects of climate change will not be as dramatic in the Nordic countries as in other more vulnerable parts of the world, the Nordics are well positioned to become forerunners in developing climate change adaptation technologies and governance methods, which could be exported to other countries.

But what can the Nordic countries do to pursue this course of action? As a result of the NCM/Nordregio conference, several aspects of climate adaptation were spotlighted:

- 1) The importance of finding the synergies between climate change adaptation and mitigation measures. Pursuing each of these actions for dealing with climate change should no longer be seen as an “either-or” choice, but as part of an integrated programme.
- 2) The various Nordic regions have different degrees of vulnerability to a changing climate. Thus, there are different adaptation needs in the various geographies, for instance, the agricultural areas of Denmark and Southern Sweden, the far north of Sweden, Norway and Finland, as well as Iceland and Greenland, or sensitive coastal zones. A major question for research is how these trans-national regions and areas can learn from one another? What are the mechanisms by which the transfer of knowledge of climate change adaptation can be transmitted?
- 3) Climate adaptation is prompting new spatial challenges for planning in the Nordic countries, as municipalities and regions must now integrate the risks of a changing climate into their land-use planning, coastal management and watercourse frameworks. However, the tools with which to do this are not necessarily forthcoming.
- 4) Communication and dissemination are key elements to bridging the gap between science, politics, planning and other stakeholders. Regardless of the quality or relevancy of models and scenarios produced, strategies and plans of action still need to be communicated or disseminated in order to be implemented efficiently at national, regional and local levels. Thus, communication, capacity-building and dissemination strategies within the Nordic countries are areas ripe for further collaboration. The geographies of the BSR countries are both similar and varying in morphology and the vulnerability to climate change may be similar across borders, rather than in a national perspective.
- 5) Another key question is who should bear the costs and responsibility for climate change adaptation. In the recently released report of climate change and vulnerability in Sweden, the case was made that climate change adaptation is embedded in local

responsibility and planning. At the same time, a more cross-sectoral outlook and responsibility should be taken at the regional or county level. Even at the local level, who should bear the costs of climate change adaptation?

The *Planning for Climate Change* conference, held in Helsinki on 11 September 2007, was intended to “kick-start” the process of Nordic concerted climate adaptation action. Although the conference has not provided definitive answers to many of the pertinent issues on Nordic agendas, it helped to initiate the process of asking the interesting, relevant and vital questions.

The Nordregio team responsible for the planning of the Conference would like to thank all participants and speakers for their efforts in this endeavour.

Stockholm, December 2007



# 1. Recommendations for Concerted Nordic Action on Climate Change

These brief recommendations have been drafted in connection with the NCM/Nordregio conference, *Planning for Climate Change*, held 11 September 2007, in Helsinki. A more in-depth version of possible courses of action is elaborated in Chapter 6.

## 1.1 Climate actions to boost Nordic visibility and competitiveness

The visibility of the Nordic countries in combating and adapting to climate change will come to the forefront in 2009 with the Swedish European Council Presidency, and the hosting of the COP-15 to the UNFCCC, in Copenhagen. This is an opportunity for long-term image-building, since the Nordic countries will be in the centre of international media attention. Common actions could include:

adoption of a common *Nordic platform on post-Kyoto climate change negotiations* prior to the COP-15 in Copenhagen that focuses on both adaptation and mitigation and the responsibility and opportunity of the industrialized countries in technology transfer;

linking climate change adaptation in non-Annex I countries more strongly to the *development aid budgets and actions* in each Nordic country and presenting this at COP-15;

pioneering efforts in governing *climate change* adaptation through best practices, to inspire other countries, including *consensus-building and conflict resolution* in mediating the conflict of interests surrounding climate change.

## 1.2 Nordic collaboration on climate change research and development

The IPCC has provided state-of-the-art scenarios and analyses of international climate change research, but results are difficult to understand at the regional level and it is costly to organize such efforts on a national level. Thus greater Nordic collaboration could have a large value-added effect in this area, including:

- Support for a research programme that specifically *refines the results of the IPCC's research to the Nordic level*. The Nordic Energy Research climate model for Norden is a step in this direction;
- Instigate a comprehensive collaborative research programme on the socio-economic effects of a changing climate in Norden, somewhat like a *more regionally-directed "Stern report"* for the Nordic countries.
- Efforts to develop a research programme on the *territorial development impacts of climate change mitigation and adaptation* in the Nordic countries. Nordregio would be well placed to develop such a programme.

## 1.3 Concerted Nordic communication and capacity-building strategies for climate change

Understanding, communicating and building capacity for climate change is crucial for politicians and planners alike. Due to their fairly common geographies, population dynamics and cultural traditions, there are substantial opportunities for trans-national learning among the Nordic countries regarding climate change mitigation and adaptation potentials, including:

- Facilitating *traditions of trans-national learning* by encouraging communication of “best practices” in dealing with climate change, such as finding appropriate forms for analyzing and communicating the spatial relevancy of climate change issues, including risks, hazards and urban planning. In this regard, new INTERREG IV projects could be encouraged. The NCM project, “Framtidens stad,” is another example of planning the future supply of energy for cities;
- Continuous efforts, for example in the form of a *web portal containing national, regional and local climate change measures* in the Nordic countries, for mutual inspiration;
- Production and dissemination of a *policy-relevant brochure on how climate change will affect* the various geographies of the Nordic countries (such as the Arctic areas, coastal cities, vulnerable ecosystems, urban areas) for politicians and planners;
- Initiating a *dialogue process at Nordic level* to address *institutional capacity for dealing with climate change*, including what types of political and institutional support are needed for questions such as flood risk, vulnerability of cultural heritage, or regional planning for the post-carbon society.

## 1.4 “Mainstreaming” climate change adaptation into all governance levels

One of the biggest challenges for actors dealing with climate change in the Nordic countries is how to integrate or “mainstream” climate change adaptation into national, regional or local sectoral institutions. The cross-sectoral approach thus demands efforts such as:

- Supporting *Nordic inter-ministerial workshops* for climate change adaptation. One such workshop has been organized at the national level in Norway in preparation for a national adaptation strategy, and this could serve as a model for a Nordic inter-ministerial workshop;
- Mainstreaming climate adaptation further into the Nordic Council. Today, the climate group is made up of representatives from *Energy* and *Environment*. Representatives from *Regional Policy* should also be involved;
- Identifying transferable processes for *increasing the capacity to integrate climate change* into existing policy areas such as finance and insurance. The efforts of Finland in encouraging broad participation and transparency in this process provide an example;
- Recognizing the need for *long-term planning for climate change* with a focus on mainstreaming *both climate mitigation and adaptation* into policy areas such as transport, energy supply and its mix, regional innovation and urban planning.

## 2. The *Planning for Climate Change* - Conference Programme



**NORDREGIO**

Nordic Centre for Spatial Development

### **Planning for Climate Change: The Adaptation Challenge - A Nordic perspective**

**11 September 2007  
SAS Radisson Seaside Hotel  
Gräsviksstranden 3  
Helsinki, Finland.**



Global climate change has been at the top of the international political agenda in recent years. In this period the public discourse has changed from a discussion of the extent to which climate change is a man-made phenomenon to the question of how to respond to climate challenges. How do we quickly and efficiently mitigate future climate changes?

Another burning question, which as yet has not had as much public attention, is the question of how we adapt to the climate changes which we know will come during the next decades regardless of possible successful national and international efforts of reduction of carbon dioxide emissions?

The Nordic Council of Ministers and Nordregio, Nordic Centre for Spatial Development have the pleasure of inviting you to participate in this conference devoted to discussing these questions as well as related issues:

- What are the challenges posed by climate change with regard to the spatial development and planning in the Nordic Countries?
- How do we cope with these challenges, what are the needs for developing new knowledge and competences?
- What are the possibilities to harness technology and innovation in meeting both mitigation and adaptation challenges?
- How can Nordic cooperation contribute to these endeavours?

The conference will address Nordic politicians, administrators and planners. The conference will be held in both Scandinavian languages and English. Please note that the number of participants is limited and the deadline for registration is August 27, 2007. See <http://www.nordregio.se/event070911.htm> for registration.

