



Developing Policies & Adaptation Strategies to Climate Change in the Baltic Sea Region

Newsletter No. 4 - July 2007

The Third International ASTRA Conference in Riga

National and international stakeholders meet to discuss waters and climate change

The Third International ASTRA Conference "Climate change and waters" took place in Riga, 9th-12th May 2007. The conference was financed and supported by the BSR INTERREG III B Neighbourhood Program and the Latvian National Research Programme "Climate Change Impact on the Water Environment of Latvia". The conference brought together researchers, NGOs, sectors' representatives, specialists and other stakeholders to discuss climate change aspects, impacts on waters and approaches to adaptation strategies and its implementation. More than 90 participants from 7 countries met in Riga.

The conference's keynote lectures tackled issues on climate change adaptation strategies relevant to the Baltic Sea region. Ms. Pirkko

Heikinheimo from the Finnish Ministry of Agriculture and Forestry informed about Finland's National Strategy for Adaptation to Climate Change, progress and lessons learned until now. German representative Jacobus Hofstede from the Schleswig-Holstein State Ministry for Agriculture, Environment and Rural Affairs compared the potential climate change effects in the North Sea and Baltic Sea Region. The majority of discussions and presentations during the conference focused on climate change adaptation strategies and various

instruments to be used in the region.

Particularly successful was the panel discussion on the topic "How to integrate climate change adaptation issues into existing development policies" that was led by the project leader Philipp Schmidt-Thomé and Jacobus Hofstede. The audience was interested in the local level climate change impacts and instruments, like spatial planning, construction guidelines and financial regulations, how to adapt to these direct and indirect impacts of climate change foreseen by the scientific community.

The last day of the conference was devoted to local and regional climate change impact assessments in North Sea and Baltic Sea areas. Such aspects as vulnerability of the

groundwater reservoir in Gdańsk region, the sea level rise aspects at the Lithuanian coast, as well as the impacts on inland waters, including nutrient load variability and water quality aspects in Finland and Latvia were discussed.

Participants took part

in the post-conference trip where they were introduced with the local landscapes vulnerable to climate change impacts in the vicinity of Riga. They visited the bog of the Kemer National Park, beaches and dunes as well as a historical wooden settlement in the resort town Jurmala. (A. Briede)

The following section gives insight into the topics of the conference. For more information on the Riga conference please visit the project website. All presentations are available at www.astra-project.org -> past events -> Riga conference

3rd International ASTRA Conference in Riga

The Final International ASTRA Conference will take place in Espoo, December 10th & 11th 2007

Read more on page 7 or at www.astra-project.org



Kemer national park, Latvia

Climate change: Policy and research in Latvia

National research program "Climate Change Impact on the Water Environment of Latvia"

In June 2006 environmental research focusing on regional impact of climate change on water ecosystems and elaboration of adaptation proposals has been adopted as one of Latvia's research priorities. This gave an opportunity to launch national research in the same year.

The programme's goals are to assess short-, medium-, and long-term impact of climate change on the environment and



Philipp Schmidt-Thomé and Māris Kiaviļodis chairing the final discussion at the Riga conference

ecosystems of the inner waters of Latvia and the Baltic Sea, and to create a scientific basis for adaptation of environmental and sectoral policies of Latvia to climate change. Major partners are University of Latvia, Agricultural University of Latvia, Daugavpils University, Latvian Institute of Aquatic Ecology and Latvian Fish Resources Agency. In this context work has commenced on identifying expected impacts of climate change on the aquatic environment of Latvia and analysing the content of existing development policies and planning documents in relation to adaptation to climate change. The starting point for this analysis has been in-depth interviews with researchers of programme work packages to define the priority issues and anticipated impacts of climate change and to identify relevant affected (directly and indirectly) sectors and stakeholder groups that will need to be involved in the formulation and implementation of climate change adaptation policies and measures. The results of the interviews reveal variable uncertainty regarding the nature, vulnerability, and timing of specific climate

change related impacts. A review of national and municipal planning documents is in progress to identify existing approaches to climate change adaptation. Preliminary analysis reveals a limited awareness regarding the relevance of climate change and minimal inclusion of climate change issues in development policies and measures of development plans. (A. Andrušaitis, M. Kiaviļodis, K. Abolina, A. Zilans)

Long-term assessment of the River Salaca hydroecosystem, North Vidzeme biosphere reserve

