

## International conference

**“Are we ready to cope with climatic changes? Consequences of the winter storm 2005”**REPORT

**TIME:** May 18-20, 2006  
**PLACE:** Klaipeda, Lithuania  
**PARTICIPANTS:** Representatives of science and research institutions, local authorities, non-governmental organizations, companies from Belgium, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, United Kingdom, United States of America. In total 70 participants.

The conference was organized within the framework of the projects “Developing Policies and Adaptation Strategies to Climate Change in the Baltic Sea Region (ASTRA)” and “Awareness Raising Campaign on Climate Change”.

**INVITED EXPERTS:**

Mr. André Müller	Federal Ministry of Transport, Building and Urban Affairs (Germany);
Mr. Andrus Meiner	European Environment Agency (Denmark);
Mrs. Ruta Bubniene	Climate Action Network – Europe (Belgium);
Mrs. Rita Palciauskaite	Land Management Institute (Lithuania);
Mr. Bryan Boulton	The ESPACE Project, Hampshire County (United Kingdom);
Mr. James Hindson	Field Studies Council (United Kingdom).

**GOALS OF THE CONFERENCE:**

- ⇒ To raise awareness on climate change in the Baltic Sea Region;
- ⇒ To inform about winter storm 2005 and its consequences;
- ⇒ To inform about the climate change research and the scientific background.

**PROCEEDINGS:****Thursday, May 18**

**Opening** of the workshop, by *Ms. Elena Talockaite, ECAT (Lithuania)*

Mr. Vidmantas Pleckaitis, Vice-Mayor of the City of Klaipeda, Mr. Keith Shannon, Deputy Head of Mission, British Embassy in Lithuania and Mrs. Lina Virviliene, Deputy Head of Klaipeda Region EPD under the Ministry of Environment of the Republic of Lithuania welcomed participants of the conference.

Ms. Talockaite briefly introduced to the goals of the conference, participants, agenda and main topics.

Mr. Philipp Schmidt-Thomé from Geological Survey of Finland introduced goals and activities of ASTRA project.

Mrs. Vaiva Ramanauskiene from ECAT (Lithuania) presented project “Awareness raising campaign on climate change” carried out in Lithuania.

**Climate Change in Lithuania** by *Mr. Gintautas Stankunavicius, Vilnius University (Lithuania)*

Mr. Stankunavicius presented that Lithuanian climate follows the North Atlantic and Global scale climate tendencies experiencing substantial changes during past century and especially during last few

decades. Regional temperature and precipitation trends closely match hemispheric and regional pressure patterns dynamics. Collateral data such as phenological, ice and snow cover indices confirm changes in regional climate. Global warming as widely announced phenomenon appeals to undoubted facts despite increasing climate extremity.

**Promoting Trans-European Risk Management in the Framework of EU's Territorial Agenda – What about Local and Regional Stakeholders?** by Mr. André Mueller, Federal Ministry of Transport, Building and Urban Affairs (Germany)

Mr. Mueller presented main principles of the Territorial Agenda of the EU. Stress vulnerability reduction, risk management, polycentric spatial development and risk governance are named within priorities of the promotion of trans-European technological and natural risk management, including integrated development of coastal zones, maritime basins, river basins and mountain areas. The need for local and regional stakeholders' input was stressed.

## **SESSION I – CLIMATE CHANGE IN THE BALTIC SEA REGION**

*Chaired by Ms. Elena Talockaite, ECAT (Lithuania)*

**Climate Impact Research in the Baltic Sea Region – State of the Art** by Dr. Juergen Kropp, Potsdam Institute for Climate Impact Research (Germany)

In the presentation Dr. Kropp raised the issue of climate research and modeling (existing knowledge and lessons learned), possibilities to estimate regional consequences and preconditions for good policies, as well as necessity to connect mitigation and adaptation issues. Dr. Kropp concluded that problem of adaptation is not new. View on adaptation changes, as humanity now can anticipate disastrous developments. Results from climate models show the necessity of adaptation and mitigation. However, information for concrete actions stands outside the scope of models. Adaptation and mitigation actions have to be developed in close cooperation of decision-makers and scientists.