For more information about the conference please contact Lisa Van Well ([lisa.van.well@nordregio.se](mailto:lisa.van.well@nordregio.se)) or Richard Langlais ([Richard.langlais@nordregio.se](mailto:Richard.langlais@nordregio.se)). For information regarding conference registration please contact Sophie Didriksson ([sophie.didriksson@nordregio.se](mailto:sophie.didriksson@nordregio.se))

Tuesday, September 11<sup>th</sup>

Morning session

TIME	ACTIVITY
10.00	<b>Welcoming remarks:</b> Finland's Minister of the Environment, <i>Paula Lehtomäki</i> Conference Chair, <i>Ole Damsgaard</i> , Director, Nordregio Secretary General of the Nordic Council of Ministers, <i>Halldór Ásgrímsson</i>
10.15	<b>Keynote address</b> "Challenges of climate change for Nordic cooperation: a Finnish perspective" Finland's Minister of the Environment, <i>Paula Lehtomäki</i>
<b>Setting the scene for climate change adaptation</b>	
10.30	"What science tells us about the challenges of climate change for the Nordic region. Nordic responses on the international stage": <i>Bert Bolin</i> , Professor Emeritus in Meteorology, Stockholm University Founding Chair of the IPCC, 1988-97
11.00	<b>Coffee break with snack</b>
11.30-12.45	<b>Planning for climate change: the present view of future challenges</b>
	"Problematizing the adaptation challenge and the role of Baltic Sea Cooperation in dealing with future challenges": <i>Philipp Schmidt-Thomé</i> , Geological Survey of Finland  "Implementing a national adaptation strategy: Lessons from the Finnish experience": <i>Susanna Kankaanpää</i> , Research Programme for Global Change, Finnish Environment Institute
12.45-13.15	<b>"Reflexivity Panel": Opportunities for adaptation through Nordic collaboration</b>  The "Reflexivity Panel" is an opportunity for candid discussion about the real value-added of Nordic collaboration in adaptation strategies. Panel participants will digest the important points of the morning speakers and provide contextual feedback. The panel will include:  Introduction by <i>Richard Langlais</i> , Senior Research Fellow, Nordregio, Moderator of the Reflexivity Panel  <i>Mårten Dunér</i> , Head of Planning Unit, The National Board of Housing, Building and Planning, Sweden <i>Christina Gestrin</i> , MP, Finland, and Member of Finland's Delegation to the Nordic Council <i>Oras Tynkkynen</i> , MP, Finland, Specialist on Climate Policy Issues in the Prime Minister's Office
13.15-14.15	<b>Lunch</b>

Tuesday, September 11<sup>th</sup>

Afternoon session

TIME	ACTIVITY
14.15	<b>Adapting and responding to climate change challenges through spatial planning</b>
14.15-15.45	<p>“A voice from the Arctic: How Greenland has dealt with climate change in the past, present and future and the role of spatial planning”: <i>Klaus Georg Hansen</i>, Head of Division, Spatial Planning Division, Ministry of Environment and Nature, Greenland Home Rule</p> <p>“Climate cooperation in the Oslo region: vulnerability to a climate change and strategies for adaptation”: <i>Eivind Selvig</i>, Partner, AS Civitas, Norway</p> <p>This on-going work attempts to indicate the possible social, human and environmental implications of changing climate, while exploring the economically viable measures that might be enacted to adapt to these changes. The cooperation also raises questions of vulnerability and risk, and how one can plan for robust solutions.</p> <p><b>15.00-15.15 Coffee break</b></p> <p>“Challenges and Opportunities in the High North - with Global Warming” <i>Trausti Valsson</i>, Professor of Planning, Faculty of Engineering, University of Iceland</p>
15.45-16.15	<p>“Reflexivity Panel” reconvenes for brief comments that link the morning and afternoon sessions, questions and comments from the floor</p> <p>Introduction by <i>Richard Langlais</i>, Senior Research Fellow, Nordregio, Moderator of the Reflexivity Panel</p> <p><i>Mårten Dunér</i>, Head of Planning Unit, The National Board of Housing, Building and Planning (Boverket), Sweden <i>Klaus Georg Hansen</i>, Head of Division, Spatial Planning Division, Ministry of Environment and Nature, Greenland Home Rule <i>Pirkko Heikinheimo</i>, Coordinator, Climate Change Adaptation Research Programme ISTO, Research programme on adaptation to climate change (2006-2010), Ministry of Agriculture and Forestry <i>Eivind Selvig</i>, Partner, AS Civitas, Norway</p>
16.15-16.30	<b>Concluding and summary remarks</b>



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# 3. Opening Remarks by the Secretary General of the Nordic Council of Ministers, Halldór Ásgrímsson

The Nordic countries have been among the forefront of those countries worldwide that have been active in addressing the issue of climate change. Climate change has conquered the political agenda very successfully, for better and for worse. The good part is that we have been awakened to the challenges that it poses; the less satisfying part is that much of the media attention is focused on the dramatic events – extreme hurricanes, record-breaking temperatures, devastating floods, and so on – which grab the attention from the serious, but often more boring, work of figuring out how to address this situation we find ourselves in.

In addressing climate change, the Nordic countries have been very busy and focused on mitigation, the efforts to reduce the causes of climate change. The Kyoto and post-Kyoto processes have witnessed a serious engagement by the Nordic countries. In spite of all that hard work, however, the recent reports from the IPCC, or Intergovernmental Panel on Climate Change, tell us that even if we produce excellent mitigation plans, there is a lag, or delay, built into the global climate system, so that no matter what we do, we have to face at least two or three decades of climate change. For those changes, and perhaps even more that will come later, we must begin to adapt. The recent Stern report has given us an indication of how expensive it will be if we do not do so, or if we start too late.

So, we decided to focus this Nordic Council of Ministers climate change conference on the major challenge of adaptation. Although we recognize that there are many climate change conferences scheduled for this autumn in different parts of the world, only some of them focus so clearly on adaptation, and this is the only one that looks at that from a joint Nordic perspective. It is a unifying issue and a cross-cutting challenge, slicing across most, arguably even all, the sectors in our societies. This conference seeks the ways in which our unique Nordic expertise and traditions of cooperation can be used most effectively, in a kind of collaboration that benefits not only we who live here in the north of Europe, but that contributes a fresh outlook to the global efforts at climate change adaptation.

This conference has brought together a stimulating and encouraging mix of expertise and a high level of engagement from a number of fields and sectors. Our highly qualified speakers have been asked to highlight those things that could be the basis for collaboration at the Nordic level, in such a manner that the value-added is clear for each of the countries involved. Throughout the day, we anticipate that a number of intriguing possibilities for collaboration will emerge, that might indeed have a merit worth investigating further, even beyond this meeting. We hope that the reflexivity panels will be able to identify those themes and help us to understand their pros and cons more clearly.

At the very least, the Nordic countries have the experience and the potential to mediate between the outlying regions of the extreme north, the endangered Arctic and its small communities with their globally attractive resources, and the rest of the world. We have low population density, a climate that, in a warmer future, might seem very comfortable indeed to people living further south, and abundant natural riches. The next decades will pose serious questions about how we can make the best use of our abundance, at the same time as the changes we face may threaten the economic and physical basis for being able to safeguard them. We need to plan for the serious adaptations that climate change is calling for. This conference is a solid step in that direction.



## 4. Presentation Abstracts

Presentations made at the *Planning for Climate Change* conference, held in Helsinki on 11 September 2007, largely focused on the issue of Nordic cooperation. But prior to the occurrence of real cooperation, Nordic countries must also be aware of how climate adaptation processes are being addressed at national, regional and local levels and where science, politics and planning can play a role. To address these concerns, national and international experts, scientists, administrators and policymakers in the climate change field were invited to discuss their own risk scenarios, vulnerabilities, opportunities and challenges for responding to climate change.

At the end of each session, a “reflexivity panel” convened to digest the information presented by the speakers and to reflect on pertinent areas for Nordic cooperation. Members of the audience also participated lively in the discussion with comments and questions to the speakers.

The following chapter contains brief abstracts of the speakers’ presentations.

### 4.1 The Nordic role in promoting global climate goals

*Paula Lehtomäki, Finland’s Minister of the Environment*

In her keynote address, Minister Lehtomäki discussed how adaptation, alongside mitigation, is a key aspect of a climate change strategy. The IPCC has demonstrated that the global situation with regard to climate change is alarming. In the context of the EU, the European Council policy goals and targets are important for concrete action with regard to mitigation and adaptation, since the developed countries of the world bear a particular responsibility.

The Nordic countries have a joint responsibility to combat the negative effects of climate change via aid and technological exchange. The Nordic countries are characterised by high technological developments in the energy and climate sectors and this could be exported to other countries. In terms of visibility, the Nordic countries will take centre stage in the climate change regime in Autumn 2009, when Denmark hosts the COP-15/MOP-5 and Sweden assumes the EU Council Presidency. The Nordic countries clearly have a special role in promoting global climate goals.

### 4.2 What science tells us about climate change

*Bert Bolin, Professor Emeritus in Meteorology, Stockholm University  
Founding Chair of the IPCC, 1988-97*

According to Professor Bolin and the results of the IPCC, the international community has long been under-estimating the scope of climate change and we are now at the stage that we must take immediate action to deal with the situation (Figure 1.). The climate dilemma is that there is still a huge difference between the development standards and the carbon-intensity of developing and developed countries. The industrialised countries must decrease their greenhouse gas emissions by at least 50%, at the same time as it must be faced that the developing countries will never be able to use fossil fuels as the developed countries have already done. Thus the real challenge for the future is energy use and supply, but there are business opportunities to be had for the Nordic countries in terms of energy efficiency and development of new technologies.

Adaptation and mitigation are two sides of the same coin and must be addressed jointly. Nordic cooperation can play an important role by 1) supporting the EU climate change goals and visions, 2) supporting developing countries by redirecting development aid support to climate change projects, 3) making emissions reductions at home, while being aware that carbon trading permits must be used cautiously and 4) engaging to a greater extent in technical development for carbon reductions, for instance in biomass development.