Long term assessment of the Salaca River hydroecosystem has been carried out since 1982 and is in progress until now. The River Salaca, as the majority of surface waters in Latvia, belongs to the class of hydrogencarbonates of calcium group with medium rate of mineralisation. A comparatively high level of organic substances characterizes the river water. Phytoplankton as well as zoobenthos communities in the upper part of the River Salaca indicate a eutrophic nature of the origin of the river. Cyanobacterial "blooms" from lake Burtnieku affect waters of upper Salaca. In the last decades the river was overgrown by macrophytes, and macroalgae. Water mosses are common in the smaller tributaries. The increasing growth of aquatic vegetation in the last years has been related to climatic factors - higher mean annual air temperatures and earlier springs. Significant quantitative and qualitative changes in the structure of the macrozoobenthos community as well as in chemical and bacteriological parameters are not recorded, and thus the river is considered to be a stable ecosystem. High species diversity is characteristic for Salaca River communities. The river is classified as -mesosaprobic or weakly polluted. (I. Druvietis, A. Briede, L. Grinberga, E. Parele, V. Rodinov, G. Spriņģis)

Climate change impacts in the Gdańsk region

Vulnerability of groundwater reservoir and spatial planning

The Gdańsk region, situated in a coastal, subsiding area with its "soft" geology is especially exposed to climate change impacts such as flooding and coastal erosion. The groundwater system and water supply structure is based considerably on resources from low-lying, near shore

Latvia's National Research Programme

Long-term Assessment of the River Salaca

Climate Change Impacts in Gdańsk



Jugendstil in Riga, Latvia

located water intakes which are especially susceptible. Both, natural (i.e. sea level rise, storm surges) and human induced (i.e. reduction of water consumption) factors cause rise of groundwater level and may seriously affect quality and quantity of fresh water.

Although Gdańsk and the Vistula Delta Plain are ones of the most flood prone areas in Poland, these are simultaneously the best protected. Climate change influence has rather been carefully considered in policies and strategies so far, however sea level rise in long lasting perspective has been taken into account in relation to coastal area protection. Comparison of spatial planning policy directions with elaborated map of areas exposed to sea level rise and flooding with respect to predicted climate change is one step forward in finding the most vulnerable spots towards climate change. It is followed by a discussion on adaptation strategies. (Z. Kordalski, W. Jegliński, D. Kaulbarsz, M. Lidzbarski)

Climate change impacts in the Pärnu region

The research carried out by the scientists of the Estonian University of Life Sciences has indicated that presently in the western part of Estonia's mainland the ground surface uplift in the coastal zone is close to zero (precision ± 0.5 mm/year). Against such background, in Pärnu region local subsidence of 1.3 mm/year is observed. These results are in good agreement with collected data, as well as the geological and archaeological information about Pärnu region.

Considering the above-said, the prognoses of floods are based on ground surface subsidence of 1.3 mm/year (13 cm by the end of the century) due to geological reasons.

The results of SEAREG assumed in the high-case scenario that sea level rise by the end of the century will be 88 cm. Considering the ground surface subsidence and sea level rise, the relative sea level rise in Pärnu region will be ca 100 cm.

For Pärnu region most unfavourable are south-westerly winds and storms, whereas the investigations of scientists of the Institute of Geography, Tartu University have shown that the frequency of such winds increases. Considering the relative sea level rise of 100 cm, the sea level during severe storms may rise 350-390 cm above contemporary sea level; besides, waves will

be added to level. Especially dangerous are periods when storms are accompanied by precipitation and the inflow from rivers adds 20 cm or more to the level.

Besides floods, during storms certain shore sections are intensively abraded.

To mitigate and minimise the impact of floods, the town planning should be promoted into areas with ground surface elevation more than 5-6 m. In case mankind will not decrease the emission of C and N-compounds into the atmosphere, the impact of protective dams will be only short-term (less than 100 years). (V. Petersell, S. Suuroja, J. Kivisilla)

Climate change effects on water quality in the Oder estuary

The Odra (German: Oder) estuary is located on the southern Baltic Sea and consists of the shallow Szczecin (Oder-) Lagoon and the Pomeranian Bay.

The entire estuary is dominated by the discharge of the River Odra (Oder) into the lagoon. With its length of 854 km and basin area of 120,000 km², the Odra is one of the most important rivers in the Baltic region. Between 1980 and 1999, the annual average Odra discharge was 17 km³ (530 m³/s) and contributes at least 94% to the lagoon's water budget. The Odra river carries high loads of nitrogen and phosphorus and causes severe and ongoing eutrophication of the coastal waters.