Dr. Kropp also presented AMICA project (“Adaptation and Mitigation – an Integrated Climate Policy Approach: European Cities Striving for Best Practice Examples”). Thematic working groups, partners, scope of the scientific analysis, etc. were presented. Dr. Kropp concluded that adaptation could reduce adverse impacts. Communities will have to adapt to climate change and it will cost. Adaptation measures have to be included into existing management and development process. Experience shows that planned adaptation measures have immediate benefits. Development activities modify adaptive capacity, which varies considerably among countries, regions and socio-economic groups. Enhancement of adaptive capacity is essential in order to reduce vulnerability. Current knowledge of adaptation and adaptive capacity is insufficient. There is a need for more joint projects with decision-makers and scientists.

**An Overview of Adaptation Strategies for Climate Change Existing in the BSR** by Ms. Elena Talockaite, ECAT (Lithuania)

Ms. Talockaite presented goals of the overview, methodology used, overview of adaptation strategies to climate change existing in the BSR, communication strategies, as well as development and implementation process of adaptation strategies in BSR countries. Information was gathered from Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden. Assessment showed that National Strategy for Adaptation to Climate Change exists in Finland and describes impacts of climate change in different sectors. Other countries have framework policies, cross-sectoral strategies and sector-based document. However, climate change integration level is limited or unclear. Therefore, there is a need for deeper content analysis of these documents. Initiation and elaboration of these documents was carried out mainly using top-down approach. Information and involvement of stakeholders was

organized only when it was legally required. A number of institutions and organizations are involved in the development and implementation process. There is a clear need for coordination and cooperation between involved stakeholders.

**The Winter Storm 2005 as an Example of an Extreme Event – a Scoping Study for ASTRA** by Dr. Lasse Peltonen, Helsinki University of Technology, CURS (Finland)

Dr. Peltonen introduced results of the study “Impacts of winter storm Gudrun and measures taken in the Baltic Sea Region” carried out in the frame of ASTRA project. Dr. Peltonen made an overview of goals, methodology used, impacts of Gudrun in the Baltic Sea Region as well as measures taken in the BSR before, during and after the storm.

Winter storm Gudrun (Erwin) battered northern Europe on January 7-9, 2005. 17 persons died in the storm. Social, economical and natural systems were severely affected. The scale and nature of impacts caused by Gudrun differs from country to country. Flooding and evacuation of inhabitants, cuts of power and communication lines, damage of property and infrastructure, disruption of sea, air and land transport, forest losses, release of untreated wastewater, coastal erosion, impact on industrial and energy sectors were named as main impacts of Gudrun. Analysis of measures taken before and after the storm, as well as performance of early warning systems at national and case study levels showed that countries that had experienced storms previously were better prepared for the Gudrun and implemented measures more efficiently. Early warnings, information sharing and coordinated action are key elements in damage control. Each BSR country has its own strategies or rules of behavior and actions in extreme situations. The overview analysis showed that before Gudrun more activities were implemented at national level, while local and regional levels were more active only after the storm. The analysis of impacts and measures taken before and after Gudrun showed that it is essential to ensure the good prediction and management of extreme weather events at both national and local levels. Gudrun stimulated technical improvements, as well as organizational and institutional changes in almost all countries analyzed in this report. Need for a better information sharing and coordination between different actors was seen as a top priority.

**SESSION II – EUROPEAN DIMENSION OF CLIMATE CHANGE**

*Chaired by Ms. Elena Talockaite, ECAT (Lithuania)*

**Climate Change and European Union** by Mr. Andrus Meiner, European Environment Agency (Denmark)

Mr. Meiner stressed the need for more efforts to reach the EU Kyoto targets. There is also a need for substantial further reduction in global GHG emissions in order to achieve long-term targets and avoid unacceptable impacts. Strong global action is needed in the mitigation process, while the EU has to take its responsibility and continue taking a leading role. Different stakeholders – governments, industries, private persons, researchers, NGOs and media – have to contribute to the successful implementation of mitigation measures.