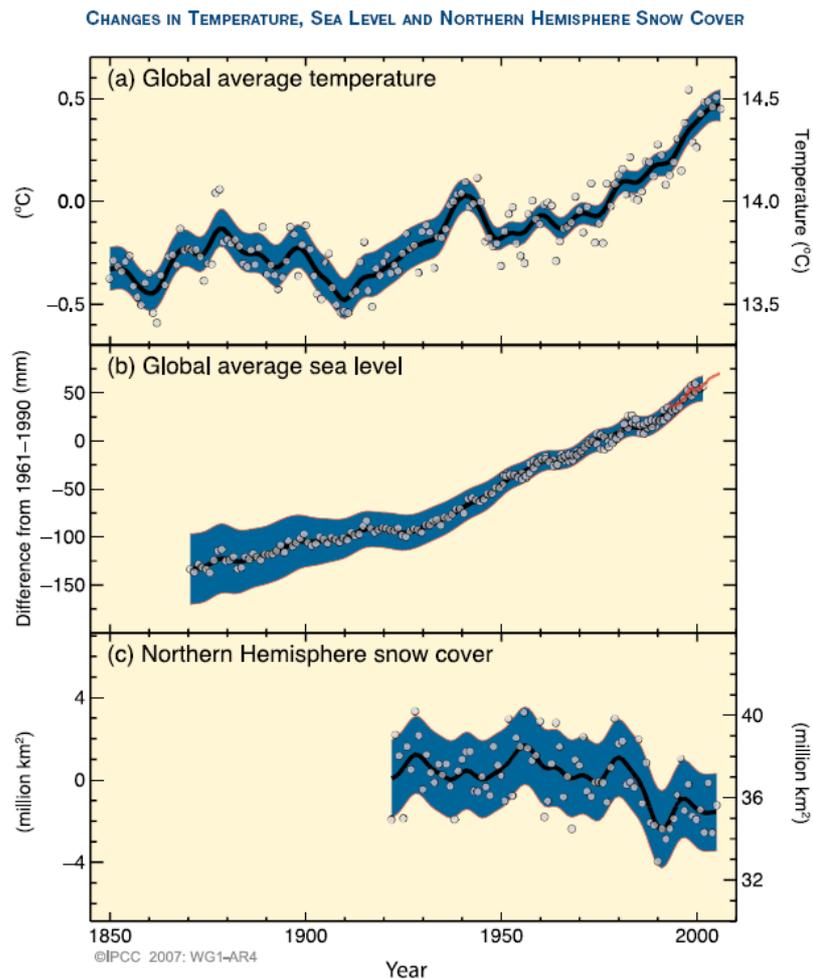


Figure 1: Changes in temperature, sea level and Northern Hemisphere snow cover. Source: ICPP 2007

## 4.3 Creating climate change awareness among spatial planners in the BSR

*Philipp Schmidt-Thomé*, Geological Survey of Finland

Philipp-Schmidt-Thomé discussed how spatial planning can be a powerful tool in natural hazard and climate change adaptation. Since planners are not usually experts in climate change, the role that the communication of climate change impacts plays is a key issue in raising awareness and prompting local action. Two such applied examples from the Baltic Sea Region that address this issue are the INTERREG projects SEAREG (“Sea Level Change Affecting Spatial Development of the Baltic Sea Region”) and ASTRA (“Developing Policies and Adaptation Strategies to Climate Change in the Baltic Sea Region”). Within these projects, modelling and GIS application as well as vulnerability assessments (*Figure 2: Sea level change affecting spatial development in the Baltic Sea Region. Source: SEAREG*) are cornerstones for

frameworks of decision support, as is the knowledge base created by regulations, legislation and guidelines for communication.

The current trend in land-use planning throughout Europe is to build closer and closer to the coasts – oftentimes in areas that are highly vulnerable to sea level rise. There is no need to “reinvent” spatial planning routines in the Nordic countries in order to deal with climate adaptation, but, instead, the challenge is to find ways to include aspects of uncertainty into planning and to further increase awareness among practitioners of the increased risks associated with changing climate.

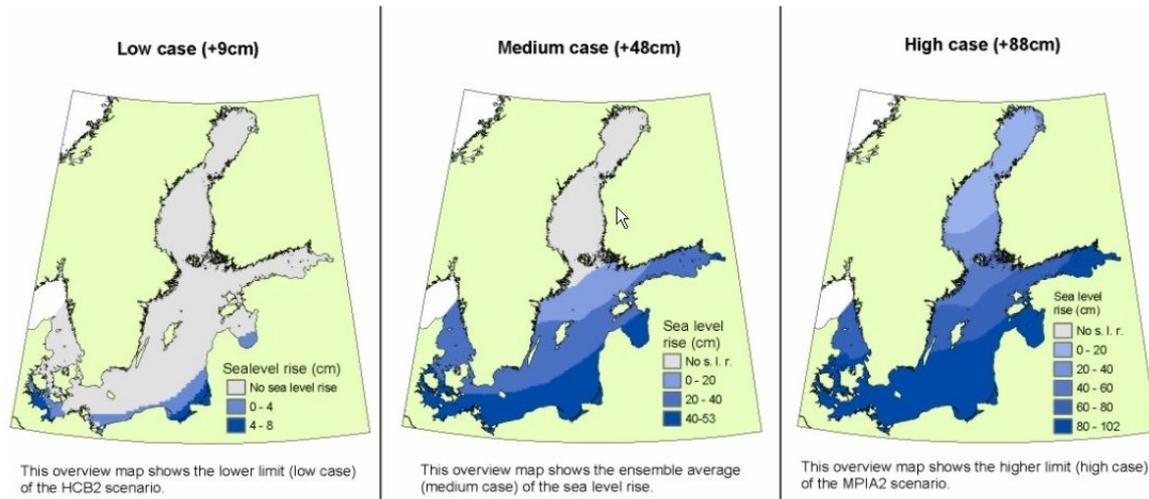


Figure 2: Sea level change affecting spatial development in the Baltic Sea Region. Source: SEAREG

## 4.4 Finland implements a national adaptation strategy

*Susanna Kankaanpää, Research Programme for Global Change, Finnish Environment Institute*

The Finnish experience with adopting and implementing a national climate change adaptation strategy was the theme of Susanna Kankaanpää's presentation. What makes the process interesting, other than the fact that Finland was the first Nordic country to produce a national adaptation strategy, in 2005, is that Finland adopted a multi-sectoral approach by assigning the Ministry of Agriculture and Forestry to coordinate the work with other ministries and research institutions. The goal of the strategy is to strengthen adaptive capacity in Finland through mainstream adaptation in the natural resource sectors and by taking climate change into account in long-term investments. On the local level, around fifty municipalities are taking part in a climate campaign. As an example, Espoo has prepared a study on adaptation and was the first city in Finland to host a seminar on climate change issues and planning.

From the Finnish experience, a few lessons can be transferred to other Nordic countries; 1) the political framework is important for gaining support for adaptation measures, 2) broad participation and transparency are needed in order to build confidence, 3) research and expert assessments are crucial in the strategic work and in implementation, but there is a need for further research, and 4) mainstreaming into various sectors is key if mutual learning is to take place.

## 4.5 Reflexivity Panel 1: Opportunities for adaptation through Nordic collaboration

The “Reflexivity Panel” was an opportunity for candid discussion about the real value-added of Nordic collaboration in adaptation strategies. In addition to presenting their own positions, panel participants provided contextual feedback on the presentations and recommended various courses of Nordic action:

**Christine Gestrin**, *MP, Finland, and Member of Finland’s Delegation to the Nordic Council*, related that the initiative to hold the *Planning for Climate Change* conference had been taken by the Nordic Council of Ministers’ environmental committee. Concerted Nordic action on climate change should be possible in three areas – research, development and implementation (including commercialisation of environmental techniques) – since the Nordic countries share much the same socio-economic base. The most central question for the Nordics, however, is how to best engage in efforts to decrease greenhouse gas emissions and by including the question of demand for renewable energy sources. There are great opportunities for the Nordic countries to become world-leading in environmental technology. At the same time, the Nordic countries bear a great responsibility towards the more vulnerable parts of the world.

**Mårten Dunér**, *Head of Planning Unit, The National Board of Housing, Building and Planning, Sweden*, related how not much had been done in Sweden yet regarding mitigation, although indirectly there is much discussion among the central authorities to work for a denser urban environment and prevent urban sprawl, as well as ensure land for biofuel crops. Climate change has already altered planning processes in Sweden. Previously there was a great emphasis on processes, in terms of being democratic and participatory. Now climate change means that more substantive issues will be in focus and in order to change our way of thinking we need to focus on more incentives to deal with climate change.

**Oras Tynkkynen**, *MP, Green Party, Finland, Specialist on Climate Policy Issues in the Prime Minister’s Office*, stated that it was obvious that we need further research on climate change adaptation and more coordinated action at the Nordic level, including:

- Collaboration at Nordic level regarding EU-research on climate change adaptation
- More communication between researchers and policy-makers in the Nordic countries
- More policy-relevant examples of best practices in short and concise form
- Dissemination to a wider public about what they should know about adapting to climate change, in the form of easy-to-understand brochures
- Better sharing of information among peers, since adaptation is a long-term process
- Adaptation in the Arctic regions is an area where the Nordic countries can take a leading role
- Mainstreaming adaptation into other policy areas
- More Nordic collaboration at the international level
- Adapting climate change protection to socio-economic changes.

In the ensuing discussions, several points were brought up, such as cooperation regarding climate adaptation in sectors such as cultural heritage, the need to adapt to the types of measures required for combating climate change, putting climate change on the territorial agenda of Europe, the gender perspective and climate change, as well as practical and pragmatic means for coastline protection. All of these areas could potentially benefit from greater Nordic cooperation.

