Climate change and its implications on Baltic Sea marine environment and HELCOM work

Maria Laamanen, HELCOM Professional Secretary
2nd Policy Forum Climate Change Adaptation in the Baltic Sea Region
10-11 December 2012 in Stockholm, Sweden
Helsinki Commission (HELCOM): bridging science and policy

- Governing body of Helsinki Convention (1974, 1992)
- 10 Contracting Parties:
  - Denmark
  - Estonia
  - European Community
  - Finland
  - Germany
  - Latvia
  - Lithuania
  - Poland
  - Russia
  - Sweden
- Observers:
  - Belarus
  - Ukraine
  - Various organisations
- HELCOM Secretariat assists and facilitates
Ecosystem approach for the Baltic Sea: HELCOM Baltic Sea Action Plan

- Adopted in 2007 at the Ministerial level
- Ecosystem-based approach to management of human activities
- Ecological goals and objectives
- Measures and actions for:
  - Eutrophication
  - Hazardous substances
  - Maritime activities
  - Biodiversity and nature conservation
- Supports implementation of the Marine Strategy Framework Directive
- Served as the basis of the environmental section of the EU Strategy for the Baltic Sea Region
Total reductions needed (tonnes/year)

Reductions/sub-basin (tonnes/year)

Reductions/country (tonnes/year)
Status of the BSAP implementation

- Implementation through National Implementation Programmes and joint HELCOM and other projects
  → About a third of the actions are completely or nearly accomplished
Findings of importance to HELCOM

• The globe has been warming (0.05°C/decade) in the past century and the Baltic Sea region has been warming even faster (0.08°C/decade)
• Decrease in the duration of the ice cover and increase in the length of the growing season
• The projected warming of the mean annual temperature during the 21st century is from 3 to 5°C
• There is projected to be a general increase in the annual precipitation:
  – It will increase runoff and lead to potentially higher nutrient loads to the Baltic Sea from the drainage area
  – Average salinity of the Baltic Sea is projected to decrease
• Ecosystem changes are expected:
  – Changes in the distribution of species
  – Changes in functions of the ecosystem
What is the status? – Eutrophication
Major achievement: Declining N and P loads

- Downward trend of nutrient loading since the 1980s
How effective will the BSAP be in the future climate?

Annual mean air temperature was projected to be 2.7-3.8 K higher by 2099 relative to the 1960s-1990s

Simulated ensemble averages (+/- 1 S.D.) mean surface phosphate and nitrate concentrations

Red = BAU, increased loads
Yellow = Reference scenario, current loads
Blue = Scenario for fully implemented BSAP

Observations
Reconstruction 1850-2006

Meier et al. (2012), Environ. Res. Lett. 7
Red = BAU, increased loads
Yellow = Reference scenario, current loads
Blue = Scenario for fully implemented BSAP
“Now here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!” — The Red Queen and Alice in the Wonderland
Pressures on biodiversity are multiple and cumulative
Human pressures on the Baltic Sea
Human activities put a pressure on the entire sea area
What is the status?  
– Biodiversity and nature conservation

- Status of biodiversity is impoverished in all other parts of the Baltic Sea except the areas in the Gulf of Bothnia and some coastal pockets.
- Status of biodiversity is changing in a direction that is weakening the capacity of the ecosystem to provide valuable goods and services.
We have reached the 10% target for the regional network of marine protected areas set by the UN CBD COP7.

- But the current network is not yet ecologically coherent.
- Nor is it well-managed.
Did the climate assessment have any effect?

Yes, it did, the HELCOM thematic assessment on climate change provided the background for the following notions of HELCOM ministers:

- 2007 BSAP: “[We are...] fully aware that climate change will have a significant impact on the Baltic Sea ecosystem requiring even more stringent actions in the future” (HELCOM 2007, BSAP)
- 2010 the HELCOM Moscow Ministerial Meeting Declaration: [Agree...] on the need for supplementary actions and admit that climate change may have profound consequences both for the environmental status of the Baltic Sea as well as for the scope of the measures adopted by the Contracting Parties until now.

These supplementary or more stringent actions are yet to be specified in HELCOM
Now it’s the time to brief the decision makers and consider how policies could change

- HELCOM Workshop on Baltic Sea region climate change and its implications
- 5-6 February 2013 in Warnemünde, Germany
- Will bring together climate change scientists focusing on the Baltic Sea region (BALTEX community), Baltic Sea marine environment related experts and managers, as well as HELCOM observers and other relevant stakeholders
- The aim is to:
  1) Share and discuss the latest updates and findings of scientific research on climate change in the Baltic Sea region and its implications on the Baltic Sea ecosystem.
  2) Consider the implications of the climate change projections on the Baltic Sea ecosystem and HELCOM policies especially related to eutrophication and biodiversity.
  3) Produce Conclusions of the Workshop to advice HELCOM decision makers on how climate change should be addressed in HELCOM policies.
HELCOM Ministerial Meeting in October 2013 is a possibility

- ... to highlight new findings on Climate Change and the Baltic Sea: an updated HELCOM thematic assessment of climate change with proposals for more stringent management actions
- ... to start specifying more stringent and supplementary actions
- It will be held in October 2013 under the Danish Chairmanship
- Main themes:
  - Evaluation of the implementation status of the BSAP
  - Scrutiny of the effectiveness of the BSAP national implementation programs
  - Assessment of progress towards good environmental status
  - Based on the above, adjustment of the BSAP and updating of targets
Thank you!

www.helcom.fi