Mr. Meiner also concluded that there is a need to develop adaptation policy framework at European, national and regional/local levels. Adaptation issues have to be introduced into other policies and measures. EU and national scale research on vulnerability, good practices, costs and benefits has to be enhanced involving different stakeholders. Exchange of experience amongst relevant stakeholders, clear communication of risks to those affected, as well as actions they can take can contribute to the adaptation process.

## **Adaptation to Climate Change from the Perspective of EU NGOs** by *Mrs. Ruta Bubniene, Climate Action Network Europe (Belgium)*

Mrs. Bubniene introduced Climate Action Network – Europe. Mrs. Bubniene presented in more details a Viable Global Framework – 3 Tracks:

- *Track One:* Kyoto Track with legally binding emission reductions in subsequent commitment periods;
- *Track Two:* Decarbonisation Track for the developing countries not in the Kyoto Track;
- *Track Three:* Adaptation Track for the most vulnerable countries.

Improving synergies between existing actors and institutions, creation of adequate and equitable financial mechanisms, strengthening adaptive capacities of local and regional actors and institutions, as well as strengthening of scientific, economic and social knowledge on adaptation were named as most important ways forward.

## **SESSION III – CLIMATE CHANGE AND SPATIAL PLANNING**

*Chaired by Ms. Elena Talockaite, ECAT (Lithuania)*

### **Strategic and Spatial Planning in Lithuania** by *Ms. Rita Palciauskaite, Land Management Institute (Lithuania)*

Ms. Palciauskaite presented main principles of strategic and spatial planning in Lithuania, forest augmentation program, formation of protected areas and public participation in spatial planning.

### **The Management of the Lithuanian Coast of the Baltic Sea** by *Mr. Gintautas Zilinskas, Institute of Geology and Geography (Lithuania)*

Mr. Zilinskas presented main strategic and legal documents regulating and main principles of coastal management in Lithuania. Strategy of Coastal Management of the Lithuanian Baltic Sea Coast, The Law of the Coastal Zone of the Republic of Lithuania, special programs of coastal management form a legal basis for coastal management in Lithuania. Recommended measures for coastal management and their implementation was presented.

## **Friday, May 19**

*Chaired by Ms. Audrone Alijosiute, ECAT (Lithuania)*

### **ESPACE – European Spatial Planning: Adapting to Climate Events** by *Mr. Bryan Boulton, The ESPACE Project, Hampshire County (United Kingdom)*

Mr. Boulton presented aims, partners and main activities of ESPACE project. ESPACE project aims to ensure adaptation is recognized and incorporated into spatial planning systems at the European, national, regional and local levels; to develop adaptation strategies and policy guidance to deal with the long-term impacts of climate change and to raise awareness amongst a wide range of stakeholders.

## **SESSION IV – PARALLEL WORKSHOPS**

In order to discuss issues raised in the plenary in more details participants were divided into two groups and two parallel workshops were organized. Workshops results were later presented in the plenary.

### Workshop A:

*Facilitator: Dr. Gintautas Stankunavicius, Vilnius University (Lithuania)*

Main aim of Workshop A was to present first results of the research carried out in the case study areas in the frame of ASTRA project. Following issues were presented during the workshop:

1. "Perceived Climate Change Impacts and Exposure Units in the BSR: Results from a Case Study Screening" by K. Eisenack, Potsdam Institute for Climate Impact Research (Germany);
2. "Sea level changes and coastal evolution in the south-eastern Baltic" by Dr. L. Z. Gelumauskaite, Dr. J. Seckus, Institute of Geology and Geography (Lithuania);
3. "Impact of wind regime on the changes in dunes" by Dr. R. Morkunaite, Prof. Hab. A. Cesnulevicius, A. Bautrenas, Institute of Geology and Geography (Lithuania);
4. "Consequences of the winter storm 2005 in Estonia: possible changes in mean and extreme sea levels due to climate change" by Ü. Suursaa, University of Tartu (Estonia);
5. "Coastal damages in Estonia caused by the storm on January 9, 2005" by H. Tonisson, Tallinn University Institute of Ecology (Estonia);
6. "Temperature and sea level changes in Pärnu area during last fifty years" by V. Petersell, J. Kivisilla and S. Suuroja, Geological Survey of Estonia;
7. "Case study areas: Cities of Kokkola and Raahe, Finland" by S. Putkinen, Geological Survey of Finland;
8. "Results of Storm Surges on the Gulf of Gdansk Coast" by Dr. Szymon Uscinowicz, Polish Geological Institute (Poland).