Climate has strong and multiple effects on water quality in the estuary system. We can distinguish external and internal effects. Climate change affects the river basin and results in altered water discharge and nutrient loads in the Oder river. For example, the strong reduction in nutrient loads and nutrient concentrations in the lagoon, observed in the early 1990s, was largely an effect of warm and dry years.

But the estuary is directly effected by climate, as well. Examples are algae blooms, jelly fish plagues or internal eutrophication. A thermal stratification in the water column and oxygen depletion above the sediment can develop during warm and calm summer periods. Model-based estimates indicate an anoxic P-release from sediments of up to 10 $\mu\text{mol P/m}^3\text{d}$ or up to 400-600 t P for the entire Lagoon during a few weeks. (G. Schernewski, H. Janssen)

Climate Change Impacts in Pärnu

Climate Change Effects in the Oder Estuary



Warning sign in Hamburg, Germany

Climate change adaptation in the Baltic Sea Region and Europe

The 4th Assessment Report of the IPCC, what does it imply for adaptation to adverse effect of climate change in the Baltic Sea area

The 4th assessment report makes clear that our knowledge about anthropogenic climate change is better than ever. Even in the case that we instantaneously stabilize the atmospheric CO₂ level we have to bargain with a global temperature increase of approx. 2°C in comparison to the 19th century. Thus, in the current century several regions worldwide will have to cope with serious consequences affecting all dimensions of our life. This stresses the urgent need to develop proactive adaptation strategies. Climate change scenarios for the development in the Baltic catchment are reviewed and potential adaptation options are discussed. Since the problem of sea level rise is underestimated, even in the 4th assessment report. For sea level rise we show, how adaptation can help to guarantee safe limits for societies and what the benefits can be, if we follow an uncertain, but safe development path during the next decades. (J. Kropp)

Climate Change Adaptation on the European policy agenda

The recent development of climate change adaptation at the European level was outlined by Lasse Peltonen from the Helsinki University of Technology. A chronological account on the emergence of adaptation issues on the European climate policy agenda was developed. A policy analytic framework is used, including a policy cycle (or process) approach and an attempt to trace different mechanisms and motivations. The latter include consolidation of climate science and climate-related focusing events.

At the EU level, adaptation policy is moving from the initial phases of agenda setting towards policy formulation and further integration. This shift is becoming manifest with new legislative instruments with explicit references to climate change adaptation (e.g. the draft Flood Directive) and novel policy initiatives (e.g. ECCP II and other activities by the European Commission). The multiplicity of climate change impacts still means that there are great challenges in the integration of

adaptation to sectoral policies. Examples in this respect are drawn from water policy and spatial planning. (L. Peltonen)

Institutional vulnerability of spatial planning systems in the Baltic Sea region

The risk caused by climate change is an outcome of the climatic impacts themselves and the ways how the society and different regions respond to them. Based on a study on the views of UNFCCC focal points, the work focuses on national spatial planning practices and co-operation and dissemination structures in the Baltic Sea region (BSR). We seek to identify enabling environments and existing bottlenecks for active adaptation from the institutional point of view.

Factors that diminish the power of adaptation strategies in terms of spatial planning practices might include a lack of operational power by local actors, lack of information on climate change or the skill or motivation to integrate climate change information into planning practices. On national level, existence and implementation of climate change adaptation strategies is a key question. The regional level is seen to play a central role in enabling adaptive action.

There are clear differences between the adaptation capacities of the BSR countries. Whereas all the countries seem to be doing well on consensus development on the threat itself, differences arise in how climate change information is disseminated and how different actors deal with this information. The situation in Latvia is found being a positive surprise in this respect. However, current socio-economic trends in the BSR underline the need for adaptation in all BSR countries. (S. Haanpää)

Towards climate change adaptation strategies in the BSR

ASTRA's central task is to provide information and recommendations for stakeholders, especially policy-makers, on how to develop adequate adaptation strategies against climate change impacts. Special attention is given to the Pan-Baltic level as an area of joint concern, not only for the project partners but the European Union as well. To be aware of key concepts concerning adaptation (as opposed to mitigation), reasons why adaptation strategies are needed and main challenges when coping with climate change are central issues for sound decision-making.

4th IPCC Assessment Report

Adaptation on the European Policy Agenda

Institutional Vulnerability in the BSR

Climate Change Adaptation Strategy for the BSR



At the coast of the Baltic Sea on Saaremaa

It becomes visible that the concept of adaptation is not well known. Thus, the integration of adaptation into policies is not taken for granted. Resulting from this, adaptation to climate change is not yet a subject of concerted action.