## 4.6 A Voice from the Arctic

**Klaus Georg Hansen**, *Head of Division, Spatial Planning Division, Ministry of Environment and Nature, Greenland Home Rule*

Klaus Georg Hansen represented “a voice from the Arctic,” since he presented how Greenlanders have been adapting to climate changes for hundreds of years, with at least two major and unpredicted climate changes in the last 150 years, which changed the economic base (at the end of the 19<sup>th</sup> century when warmer waters caused a shift from seal hunting to cod fishing, and during the 1980s when colder waters shifted the fishing industry from cod to shrimp). In Greenland, therefore, there is a long tradition of adapting to changing climate conditions and the new climate change adaptation strategy now in preparation illuminates some of the resulting challenges and opportunities.

The challenges to spatial planning in Greenland include the disappearance of permafrost and the resulting destabilisation of infrastructure; increased precipitation, which makes it more difficult to regulate surface water; increased humidity, which causes rotting of wooden houses; and rising sea-levels, which affect the flooding of harbours. Initially, Greenland may have some short-term rise in tourism as a result of climate change. Traditionally, Greenland has cooperated with Denmark in spatial planning issues, but current climate changes and geography make it more feasible to discuss with the other Arctic areas of the Nordic countries.

## 4.7 Climate cooperation in the Oslo region: Vulnerability to climate change and strategies for adaptation

**Eivind Selvig**, *Partner, AS Civitas, Norway*

Eivind Selvig presented the on-going work in the Oslo region, to indicate the possible social, human and environmental implications of changing climate, while at the same time exploring the economically viable measures that might be enacted to adapt to these changes. The extreme weather events of the last few years have driven this process, but the process is also anchored in political consensus, which is facilitating actions. In Norway, the municipalities could have a central role in climate change adaptation, as they have both the responsibility for technical infrastructure, risks and vulnerability, health, security etc., and the knowledge of historical events, current plans and the possible barriers to enacting plans. But planning for climate change is not one of the tasks that Norwegian municipalities have today.

Thus the challenge is to link new knowledge of climate change to the municipalities' experience of historical events and their competencies regarding specific knowledge about health, drinking water, etc., and helping to provide planning tools, facilitate cooperation between various sectors and to help communicate and understand the climate changes that are coming. In this way national authorities can help to support regional and local efforts toward climate change adaptation.

## 4.8 Climate change in the high north: How the world will change...

**Trausti Valsson**, *Professor of Planning, Faculty of Engineering, University of Iceland*

Climate change patterns will have various effects around the globe. The warmer and longer summers and the shorter and milder winters that can be seen in the high north make activities such as agriculture and fishing much easier. But of greatest consequence is the retreat of the

Arctic sea ice, which is expected to facilitate increased shipping patterns in the area and change the status of currently very remote places such as Iceland or Greenland. With increased transport routes and exploitation of oil reserves in the high north, the area could experience a dramatic boost in economic activity.



Figure 3 By the 21st Century, when even the winter ice may have disappeared from the Arctic Ocean, world shipping may have become a catalyst for additional development in the high north. Source: Valsson 2007

On the other hand, the melting of the Arctic ice and increased economic activity could intensify some of the unresolved disputes already seen in the Arctic, such as sovereignty rights and fishery regulations, decisions about the northern extensions of the continental shelves, coastal state delimitations and regulations concerning international shipping. Thus the Nordic Countries should unite around these questions and perhaps instigate actions such as an Arctic task force within the Nordic Council of Ministers.

## 4.9 Reflexivity Panel 2: Conclusions and further paths of action for Nordic cooperation in climate change adaptation

The Reflexivity Panel reconvened in the afternoon session as a way of summing up the conference and pointing out further courses of action. Conference participants were encouraged to actively participate in the session.

**Eivind Selvig**, *Partner, AS Civitas, Norway* made the observation that we have always been able to adapt to climate changes and this is an opportunity to use our wisdom from the past, just as much as it is a wake-up call for communities to proceed with action. Yet there is still a need for increased institutional capacity. The means of communicating climate change need to be simple and municipalities should be able to recognise their own situations. Yet the caveat was made that even if the message, is simplified it still needs to be based on sound scientific evidence.

**Klaus Georg Hansen**, *Head of Division, Spatial Planning Division, Ministry of Environment and Nature, Greenland Home Rule*, stressed the need for communication on different levels, but also within the Nordic sphere, when it comes to learning from one another. Greenland can learn much from other Nordic countries and especially the West Nordic region when it comes to

adapting to climate change. Networking is extremely important for those areas that do not have the administrative capacity for dealing with climate change adaptation.

**Pirkko Heikinheimo**, *Coordinator, Ministry of Agriculture and Fisheries, Finland*, echoed the need for greater communication, especially in finding better ways to integrate adaptation and mitigation and mainstream climate change into other policy areas. There is a need for a future Nordic forum to further discuss how “tool boxes” could be developed for integrating or mainstreaming climate change adaptation across levels and among sectors.



# 5. National adaptation strategies in the Nordic countries

Climate change adaptation strategies are appearing on the political agendas of all of the Nordic countries. What differs is the degree to which adaptation strategies are becoming institutionalised at national level in concert with measures for the mitigation of greenhouse gases.

Thus far, only Finland has agreed upon a national climate change adaptation strategy and is now engaged in the sometimes difficult process of mainstreaming the strategy. The Danish government presented its first draft of a national climate change strategy on September 5, 2007, and reactions to it have highlighted some inter-sectoral differences of opinion. Sweden appears to be opting for more decentralized adaptation actions, rather than a nationally-directed strategy. Norway is in the process of developing an adaptation strategy and exploring the participatory aspects of the process. In Iceland, long known for its history of adapting to climate change, a formal process of adapting a strategy has been initiated.

Nevertheless, climate adaptation is a priority that has recently gained the awareness of politicians and planners around the world. Much of this awareness can be attributed to salient reports such as the Fourth Intergovernmental Panel on Climate Change (IPCC) Assessment Report in 2007 and the Stern Report of 2006, which have shown that climate change is a force to be reckoned with and that its impacts will be on both the natural ecosystem as well as socio-economic patterns of human societies. Subsequent to awareness-raising, policy measures to adapt to changing climatic conditions have been influenced by a number of less dramatic international contexts.

## 5.1 The international context for national adaptation strategies

In November 2006, the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change (NWP) was launched as a finalisation of a five-year programme by the Subsidiary Body for Scientific and Technological Advice (SBSTA) of the United Nations Framework Convention on Climate Change (UNFCCC). The programme specifically aims to assist countries, especially the lesser developed countries, in understanding and assessing the impacts and vulnerability aspects of climate change, and to help them make more informed decisions about practical adaptation measures. The NWP effectively put climate change adaptation obligations on the local and national agendas across the globe. Under the Nairobi Work Programme of the UNFCCC, all developing countries should produce strategic national adaptation plans of action (NAPAs) that are highly integrated in the countries' own development plans. Even some industrialised countries (e.g., Finland) are now initiating national adaptation strategies.

Thus all levels of governance have recently plunged into courses of action regarding adaptation. The EU Green Paper on "Adapting to climate change in Europe – options for EU action," released in June 2007<sup>3</sup>, reiterated the need for adaptation as an ". . . unavoidable and indispensable complement to mitigation action," rather than as an alternative to reducing greenhouse gas emissions.

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<sup>3</sup> COM (2007) 354 final. Adapting to climate change in Europe – options for EU action (2007). Green paper from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the regions. Brussels, 29.6.2007

## 5.2 Why national adaptation strategies?

Adaptation to the challenges and opportunities of a changing climate truly calls into play various forms of multi-level governance. The EU Green Paper recognises that the strategic aspects of climate change adaptation are complex and responsibility should be taken at the most appropriate level in each country – be it national, regional, local, EU, or a combination of levels, as long as adaptation strategies are developed that reduce the learning costs across levels. According to the Green Paper, “adaptation can encompass national and regional strategies as well as practical steps take at community level or by individuals.”

While the EU does not mandate the preparation of national adaptation strategies at Member State level, it does support the member states in taking a diverse approach and encourages the transfer of various good practices between the member states that have used national adaptation strategies to coordinate inter-sectoral and multi-level initiatives.<sup>4</sup>

In addition to Finland and Denmark, in the Nordic countries, several other EU countries, including France, the Netherlands and Spain, have instigated national adaptation strategies. The UK is in the process of developing their national adaptation strategy.

## 5.3 Nordic national adaptation strategies: Where's the cooperation?

Although currently in various stages of in their processes of preparing climate change adaptation strategies, the Nordic countries have generally looked to one another for guidance and inspiration, which can be seen in the background documents to the national strategies that generally profile their efforts. However, thus far there have been only a few fora for real cooperation between the Nordics regarding adaptation to climate change at a national level. Examples of such fora have thus far been confined to various territorial cooperation programmes, such as INTERREG.

The Nordic countries have much to learn from one another in this area. Adaptation processes have only just begun and the issue is ripe for further consideration at the Nordic level.

## 5.4 Denmark – first draft of a national adaptation strategy, focus on ad-hoc measures

On September 5, 2007, the Danish government presented its first draft of a national climate change adaptation strategy, “Strategi for tilpasning til klimaændringer i Danmark- Udkast.” This strategy highlights the timely aspects of quick responses to climate change through the approach that states, “Why wait to adapt?” It is important that actors in Denmark, both public and private, are able to act in an ad hoc manner and at their own initiative, to the societal challenges of climate change. The national strategy is a tool for helping to coordinate such ad hoc measures.