A summary of issues discussed in workshop A is presented in Annex I.

### Workshop B:

*Facilitator: Dr. James Hindson, Field Studies Council (United Kingdom)*

Main aim of Workshop B was to discuss different aspects of awareness raising of local stakeholders (planners, decision-makers, general public, other interested institutions) on climate change issues. Workshop participants discussed most important groups of stakeholders, message that has to be communicated to these groups and main principles of communications. A summary of issues discussed is presented in Annex II.

### **SESSION V – PLENARY**

*Chaired by Mr. Philipp Schmidt-Thomé, Geological Survey of Finland and Dr. Lasse Peltonen, Helsinki University of Technology, CURS (Finland)*

Main outcomes of the parallel workshops were presented in the plenary. Participants of the conference made their statements on the topic "Are we ready to cope with climatic changes?" The necessity to further raise awareness of local stakeholders on climate change issues (the problem, mitigation and adaptation), as well as to improve a dialogue and cooperation between local stakeholders and scientists was raised.

*Report by Elena Talockaite  
Environmental Centre for Administration  
and Technology (ECAT-Lithuania)*

## Summary of workshop A (Scientific workshop)

This text gives a short overview of the scientific presentations.

### ***1. Dr.Jürgen Kropp “Perceived Climate Change Impact and Exposure Units in the BSR: Results from a Case Study Screening.”***

Results of the evaluation of 40 questionnaires received by ASTRA partners were presented. The screening questionnaire was elaborated by PIK in order to find out how local stakeholders/decision makers perceive the threat of climate change, what they are thinking about local problems, and to obtain information about their needs from science in order to cope with climate change impacts.

The widely used concept of exposure units was presented. Exposure units are entities which are specifically threatened by climate change impacts. These can be the built up environment, natural environment or economic sectors as well as actors such as stakeholders or individuals. Further was made clear that climate change is a fact and that responses of societies are necessary in order to adapt.

As focal impacts for the BSR region storms, sea level rise, flooding and precipitation change (interestingly enough no heat waves were mentioned maybe due to the northern location of the case studies) were identified.

One key finding of the screening was that stakeholders understand the climate change problem mainly in the mitigation (greenhouse gas reduction) context. This is in line with the finding that several stakeholders have difficulties to describe the - potential - local problems induced by climate change adequately. Consequently (planned) adaptation policies do not exist or are rare. Obviously a broad uncertainty exists on stake holder's side often leading to an increased demand of improved data/simulations. Parallel it was observed that local stakeholders are unable to translate these data into practical policies. Another key point was that policy makers are often interested in weather extremes (singular events) instead of considering climate change (process). Summarizing these situation leads to less strategic awareness what must/should be done for a safe future.

Further conclusions to be drawn:

- Exact estimates for local climate change are limited by an inherent systems uncertainty, but conclusions for local scales can be drawn, since all necessary knowledge is on hand
- There is a lot of unstructured knowledge concerning climate change issues among stakeholders (maybe more interviews with stakeholders are needed) implying that there exists a need of closer cooperation of stakeholders and science
- Impact assessment is wanted for urban built up areas, water supply, energy, transportation and infrastructure, development of tourism and forestry
- Integration of climate change into hazard protection policies should be provided
- There are already best practise examples from other projects (e.g. AMICA)

### ***2. Dr.L.Z.Gelumbaускаite” Sea level changes and coastal evolution in the south-eastern Baltic”***

Aim of the work is a 4D structural geological model of the coastal environment at the Lithuanian coast (Curonian spit-Curonian lagoon- inland) since the last 13500 years and its future evolution. This is done by means of digital elevation models taking into account sea level rise (isostasy/eustasy), sediment transport (erosion/deposition processes) modelling, interpretation of seismic profiles, analysis of pollen and tree ring samples etc. All results are integrated into a GIS.