The European Union plays an important role in improving awareness and catalyzing the process of enhancing action, whereas the member states account for providing adequate national frameworks. To effectively tackle the challenge of adaptation to the changing climate, it is concluded that the full range of policy tools should be utilized. The interplay of strategies, ranging from supra-national to local level, needs to be discussed and addressed by stakeholders. The adaptation concept should be viewed as being complementary to mitigation activities. In conclusion, it can be stated that the awareness and knowledge on the concept of adaptation itself still needs to be raised. Best practice examples in this respect are shown from partners' experiences and the literature. (F. Mannke)

Past Events

The ASTRA project at the Lithuanian Parliament

Elena Talockaite from the Environmental Centre for Administration and Technology (ECAT-Lithuania) introduced the ASTRA project to the participants of the discussion „Solving climate change problems in the context of new EU strategic documents“. This discussion was organized in the frame of the European Week on May 16, 2007 in Vilnius (Lithuania). Organizers were the Environmental Protection Committee and European Information Centre under the Committee of European Affairs of the Parliament of the Republic of Lithuania. Main goals of the ASTRA project, activities carried out in the Baltic Sea Region and Lithuania, as well as importance of climate change adaptation issues were introduced to the members of the Parliament, representatives of the Government, Ministry of Environment, Ministry of Economy, science and research institutions, business, NGOs and local communities, media, Embassies of Belarus, Czech Republic, Estonia, Hungary, Russia, Spain, UK, USA, as well as the representative of the European Commission in Lithuania (in total 40 participants). More information about the event is available on www.eic.lrs.lt. (E. Talockaite)

Local stakeholder seminar in Espoo, Finland

The City of Espoo organised together with the ASTRA Project a local seminar about climate change and planning. The seminar took place on the 30th May 2007 in Espoo. The morning session of the seminar was dedicated to climate change mitigation. Possibilities for greenhouse gas reductions in the field of housing, town planning and traffic and the climate change strategy of the Finnish Metropolitan Region were presented. The afternoon programme focused on climate change adaptation. The ideas of the ASTRA project were introduced and steps towards climate change adaptation (particularly flood protection and management) in Espoo and Kokkola were presented.

105 people from local and regional planning authorities, the Finnish Ministry for Environment, the Finnish parliament, research institutes, the Espoo environmental board and private companies participated in the seminar. There was an overall positive feedback. The language of the seminar was Finnish. (Johannes Klein)

The presentations and a hand-out for the seminar can be found from the link at www.astra-project.org -> past events -> Espoo seminar

ESPACE launches strategy to addresses the role of planning in adapting to climate change

Around 200 high level policy and decision makers from across Europe gathered in London on the 29th of June for the launch of the final ESPACE Project strategy - Planning in a Changing Climate. This strategy recommends how adaptation to climate change can be incorporated into spatial planning processes and practices, with policy guidance tools and mechanisms for integrating adaptation strategies into spatial planning at local, regional, national and European levels. Professor Jacqueline McGlade, Executive Director of the European Environment Agency, gave the keynote address and said that "The ESPACE project takes us a big step towards meeting the challenge of adapting to climate change".

The outputs of the ESPACE conference will inform Europe's response and preparation for the impacts of climate change by feeding into the development of climate change strategies and adaptation policies in

ASTRA Project & Lithuanian Parliament

Stakeholder Seminar in Espoo

Final ESPACE Conference



Winterstorm 2005 in Espoo, Finland

Member States. The strategy compliments the European Commission's Green Paper on Adapting to Climate Change in Europe which was also launched in June.

For more information on the ESPACE project and for a copy of the strategy, please visit www.espace-project.org (J. Cook)

5th Study Conference on BALTEX provided expert insights on Baltic Sea and its catchment area

From 4-8 June 2007, about 160 delegates from the international research community



Prof. Walter Leal at the BALTEX Conference

as well as representatives of other organizations and programmes met in Kuressaare on Saaremaa, the third largest island of the Baltic Sea for the 5th Study Conference on the Baltic Sea Experiment (BALTEX). BALTEX is an environmental research programme focussed on the Baltic Sea and its catchment area. The majority of presentations during the conference reflected the new objectives of BALTEX Phase II (2003-2012), which are related to climate and climate variability research, water management, and air and water quality studies, and provided a first progress review.