### 5.4.1 Actors and sectors involved in Danish climate change adaptation

The Danish efforts towards developing a national strategy for adapting to a changing climate began in 2001. At that time, the Danish Energy Authority started working on a report on climate change adaptation. It was based on national and international literature and sent to the Ministry of the Environment in 2002 (Dansk Tilpasning till et ændret klima). In a brochure published in 2004, “Adapting to the Climate of the Future,” the Ministry of the Environment

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<sup>4</sup> European Climate Change Programme Working Group II Impacts and Adaptation Building National Adaptation Strategies Sectoral Report

and the Environmental Protection Agency in Denmark remark that: “Adaptation to and mitigation of climate change are not a question of either one or the other – but rather of both” (2004:5). The focus of the new draft strategy on independent, but coordinated, ad hoc measures by actors on various levels underscores the importance of having all actors on board in the national adaptation strategy.

#### 5.4.2 On-going processes of climate change adaptation in Denmark

In addition to the scientifically, technically and socio-economically viable goals for individual sectors (such as coastal management, building and construction, water supply, energy supply, fisheries, land use and forestry, nature protection, planning, health, civil preparedness and insurance) in the coming ten-year period, the draft national adaptation strategy illuminated three main cross-sectoral measures:

- Establishment of a climate adaptation portal for the distribution of climatic and other earth sciences data, as well as assistance with decision-making processes and economic tools of analysis
- A research strategy focusing on adaptation issues and production of new socio-economic models and tools for adaptation needs, including a coordination unit for research on climate adaptation
- Organisation of further efforts, including a cross-ministerial coordination group for climate adaptation coordination, horizontally across sectors and vertically among administrative levels, as well as a knowledge centre for climate adaptation under the Ministry of Environment.

At time of writing, the national strategy was in preparation for final presentation before year’s end.

## 5.5 Finland – the Nordic forerunner on climate change adaptation

Finland is the first Nordic country to have adopted a climate change adaptation strategy. In 2001, the parliament decided that the current, general strategy on climate change needed to be supplemented with a special strategy for adaptation. The preparation work for the strategy began in 2004. In the process leading up to the climate change adaptation strategy, three major topics guided the process forward:

- The accumulation of knowledge about the effects of climate change in Finland
- The need for adaptation measures regarding the effects of climate change
- The need for adaptation regarding international and non-Finnish issues.

In the process of getting the strategy in place, several actors and stakeholders were involved. A working group consisting of representatives of ministries and research institutes and coordinated by the Ministry of Agriculture and Forestry prepared the strategy with an input from stakeholders, experts and the research community. Also, during the strategy’s preparation, the FINADAPT consortium, funded by the Ministry of Environment, was making the first in-depth studies on Finnish adaptation regarding climate change issues. The draft strategy was then modulated by the different actors involved in the process, before it was adopted as the national strategy on climate change adaptation in the first half of 2005 (Ministry of Agriculture and Forestry 2005).

The national strategy on adaptation to climate change was published as a separate document and its central parts were included in the Finnish national strategy on energy and climate, which was sent to the parliament in 2006. It pinpointed some specific prioritized measures in order to enhance the overall adaptation capacities. In general, these measures are

focused on cross-sectoral cooperation and mainstreaming, strengthening research and building the capacity to cope with extreme weather events (Ministry of Agriculture and Forestry 2005). The implementation of the strategy started in 2005 and it will be renewed in 6-to-8 years' time.

#### 5.5.1 Actors and sectors in Finnish adaptation to climate change

The practical implementation of the adaptation plan is being carried out on a sectoral basis, with various kinds of strategies and programmes. In order to take climate change adaptation issues into account, there is a need for long-term planning, together with the normal 5-10 years planning cycle. Private sector adaptation measures are expected to take place in the future. The ministries are also actors in adaptation, through their planning and guidance of their administrations. Several ministries have started implementing the strategy. The Ministry of the Environment has prepared an adaptation programme that contains practical adaptation measures. The Ministry of Agriculture and Forestry is mainstreaming adaptation into its plans and programmes, including the National Forest Programme. The Ministry of Transport and Communications has taken a practical approach, with case studies of adaptation in the transport sector. Stakeholders and regional and local level authorities are also becoming active and starting their adaptation work.

#### 5.5.2 On-going processes and the way forward

Finland is in many ways the Nordic forerunner regarding climate change adaptation, in the sense that they actually have adopted a strategy on the issue. Notwithstanding that, however, the actual adaptation also needs to take place. With this notion in mind and following the development of the adoption of the climate change adaptation strategy, the Climate Change Adaptation Research Programme (ISTO) has been launched through a joint effort of Finnish ministries. ISTO is coordinated by the Ministry of Agriculture and Forestry (2005). The programme funds individual projects during the period 2006-2010, and the overall aim of the programme is to facilitate more in-depth and concrete adaptation measures and to aid the implementation of adaptation strategies. Furthermore, the aim is to tackle the lack of integration between the different actors, regarding climate change adaptation. The research that will be conducted is supposed to feed into the various strategies on climate change adaptation in order to evolve and further enhance the strategies. An evaluation of the implementation and a prescription of additional measures will therefore be carried out on the basis of the state of knowledge resulting from research and experience. The evaluation process of the ISTO programme will be carried out in 2008 and 2010.

## 5.6 Iceland – A budding adaptation strategy nested in mitigation strategies

With a long record of high sensitivity to climate changes throughout the centuries, Iceland is well familiar with the challenge of taking adaptive measures. In the current era of climate change, specific adaptation measures have thus far been quite minimal, in accordance to the perceived threat levels. Instead, the emphasis has clearly been on taking advantage of the benefits of a changing climate, with some emphasis being placed on mitigation efforts. Iceland's budding climate change adaptation strategy has thus far not been seen as a political strategy in itself, but rather as part of the general long-term climate change strategy, including mitigation, as formulated in the document, "Iceland's climate change strategy: Long term-vision 2007-2050," published by the Ministry for the Environment, in February 2007. Taken together, adaptation and mitigation are related to governmental strategies and objectives in a range of other areas vital for Iceland, such as economic affairs, energy issues, transport, fisheries and development aid.

### 5.6.1 Opportunities and challenges of climate change in Iceland

The verdict is still out on how climate change will influence socio-economic aspects in Iceland. If climate changes are more gradual, the economic and social systems will probably be able to adapt quite well and certain benefits may be seen. However, there may be important regional differences, since some regions of Iceland are far more dependent on the fishing industry, for instance, and thus more vulnerable to fluctuations due to climate change (Iceland's Fourth National Communication on Climate Change Under the United Nations Framework Convention on Climate Change, 2006).

In terms of infrastructure, the most important adaptation measures will probably mean changes in the design and/or operation of hydropower stations, dams, harbours, bridges and other structures that are affected both negatively and positively by changes river flow and a rise in sea level (Iceland's Fourth National Communication on Climate Change Under the United Nations Framework Convention on Climate Change, 2006). The design of coastal communities and other structures, such as new harbours, has already taken flood precautions into account.

### 5.6.2 Pointing the way to a climate change adaptation strategy in Iceland

It is expected that a scientific committee will be established to report on the effects of climate change in Iceland. Included in the work of the committee will be the task of illuminating issues with respect to potential adaptation to climate changes. The committee will build on the 4th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) and previous Icelandic reports on climate change, in particular "Climate Change and its Effects," which was issued in 2001. In addition, the scientific group is to work closely with another scientific committee which will assess the effectiveness and economic efficiency of measures to mitigate climate change. Both groups will include a broad array of stakeholders.

The committee on effects of climate change and adaptation will submit its report to the Minister for the Environment before 1 March 2008.

## 5.7 Norway – Preparing the principles for adaptation

While the work on climate change adaptation in Norway has only just gotten underway, the principles to guide the Norwegian climate adaptation process have already been delineated:

- Climate adaptation should be implemented in phases, so that relevant research and coordination of interests can be facilitated
- Climate adaptation should be part of general risk assessments
- A common scientific platform should be constructed
- There is a need to incorporate the interests of various levels in the process
- Climate adaptation should be integrated in the work of all ministerial sectors

### 5.7.1 Actors and sectors in Norwegian adaptation actions

Thus far, the main actors on the Norwegian climate adaptation scene have been national ministries, research institutes and local and regional authorities. A seminal turning point in the Norwegian efforts to deal with climate change adaptation came in August 2005, with the convening of an inter-departmental seminar on climate change adaptation organized by the Ministry of Environment.

As a follow-up to the inter-ministerial seminar, the "Report on vulnerability and adaptation to climate changes within sectors in Norway," was published in 2006. This is regarded as the first step towards a national adaptation strategy. The Directorate for Civil Protection and Emergency Planning (DSB), under the Ministry of Justice and the Police, also has a special responsibility for the coordination of risk and vulnerability planning. The challenge is thus to create the conditions for coordination and transfer of information, both vertically from

national to regional and local level, and horizontally, between authority levels and other actors such as research institutes. Research on climate change and adaptation has a special status in Norway and large research programmes such as RegClim and NORKLIMA have been set up to spur the pace of research on the effects of climate change and possible adaptation measures.