For the modelling of the future evolution data on “short term” climate change effects found during the ASTRA will be integrated into the model. As results different palaeo-relief scheme models will show different stages in time of the region.

### **3. *Dr.R.Morkunaite “Impact of wind regime on the changes in dunes”***

The task of the study is the description of dune dynamics in the Curonian spit and its future evolution. During the summers 2003/2004 several levellings of cross sections were performed in the study area. Other methods used were photo interpretation, description of wind regimes and deflation processes and a interpretation of the drought season in August 2003. A description of morphological dune types was presented and over 50 structures have been mapped. Comparing the results will enable to predict possible future changes in the Curonian spit due to climate change effects.

### **4. *Ü.Suursaar “Consequences of the winter storm 2005 in Estonia: possible changes in mean and extreme sea levels due to climate change”***

The evolution and a description of the impacts of the winter storm Gudrun on Estonia was given. The storm was classified as a 1<sup>st</sup> class hurricane. The impacts of the storm in Pärnu were described. The storm surge in Pärnu was 2.75 m high and reached 1 km inland inside populated areas. Approx. 1000 houses have been flooded. A hydrodynamic model was presented showing the situation in the Riga/Pärnu bay and its effect on sea level rise has been discussed. Sea level trends and results of extreme value analysis were presented.

### **5. *H.Tõnisson “Coastal damages in Estonia caused by the storm on January 9, 2005.”***

As an introduction a brief history of storms in Estonia has been presented. The location of case study areas were measurements and data analysis was done was shown. Following location have been studied: Järve, Kelba, Kiipsaare and Küdema. All locations are on Saaremaa Island. The damages caused by the winter storm in the study area have been presented. As a conclusion it can be said that an extreme storm can change the coastal environment dramatically and these changes will last for a long time. In connection with climate change more extreme storm events are probable in the future.

### **6. *S.Suuroja “Temperature and sea level changes in Pärnu area during the last 50 years”***

The case study area of Pärnu and Tallinn have been presented. A temperature rise form 0,62 degree Celsius occurred in the time period 1950-2000 (PIK) . The predicted maximum sea level rise for the next hundred years is 50-70 cm ( SEAREG project) Vertical movements of the earth’s surface have to be considered in Estonia ( glacial rebound effect is still ongoing).In the time period 1950-2005 the sea level has risen in the following places; (Pärnu + 15,6 cm), Tallinn (+12,1 cm), Ristma (+10,5 cm), Narva (+12,0 cm), Virtsu (+9,6 cm). The precipitation has risen from 630 mm to 790 mm in the last 40 years.

### **7. *S.Putkinen “Case study areas: Cities of Kokkola and Raahe, Finland”***

An overview of the case study areas Kokkola and Raahe was given, Both towns are important locations for harbours and heavy industry. These industries are mostly located near the shore. The region experience extreme land uplift rates ( 9mm/a). The city of Kokkola is highly interested in the changes in sea currents and the sea ice cover, as well as the impact on the newly planned housing areas ,recreation areas (summer cottages) and impacts on leisure time activities. The city of Raahe is

interested in possible impacts on a planned windmill park, as well on sea currents and sea ice cover. Planners want the most probable and worst case scenarios for city planning and are planning to develop possible future alternatives. One important point raised is how can the project results be integrated into future city planning?

#### **8. *Dr.Szymon Uscinowicz “ Results of storm surges on the Gulf of Gdansk coast”***

The case study area of Gdansk region was presented highlighting the low-lying areas of the Vistula delta plain (land subsidence in comparison to the northern case study areas) and different types of coastal areas have been introduced. Approx 1 Mio people live in the greater Gdansk area. The ASTRA case study is mainly made up of sandy dune coast. Within this coastal strip lie important groundwater intakes for the water supply. The groundwater supply might be endangered due to climate change effects in future. An increase of storm events was recorded since the 1950ies. The storms in 1993 and in 2004 caused great damages in the Gdansk regions, whereas the winter storm of 2005 had almost no effect on the region.