For the first time, the conference has been conducted in co-operation with other programmes and organizations which have a dedicated activity profile in areas where BALTEX research is contributing, for example two projects supported by the Interreg IIIB Baltic Sea Programme, ASTRA (Developing Policies and Adaptation Strategies to Climate Change in the Baltic Sea Region) and Coastman (Coastal Zone Management in the Baltic Sea Region), the Baltic Sea Marine Environmental Protection Commission (HELCOM), or the Sixth Framework Programme Ensembles (Ensemble-based predictions of climate changes and their impacts).

Representing ASTRA's German partner TuTech, Professor Walter Leal introduced

the ASTRA-project to the delegates, highlighting the importance of utilizing scientific knowledge and translating this into recommendations for decision-makers and other stakeholders in the Baltic Sea Region who need this information to develop adequate adaptation and mitigation strategies. (F. Mannke)

For the partners of the ASTRA Project Are Kont and his colleagues organised two excursions on Saaremaa. The excursions offered the possibility to visit geologically and ecologically interesting places and gave insight in the history of Saaremaa.

More information on BALTEX is available at www.baltex-research.eu. The guide to the excursions is available at www.astra-project.org

Announcements

New Book on Information, Communication and Education on Climate Change

The book "Information, Communication and Education on Climate Change - European Perspectives", edited by Leal Filho, Walter / Mannke, Franziska / Schmidt-Thomé, Philipp is now available. The book explores the links between education, communication and training and the challenges of climate change. It describes approaches, methods and initiatives aimed at raising awareness on climate change and illustrates some of the future action needed in this field.

Prepared within the framework of the BSR INTERREG IIIB project ASTRA, the book is published as vol. 26 of the award-winning series "Environmental Education, Communication and Sustainability".



Information, Communication and Education on Climate Change European Perspectives

Edited by Leal Filho, Walter / Mannke, Franziska / Schmidt-Thomé, Philipp (eds.), Peter Lang Scientific Publishers, May 2007,

ISBN 978-3-631-56682-4 Hardback, Clothbound

Order online: www.peterlang.com

5th Study Conference on BALTEX

Book: Communication & Education on Climate Change



At Kiiipsaare on Saaremaa, Estonia

Final International ASTRA Conference in Espoo, 10th & 11th December 2007

The BSR INTERREG IIIB project ASTRA "Developing Policies & Adaptation Strategies to Climate Change in the Baltic Sea Region"- concludes with the Final International ASTRA Conference at the Geological Survey of Finland in Espoo. The conference presentations will reflect climate change adaptation processes developed in the Baltic Sea Region focusing on concrete examples of how climate change adaptation strategies were integrated into local planning processes. The conference will further serve as a discussion platform on how climate change adaptation processes can benefit from regional development.

Main Topics of the Final International ASTRA Conference

- ◆ How does climate change affect the Baltic Sea Region?
- ◆ Setting climate change on the political agenda
- ◆ Strategies for adaptation in the Baltic Sea Region
- ◆ Examples of climate change adaptation on the local and regional level
- ◆ The costs of climate change in the Baltic Sea Region

Tentative conference program frame

Sunday 9th December, evening: Internal final project meeting

Monday 10th December, all day: Conference, Presentations, Cocktail diner

Tuesday 11th December, morning: conference, press conference; afternoon: excursion

More Info and Registration: www.astra-project.org

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page 7: Ivars Druvietis

ASTRA in a nutshell

Focussing on the Baltic Sea Region (BSR), the project "Developing Policies & Adaptation Strategies to Climate Change in the Baltic Sea Region" (ASTRA) assesses regional impacts of the ongoing global change in climate. Its aim is to develop adequate climate change adaptation strategies and policies. The project is co-financed by the INTERREG III B programme of the European Union, with a project budget of 2,2 Mio Euro. The time frame of the ASTRA project is from June 2005 to December 2007.

Background

- ◆ The impact of climate change, along with the societal impacts of natural hazards, play an important role in the spatial and economic development of regions.
- ◆ The economical losses caused by natural hazards are rising continuously.
- ◆ Climate change has potential long-term effects on the living environment, sea level rise and coastal protection.

Positive responses towards these impacts on development are mid to long-term strategies that are supported by decision makers and other stakeholders, including regional and local planners.

Aims of the ASTRA project

- ◆ Climate modelling / climate impact research
- ◆ Adaptation strategies
- ◆ Risk awareness / policy recommendations

ASTRA's partners comprise various research institutes and regional planning offices around the Baltic Sea Region, broken down to 19 inner and 16 outer circle partners. Lead partner of the project is the Geological Survey of Finland (www.gtk.fi).

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Final International ASTRA Conference

ASTRA in a Nutshell



River Salaca, Latvia