### 5.7.2 On-going processes of adaptation

CICERO (Center for International Climate and Environment Research) published, in 2004, a preliminary study for a national adaptation strategy, in which three possible models for organizing the adaptation process were outlined: 1) a process led by central authorities; 2) a process coordinated by an interest organization; or 3) a research-based process implemented by a group of interest and research organization. The question remains as to the balance between centralized and decentralized governance.

In Norway, the municipal level is responsible for planning and land-use decisions and the building code requires that risk and vulnerability studies (ROS) are undertaken for new construction projects. Since the municipal level takes such responsibility in implementing actions that could potentially deal with the negative or positive effects of climate change, national authorities feel it is essential that the municipalities have unrestrained access to detailed and up-to-date climate forecasts and scenario models, and that the central and county authorities have a responsibility to assist them in this endeavour.

## 5.8 Sweden – Decentralized future approach on climate change adaptation?

In the summer of 2005, the Swedish government established a commission, the “Klimat- och Sårbarhetsutredning” (Miljödepartementet 2007), to produce a national climate change adaptation strategy. The commission’s mission was to analyze Sweden’s vulnerability regarding the effects of accelerating climate change on critical infrastructure such as water supplies, transport infrastructure and energy production, among others. An important objective for the commission was to bring all the affected and responsible stakeholders and public authorities together in order to establish an efficient organization for the work. The final memorandum was presented in early October this year (2007). However, in being a more overarching and general assessment of Sweden’s vulnerability to climate change, few actual concrete proposals or strategies for adaptation were presented. Future work appears aimed at the regional and local level rather than on establishing and formulating national strategies. As an approach to the work to be done in future, it differs from the other Nordic countries by being more focused on the decentralization of responsibility.

Since the launch of the “Klimat- och Sårbarhetsutredning,” several other governmental initiatives have been made in order to further deepen the work on adaptation to climate change. A Climate Committee was launched in early 2007, with the aim of developing Swedish policy on climate change issues. The committee is supported by a Scientific Council on Climate Issues, and the Council is to provide the committee with various reports and produce policy relevant knowledge. Furthermore, a commission on sustainable development, launched in March this year, and headed by the prime minister of Sweden, is overseeing the work on climate change in Sweden.

### 5.8.1 Actors and sectors involved in Swedish adaptation actions

The Swedish work for climate change adaptation was induced on the governmental level by the launch of the commission. So far the work of the “Klimat- och Sårbarhetsutredning” has been rather top-down, with a focus on initiatives and guidelines coming from actors at the national level. The local and regional levels are included only slightly. Furthermore, the actors are divided into their corresponding sectors. The commission itself is divided into four main sectors, or thematic areas: technical infrastructure and spatial planning, agriculture and forestry,

health and water resources and flooding of three large lakes, Mälaren, Vänern and Hjälmaren. In general, the Swedish work on climate change adaptation is to a large extent focused on water-related issues, such as flooding.

The structure of the commission follows the structure of responsibility among the Swedish public authorities. The individual public authorities are dealing with their respective issues in connection to climate change, and this might undermine a future integrated approach, since the question and issue of responsibility remains vague. However, since this is also an issue that has been identified by the commission, the future work on adaptation will, it seems, be more focused on the regional and local level. The proposals put forward by the commission may nevertheless result in increased responsibilities for a number of government agencies. Primarily, this involves ensuring that the issues are fully integrated in the process and that sufficient information and advice is available for the key actors/stakeholders within their respective sectors. Each agency would also be responsible for the monitoring work. The Environmental Protection Agency would have the overall responsibility for co-ordinating the work and reporting on the progress made in each sector.

### 5.8.2 On-going processes of adaptation and future plans

Since 2000, the Swedish government has issued a number of proposals on issues relating to climate change, mainly dealing with vulnerability and crisis management (Miljödepartementet 2006). Furthermore, the proposals have also focused on risk-mapping, and in this process the municipalities have had an important role in carrying that out on the local scale, according to governmental guidelines. This has been used by the municipalities as a tool in their physical planning.

The final memorandum of the “Klimat- och Sårbarhetsutredning” was released in early October of this year (2007). It contains a thorough description of the presumed effects and possible future societal challenges due to climate change. However, there is little on the concrete efforts needed for adaptation. The suggested actions are presented according to sectors, and include strengthening research; creating new legislation regarding building standards and responsibility; and clarifying regional responsibility regarding the coordination of adaptation to climate change (Miljödepartementet 2007). The latter suggestion is perhaps the most interesting. With that statement, Sweden differs from the other Nordic countries, in that, in the future, there may be an increased focus on the regional level for the work on adaptation. Therefore, a new *national* strategy on adaptation to climate change would seem more unlikely. In their role as coordinator, the regions and county administrative boards will likely ensure that the local and regional variations are included in the work for adaptation.

In January 2008, the Climate Committee will release their report on how Sweden can improve and develop its policy on climate change. The work of the committee will be the basis for the up-coming Swedish proposition on climate change. Looking further ahead, in 2009, Sweden will take on the EU presidency, and this coincides with the current negotiations for a new framework agreement under the UNFCCC. This is a significant opportunity for the Nordic countries, and Sweden in particular, to project themselves as the forerunners on the climate change issue. In this context, the presumed advantages that the Nordic countries are facing regarding climate change will affect political agendas, which Sweden, as forthcoming EU presidency, in 2009, may indeed illustrate.



# 6. Climate Change Policy

## Recommendations for the Nordic Countries

These recommendations have been drafted in connection with the NCM/Nordregio conference, Planning for Climate Change, held in Helsinki, on 11 September 2007.

Both climate change mitigation and adaptation command a firm place as an essential part of the Nordic agenda. Climate change actions exemplify such a strategy, since such an agenda gives priority to the role of innovation and to the current and future provision of energy supply. The recommendations in the sections below sketch out some concrete ways that climate change adaptation and mitigation could form an even more central part of the Nordic agenda.

The recommendations are based on four inter-related thematic calls for Nordic action:

- Nordic *identity, visibility* and *competitiveness*;
- Nordic collaboration on *research and development*;
- concerted Nordic *communication, capacity-building and dissemination strategies* for climate change response;
- implementing, or “*mainstreaming*,” climate change adaptation concerns as aspects of national, regional and local governance.

### 6.1 Nordic identity, visibility and competitiveness

These recommendations are largely centred on the relation of the Nordic countries to the international community; as such they delineate suggestions for boosting the identity and in turn the visibility of action taken at Nordic level to deal with the challenges and possibilities of climate change, particularly climate change adaptation. As the “Nordic” way of dealing with climate change becomes visible, and Nordic solutions are “exported” abroad, international competitiveness may be boosted.

**A)** The visibility of the Nordic countries in combating and adapting to climate change will come into the forefront in the next few years with Sweden’s presidency of the European Council in the latter half of 2009, and with the hosting, in Copenhagen, of the fifteenth Conference of the Parties (COP) to the UNFCCC and the Fifth Meeting of the Parties (MOP) in 2009. This is an opportunity for long-term image-building, since the “best practices” of the Nordic countries in terms of climate change mitigation and adaptation will be at the centre of international media attention. Concerted action by the Nordic countries will thus have a great added value, not only in terms of visibility, but also as a good example for other parts of the developed world to consider. Measures in this regard could include:

- Adoption of a common Nordic platform on post-Kyoto climate change negotiations prior to the COP-15 in Copenhagen;
- Stronger linking between climate change adaptation in non-Annex I countries and the development aid budgets and actions in each Nordic country.

**B)** Since the Nordic countries are among the most technologically advanced in the world, they also have the responsibility for helping to combat the negative aspects of climate change in more vulnerable parts of the world. The opportunity thus exists for “exporting” Nordic

technology, consensus-building and governance competencies. The Nordic countries may become viewed as “world’s best” in environmental technology, participatory planning and consensus politics, which creates an opportunity to become even more competitive in exporting not only the technology needed for climate adaptation, but also the best practices in organization, planning and governing climate change adaptation in the post-carbon society. Measures could therefore include:

- Increased Nordic collaboration in research, innovation and energy technology, boosted by specific Nordic research programmes linking the technical aspects of climate change adaptation and mitigation;
- Efforts to draft a plan of action to make the Nordic countries a pioneer in efforts to *govern climate change* adaptation. To inspire others, such a plan could focus on the governance aspects of climate change in the Arctic or sub-Arctic regions, urban governance in the post-carbon society, or best practices;
- With long experience and competency in the fields of *consensus-building and conflict resolution*, the Nordic countries could inspire other countries in mediating the conflict of interests surrounding climate change through concrete action.

## 6.2 Nordic collaboration on research and development

There is an urgent need for greater research and development efforts in the global shift to the post-carbon society. Research and knowledge are needed to create a scientifically sound basis for what a changing climate means in different areas of the world, including the Nordic countries. In this regard, Nordic collaboration on research and development efforts in climate change mitigation and adaptation, centred specifically on the Nordic countries will have a great value-added effect.

**C)** While the IPCC has routinely provided state-of-the-art scenarios and analyses, many of them are produced at a resolution where it is difficult to ascertain what the expected scenarios and effects will be at the regional level. There would thus be great value in complementary Nordic research that scientifically interprets what climate change would mean for different Nordic areas at the macro-regional level.

- The Nordic countries, aided by the Nordic Council of Ministers, could support a research programme that specifically *refines the results of the IPCC’s research down to the Nordic level*. While such a research programme may be difficult to reconcile for national budgets, the fairly similar geographic and socio-economic conditions in the Nordic countries means that such a macro-regional research programme could be a cost-efficient solution.