*Summary by Michael Staudt  
Geological Survey of Finland (GTK)*

## **Summary of workshop B (Awareness raising workshop)**

### **A. Background**

The Conference was held as part of the EU funded ASTRA project. One session of the Conference was devoted to Raising Public Awareness, and this was held as part of the British Embassy support **Awareness Raising Campaign on Climate Change** Project. The Session was included in a larger international event to maximise attendance of different stakeholder groups.

### **B. A Report on Session IV Parallel Workshop – Awareness Raising on Climate Change.**

My contribution to the event was to lead a three hour workshop during the morning on Awareness Raising and Climate Change. There were around 45 participants made up of a mixture of scientists from the ASTRA project and local administration representatives from the different cities in Lithuania that ECAT are working with on the Awareness Raising on Climate Change project.

I had prepared a workshop content and structure in advance, based on my understanding and expectations of the participants needs. Having attended the first day of the workshop however, I reviewed the original plans and delivered something slightly different, as it was apparent that some of the activities I had originally intended to use would not work and that in any case – too many activities had been planned! The papers are attached as appendices.

I started with a short ice breaking question and answer presentation on a flip chart to find out how much participants knew about personal contributions to climate change including data on CO<sub>2</sub> emissions per person for the Baltic Sea countries and CO<sub>2</sub> emissions for specific activities such as driving a car. Some of the figures were surprising – even for the scientists!

After this ice breaking activity the rest of the workshop was spent (a) in group discussions examining key question related to public awareness and climate change and (b) in giving a presentation on latest research on communicating climate change issues.

For the discussions, the participants divided into language based groups to allow for English and Lithuanian discussions. This had the advantage of allowing effective discussions but the disadvantage in that the scientists did not communicate with the local administrators. The groups considered key question such as “What are the key messages about climate change?” “Why do we want to raise public awareness?” “What is our goal in public awareness raising?” and “How do we know that we have been successful?” The groups also considered issues such as the barriers to raising awareness and how to raise awareness successfully – what works! There were two feedback sessions during which there was some discussion of the key issues.

I then gave a short presentation based on the recent research from Futerra for the Defra Climate Change Working Group related to communicating Climate Change. Called “The rules of the Game” the research gives the evidence base for a recommended Climate Change communications strategy through x topics – “Blowing away the myths”, “A new way of thinking”, “linking policy and communications”, “Audience principles”, “Style principles” and “Effective management”.

The feedback from the workshop was very positive. It appears that for many of the participants this was the almost the first time that group work had taken place at a conference of this nature.

This opportunity to discuss issues with colleagues in a structured way was appreciated. The workshop also successfully built on other presentations during the Conference, especially that of Bryan Boulton from Hampshire County Council in the UK.

### **C. Brief Review**

A number of issues arose at the Conference.

Firstly – the whole issue of adapting to climate change is one which the environmental education community does not give great attention to. In working with different education at different levels – the main emphasis is nearly always on mitigating climate change, not planning to adapt to climate change. Yet, as various speakers pointed out – there is no way we can stop the climate changing and therefore we need to ensure appropriate plans are made now for the future to manage the impacts that a changed climate will bring. Education needs to take this on board.

Secondly, there was a clear realisation from the workshop that the local administrative bodies in Lithuania, and probably around the Baltic Sea as a whole, are woefully unaware of the likely impact of climate change, and that part of the reason for this lies in the fact that scientists are really poor at communicating with groups other than other scientists!! There is a clear need for the science to be made simple and for more effective communication. That is partly what the ASTRA project is about – but if it is to be successful then the scientists involved need a greater level of training in communication.

Thirdly – one of the key issues in communication that was discussed focused on the principle of “agency”. It is no good just giving people information about a topic such as climate change without giving them the opportunity to do something about it and take action. Without this opportunity raising public awareness can lead to apathy and frustration – and only a handful of the most eager will make any efforts to do anything.

*Summary by James Hindson,  
Shrewsbury, UK*