**D)** The global costs of not reacting in a timely fashion to the challenges of climate change have been succinctly stated in the Stern Report. Since adaptation to climate change is essentially a socio-economic question, there is still much scope for exploring how Nordic society can react to both the challenges and opportunities of a changing climate and adapt to the measures taken, at the same time as territorial development and regional growth are promoted.

- The Nordic countries could instigate a comprehensive collaborative research programme on the specific socio-economic effects that they would experience as a result of climate change. In effect, such a programme could be likened to a more *regionally-directed “Stern report”* for the Nordic countries.

- A specific research programme, supported by the Nordic countries and the Nordic Council of Ministers, could focus on how regional policy can respond to the “benefits” of climate change and the resulting new patterns of energy provision, by broadening the *territorial impacts and economic attractiveness of the Nordic countries*. Nordregio, as an institute with competence in both territorial development and climate change adaptation and mitigation, would be well placed to develop such a programme.

## 6.3 Concerted Nordic communication, capacity building and dissemination strategies for climate change response

Regardless of the quality of research produced, or the relevancy of national goals for climate change response, the strategies and plans of action still need to be communicated and disseminated in order to be implemented efficiently at all levels of governance. Communication, capacity-building, and dissemination strategies within the Nordic countries, are all ripe for further Nordic collaboration. Although the geography of the Nordic countries is similar, their vulnerability to climate change may be more similar when considered in a trans-border, rather than national, perspective. The occurrence of climate change demands that we are able to learn across international borders. Greenland’s government, for instance, may derive more value from exchanging experience with representatives of Arctic parts of Norway and Sweden than with its more traditional counterparts in Denmark.

**E)** “Trans-national learning” within the Nordic countries could therefore be an essential part of any communication or dissemination strategy. The Nordic countries are similar on many socio-economic levels, particularly in terms of lifestyles and attitudes; there are substantial opportunities for learning from one another with regard to climate change mitigation and adaptation potentials.

- The Nordic countries and the Nordic Council of Ministers could facilitate *new traditions of trans-national learning*, such as by encouraging communication about various “best practices” and good examples of having utilized the potential positive effects of climate change, such as those seen in new patterns of agriculture, or in the increasing attractiveness of peripheral areas, as well as in the success of measures aimed at infrastructure protection.
- The Nordic countries and the Nordic Council of Ministers could support fora for increasing the communication between and among the Nordic states on *linking urban planning to the new challenges that climate change poses*. Seminars and workshops could be organized on the common challenges associated with, for instance, planning for more energy-efficient cities, or planning that takes into account vulnerability to climatic events.

**F)** To a large degree, trans-national learning implies simplifying what scientific knowledge means in practice. In the case of climate change adaptation at the local and regional levels, planners and politicians alike need access to reliable scientific knowledge that is easy to understand. Planners, politicians and private actors also need special competence in order to form the various types of partnerships that are needed to deal with climate change issues. Much of this knowledge can be found in the Nordic countries, but there is still a need to find the relational forums in which to disseminate this capacity to other interested actors.

- The Nordic countries and the Nordic Council of Ministers could work together to produce and disseminate a *policy-relevant brochure for what climate change means* for the various geographies of the Nordic countries (such as the Arctic areas, coastal cities, vulnerable ecosystems, urban areas), formulated in simple language.

- A *dialogue* could be initiated to bring together pertinent actors in the Nordic countries and explore the need for *greater capacity to deal with climate change*. The dialogue could take up specific questions, such as how the risk of flooding due to increased extreme weather can be alleviated in urban areas, or how we can plan city transportation in a more energy-efficient manner.

## 6.4 Implementation, or “mainstreaming,” climate change adaptation concerns as aspects of national, regional and local governance

One of the biggest challenges for adapting to climate change in the Nordic countries is how to integrate it into national, regional or local governance institutions. This “mainstreaming” of climate adaptation actions means introducing climate change into both the sectoral and inter-sectoral institutions. At the moment, policy areas in the Nordic countries are organized, both at the national level and below, in a highly sector-based fashion. Climate change, as an issue that cuts across various governance sectors – environment, agriculture, energy, fisheries, urban planning, regional planning, etc. – demands to be approached both sectorally and cross-sectorally.

**G)** In this respect, the Nordic countries stand to learn from one another as a part of the processes by which climate change concerns are integrated or mainstreamed into other policy areas.

- The Nordic countries and the Nordic Council of Ministers could invigorate the process of climate change mainstreaming by supporting *workshops for inter-ministerial actors* in the Nordic countries, where the focus would be on the processes and structures of inter-sectoral climate actions, for example, how to integrate hazard scenarios into spatial planning. Such a workshop has been organized on a national level in Norway, and this could serve as a model for a Nordic inter-ministerial workshop.
- Experiences on the ground level, or “best practices,” when it comes to climate change mainstreaming in the Nordic countries, can provide invaluable feedback and inspiration to local and regional institutions in other countries. Thus, the Nordic countries are encouraged to identify interesting situations for policy responses, which in turn could lead to *increasing the capacity to integrate climate change into existing policy areas*.

**H)** Mitigation and adaptation are actually “two sides of the same coin” when considering a climate change strategy. While it makes sense to separate the strategies, in the initial stages of mainstreaming climate change measures into policy responses, the Nordic countries, in the longer-term, must consider how they can at the same time secure future energy provision and adapt to these new forms of energy use in various sectors.

- The Nordic countries should recognize the need for *long-term planning for climate change*, which takes into account all relevant stakeholders, but has a focus on the substance and outcome of the mainstreaming of both climate mitigation and adaptation.

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# Appendix 1: List of participants

Surname	First name	Position	Organisation/Employer	Country
Aalto	Silja	Senior Advise	Ministry of the Environment	Finland
Alakivi	Irja	Senior Official/Consultant	Association of Estonian Cities	Estonia
Alestalo	Mikko	Prof. Deputy Director General	Finnish Meteorological Institute	Finland
Andersen	Cathrine	Adviser	Directorate for Civil Protection and Emergency Planning/ Norwegian Climate Adaptation Programme	Norway
Anderssen	Idun Husabø	Researcher	Vestlandsforskning	Norway
Ásgrímsson	Halldór	Secretary General	Nordic Council of Ministers	Iceland
Bjerga	Magnar	Adviser	Norwegian Polar Institute	Norway
Bock	Nikolaj	Senior Adviser	Nordic Council of Ministers	Denmark
Bolin	Bert	Professor Emeritus	Professor Emeritus in Meteorology, Stockholm University	Sweden
Bothen	Mats	Project manager	Stockholm City Planning Administration	Sweden
Bowman	Clive	Senior Research Fellow	UHI Millenium Institute	UK
Carlsen	Henrik	Senior Analyst	FOI, Swedish Defence Research Agency	Sweden
Cederlöf	Magnus	Chief Engineer	Ministry of the Environment	Finland
Damsgaard	Ole	Director	Nordregio	Sweden
Døvik	Kristian	Higher Executive Officer	Ministry of Environment	Norway
Dunér	Mårten	Head of Planning	The National Board of Housing, Building and Planning, Sweden	Sweden
Ehrström	Margaretha	Senior Adviser	National Board of Antiquities	Finland
Ekestam	Harry	Senior Adviser	Ministry of the Interior	Finland
Ekroos	Marja	Counsel to the Environment Committee of the Finnish Parliament	Parliament of Finland	Finland
Ellefsen	Unn	Senior Adviser	Ministry of the Environment	Norway
Eriksson	Magnus	Secretary for International Affairs	Parliament of Finland	Finland
Francke	Per	Research assistant	Nordregio	Sweden
Gestrin	Christina	Member of Parliament	Parliament of Finland	Finland
Grandell	Nina	Special Adviser	Ministry of Finance	Finland
Hansen	Henning Sten	Senior scientist	National Environmental Research Institute	Denmark
Hansen	Klaus Georg	Head of Division	Spatial Planning Division, Ministry of Environment and Nature, Greenland Home Rule	Greenland
Heikinheimo	Pirkko	Coordinator	Ministry of Agriculture and Forestry	Finland
Heikkonen	Kaarina	City Ecologist	City of Helsinki, Environmental Centre	Finland
Hukkinen	Janne	Professor	Helsinki University of Technology	Finland
Huovinen	Susanna	Chairman of the Environmental Committee	Parliament of Finland	Finland
Iglebaek	Odd	Editor	Nordregio	Sweden
Johansen	Harley E.	Professor of Geography	University of Idaho	USA
Johansson	Magnus	Project Manager/Analyst	Swedish Rescue Services Agency, NCO – Swedish Centre for Lessons Learned from Incidents & Accidents	Sweden
Kankaanpää	Susanna	Researcher	Finnish Environment Institute	Finland

Karlsen	Marianne	Adviser	Directorate for Civil Protection and Emergency Planning/ Norwegian Climate Adaptation Programme	Norway
Karlsson	Martin	Adviser	The National Board of Housing, Building and Planning, Sweden	Sweden
Klein	Johannes	Researcher	Geological Survey of Finland	Finland
Klint	Mikaela	Arctic coordinator on climate change and contaminants	Danish EPA/Nordic Council of Ministers	Denmark
Kuhmonen	Hanna-Marie	Senior Officer	Ministry of Agriculture and Forestry	Finland
Kuusisto	Esko	Hydrologist	Finnish Environment Institute	Finland
Langlais	Richard	Senior Research Fellow	Nordregio	Sweden
Lehtomäki	Paula	Minister of the Environment	Minister of the Environment	Finland
Høyer	Hege	Trainee	Western Norway Research Institute	Norway
Leivestad				
Levänen	Jarkko	Secretary of International Affairs	The Student Union of Helsinki University of Technology	Finland
Lindberg	Fredrik	Head/Project Manager	Arkitekturum AB	Finland
Lindström	Guy	Deputy Director	Parliament of Finland	Finland
Luoma	Kaleva	Energy Engineer	Association of Finnish Local and Regional Authorities	Finland
Magnusson	Roland Lars	Analyst	GreenStream Network	Finland
	Johannes			
Mortensen	Philip	Adviser	Ministry of the Environment, Department for Pollution Control	Norway
Müller	Mattias	Environmental Strategist	Trelleborg municipality	Sweden
Mälly	Marko	Senior Adviser	Regional Council of Päijät-Häme	Finland
Nyholm	Nanna	Environment Adviser	US Embassy, Copenhagen	Denmark
Rask	Mikko	Researcher	Helsinki University of Technology	Finland
Rasmussen	Jens Nytoft	Senior Adviser	Nordic Council	Denmark
Robstad	Bjørn Willy Robstad	Adviser	The Norwegian Parliament	Norway
Rød	Axel	Adviser	Ministry of Local Government and Regional Development	Norway
Schmidt- Thomé	Philipp	Researcher	Geological Survey of Finland	Finland
Selvig	Eivind	Analyst	AS Civitas	Norway
Siirala	Maisa	Local councillor	Region of Espoo	Finland
Stadius	Peter	Senior lecturer	Helsinki University	Finland
Talling	Niklas	Junior Adviser	Nordic Council of Ministers	Denmark
Thostrup	Lars	Director	North Atlantic Coperation, NORA	Faeroe Islands
Tikkala	Terhi	Member of Parliament	Parliament of Finland	Finland
Tolonen	Pertti	Head Instructor	Emergency Services College	Finland
Torheim	Wilhelm	Deputy Director General	Ministry of the Environment	Norway
Trolle	Camilla	Coordinator	Nordic Council of Ministers, Sea and Air Group	Denmark
Tynkkynen	Oras	Member of Parliament	Parliament of Finland	Finland
Valsson	Trausti	Professor	Professor of Planning, University of Iceland	Iceland
Van Well	Lisa	Research Fellow	Nordregio	Sweden
Vauramo	Anu	Senior Adviser	Metsähallitus	Finland

# Appendix 2: Speaker presentations

*Halldór Ásgrímsson, Secretary General for the Nordic Council of Ministers*, assumed his post as Secretary General for the Nordic Council of Ministers as of 1 January 2007. Halldór Ásgrímsson has been a politician for 32 years, most recently as Prime Minister of Iceland. He has taken part in all the Nordic Council's sessions during the last thirty years, except for 1979. He has previously been both Minister of Fisheries and Foreign Minister. He takes a positive view of the EU and is interested in closer co-operation between the Nordic countries and the EU.

*Bert Bolin, Professor Emeritus in Meteorology, Stockholm University*, contributed to the early development of numerical weather forecasting in the 1950s, and to the emergence of atmospheric chemistry, particularly through studies of the circulation of sulphur and carbon in the atmosphere, the oceans and terrestrial ecosystems, in the 1960s. The launching of weather satellites gave new possibilities for the development of global models for weather forecasting and gradually for studies of global climate and its possible change, in which Bolin took active part. He served as the first Chairman of the UN Intergovernmental Panel on Climate Change, or IPCC, during the years 1988-1997, during which time the first two IPCC assessments were completed, in 1990 and 1996.

*Mårten Dunér, Head of Planning Unit, The National Board of Housing, Building and Planning (Boverket), Sweden*. The National Board of Housing, Building and Planning – Boverket – is the central government authority for planning, the management of land and water resources, urban development, building and housing under the Ministry of the Environment. Boverket monitors the function of the legislative system under the Planning and Building Act and related legislation and proposes regulatory changes if necessary. To ensure effective implementation Boverket also provides information to those engaged in planning, housing, construction and building inspection activities.

*Christina Gestrin, MP, Finland and Finland's Delegation to the Nordic Council*. She has been a Member of the Parliament for the Swedish People's Party, since 2000, and Member of the Finnish Delegation to the Nordic Council, from 2007. Among other roles on the Nordic Council, she is a Member of its Environment and Natural Resources Committee. She has a Master of Science in Agriculture and Forestry (1993) from the University of Helsinki. She has been active for many years in environmental issues, especially regarding the Baltic Sea. In addition to the above, she is a member of the following:

- Constitutional Law Committee (deputy member) 03.04.2007 -
- Finance Committee (member) 09.09.2004 -
- Subcommittee for Education and Science (member) 04.05.2007 -
- Agriculture Subcommittee (member) 04.05.2007 -
- Environment Committee (member) 03.04.2007 -
- Advisory Council of the Finnish Institute of International Affairs (member) 01.06.2007 - 31.05.2011

*Klaus Georg Hansen, Head of Division, Spatial Planning Division, Ministry of Environment and Nature, Greenland Home Rule*, and originally an anthropologist, served as Head of the Greenland National Library for five years, before spending another five years as Head of the Sisimiut Museum, in Greenland. Since 2006, he has served in his present capacity at the Spatial Planning Division, Ministry of Environment and Nature in the Greenland Home Rule. At present, he is

also Chairman for the Strategic Environmental Assessment (SEA) of the proposal by ALCOA to build an aluminium smelter on Greenland. He has done research and published on topics such as information technology and democracy, the conceptual history of the Inuit, and the modern history of Greenland.

*Pirkko Heikinheimo, Coordinator, Climate Change Adaptation Research Programme ISTO, Research programme on adaptation to climate change (2006-2010), Ministry of Agriculture and Forestry.* The aim of the five-year research programme is to support the implementation of the National Adaptation Strategy to Climate Change. The programme was prepared in cooperation between Government ministries in 2005. The programme got started in 2006. The altogether 16 projects are funded under the Environment Cluster Program of the Ministry of the Environment, as well as by the Ministry of Agriculture and Forestry and the Ministry of Transport and Communications.

*Susanna Kankaanpää, Finnish Environment Institute,* holds an M.Sc in land-use planning and environmental economics. She is currently a researcher at the Finnish Environment Institute, in the Research Programme for Global Change. She is involved in a number of national and international projects dealing with the issues of adaptation to climate change and land use change. She is preparing her doctoral thesis, on the topic of local level adaptation, at the Department of Social Policy, University of Helsinki.

*Paula Lehtomäki, Finland's Minister of the Environment, 19 April 2007 to present, and Member of Parliament, Centre Party.* Minister for Foreign Trade and Development, and Minister at the Prime Minister's Office, 17 April 2003 to 2 September 2005, 3 March 2006 to 19 April 2007

- Centre Party, Deputy Party Leader, 2002 to present
- Member of Parliament, 1999 to present
- Parliamentary Finance Committee, Chair 2003
- Finnish Delegation to the Nordic Council, Member 1999-2003
- Finnish Delegation to the Council of Europe, Member 2003

*Eivind Selvig, Partner, AS Civitas, Oslo,* has more than fifteen years experience from research, management and consultancy. He works on such issues as measures for reducing air pollution, environmental and health impacts of air pollution, environmental costs, cost-benefit and cost-effective analysis. He has special expertise concerning strategic planning and action plans to reduce air pollution, energy use and production, transportation and environmental impacts. He is a partner in AS Civitas, Oslo.

*Philipp Schmidt-Thomé, Geological Survey of Finland,* trained as a Geographer (MSc, University of Bonn); spent time as a postgraduate in Hydrogeology and Engineering Geology (University of Tübingen); and did his PhD in Geology (University of Helsinki). After studies and work assignments on environment and hazard-mapping for regional planning in Chile and Thailand, he has been based, since 1998, at the Geological Survey of Finland. He does research and research management in several European and international projects on the topics of environment, natural hazards and climate change, all in relation to spatial planning and regional development. He is an Officer on the Commission on Geoscience for Environmental Management (GEM) of the International Union of Geological Sciences (IUGS).

*Oras Tynkkynen, MP, Finland,* was recently appointed to the newly-created position of Climate Policy Specialist in the Prime Minister's Office. He is the Green Party's representative in the Parliament's Environment Committee, as well as in charge of climate and energy policy in the Green Parliamentary Group, and Chair of the party's Transport Policy Group. In 1996, he was one of the founding members of Friends of the Earth Finland, and served as its vice-

chairperson for two years. Oras was also one of the first activists in Finland to apply the “Reclaim the Streets” party concept in Finland.

*Trausti Valsson, Professor of Planning, University of Iceland, at the Department of Environmental and Civil Engineering, University of Iceland.* He holds a degree in architecture and planning from TU Berlin (1972) and a PhD in Environmental Planning from UC Berkeley (1987). Valsson was planner/researcher at the Reykjavik Planning and Development Office 1972-1979. In Iceland, he is registered both as an architect and planner. Valsson has published over a hundred articles and twelve books, of which three are in English: How the World will Change – with Global Warming; Planning in Iceland and City and Nature.