Forum

Protection of the Marine Environment and Climate Change

Internationaler 2011 Umweltrechtstag

The oceans play a central role in the global carbon cycle and have absorbed about a third of anthropogenic CO_2 emissions to date. Covering more than two-thirds of the Earth's surface, the oceans take up the greater share of incident solar heat and have a major impact on the climate system. The global hydrological cycle is primarily driven by evaporation from the seas. Marine waters host an enormous wealth of biological diversity and supply humankind with essential protein in the form of fish.[1]

Pressures on the marine environment

Global warming brings about a wide range of physical, chemical and biological changes is the oceans.[2] The warming of the seas causes shifts in temperature zones and the geographical ranges of species. Thermal expansion of sea water and the melting of glaciers are already causing sea levels to rise by 3 mm a year.[3] Excessive quantities of CO_2 dissolved in surface waters make the oceans increasingly acidic, which is particularly harmful to organisms that build shells from calcium carbonate.[4] Climate-driven pressures also alter the sensitivity of marine ecosystems to other – anthropogenic – pressures such as pollution.[5]

Rising sea levels and changing storm patterns pose major threats to coastal regions. They can lead to accelerated erosion of unconsolidated

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[1] See German Advisory Council on Global Change (WBGU), The Future Oceans: Warming up, Rising High, Turning Sour, Special Report 2006, p. 1.

[2] See German Advisory Council on Global Change (WBGU), The Future Oceans: Warming up, Rising High, Turning Sour, Special Report 2006; for the North-East Atlantic region see also OSPAR, Assessment of Climate Change Mitigation and Adaptation, 2009, URL: http://www.ospar.org/documents/dbase/publications/p00464_climate%20change%20mitigation%20adaptation%20final.pdf (accessed 10.08.2010), p. 8 ff; for a detailed discussion on climate-related biological changes in the Baltic Sea region, see HELCOM, Climate Change in the Baltic Sea Area, 2007, URL http://www.helcom.fi/stc/files/Publications/Proceedings/bsep111.pdf (accessed 10.08.2010), p. 34 ff.

[3] Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU), National Strategy for the Sustainable Use and Protection of the Seas, 2008, p. 16.

[4] Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU), National Strategy for the Sustainable Use and Protection of the Seas, 2008, p. 16. f.

[5] Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU), National Strategy for the Sustainable Use and Protection of the Seas, 2008, p. 20.

coastlines in particular and increased permeation of groundwater with salt water.[6]

It is important to limit all factors which result in warming or acidification of the oceans. This mainly entails climate change mitigation measures in the strict sense. Marine conservation policy has few approaches of its own in this regard and benefits from all measures that limit the increase in greenhouse gas concentrations in the atmosphere.[7]

Adaptation

Efforts to mitigate climate change must be supplemented with specific measures to offer the maximum possible level of protection for the marine environment given the prevailing conditions. The main focus of adaptation must be on taking climate-related pressures into account in general marine conservation.

Marine environment protection: An international issue

The protection of the marine environment affects many different polluter groups, sectors and policy areas. Regarding not only this, but also the global nature of the causal relationships involved and the fact that the oceans transcend national borders, protecting the marine environment is truly an international issue.[8] Global agreements such as the United Nations Convention on the Law of the Sea are supplemented by longstanding regional-level international agreements for various marine areas. Some such agreements have yet to deliver adequate results due to shortcomings in enforcement and control. Aiming to establish a community framework for more effective protection of the marine environment, the EU Commission presented a proposal for a marine strategy framework directive[9] in 2005. The directive has since entered into force.[10]

Ecosystem approach

Effectively addressing the diverse, cross-sectoral pressures on the seas requires an ecosystem-based approach.[11] The EU's primary goal is to achieve or maintain good environmental status in the marine environment by 2020.[12] Detailed targets and management measures to achieve good environmental status within each marine region are to be set at the

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[6] Federal Government, German Strategy for Adaptation to Climate Change, 2008, URL: http://www.bmu.de/files/english/pdf/application/pdf/das_gesamt_en_bf.pdf (accessed: 9.8.2010), p. 45.

[7] Federal Government, German Strategy for Adaptation to Climate Change, 2008, URL: http://www.bmu.de/files/english/pdf/application/pdf/das_gesamt_en_bf.pdf (accessed: 9.8.2010), p.. 23.

[8] Mechel/Reese, Meeresumweltschutz für Nord- und Ostsee, in ZUR 2003, p. 321 (323).

[9] COM(2005) 505 final.

[10] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive).

[11] See for example Directive 2008/56/EC, recitals 5 and 8.

[12] Article 1, paragraph 1 of the Marine Strategy Framework Directive.

member state level. For those waters under German jurisdiction, the Marine Strategy Framework Directive is supplemented and given more concrete form by the National Strategy for the Sustainable Use and Protection of the Seas, adopted in October 2008.[13]

Reduction of pressures on the marine environment
The additional changes in the marine environment due to climate change and the consequent heightened sensitivity of marine ecosystems also require comprehensive efforts to reduce 'conventional' pressures. Such efforts include reducing nutrient, heavy metal and persistent pollutant inputs and cutting shipping emissions from fuel combustion and antifouling treatments.[14] Adaptation options also include taking climate change into account when setting catch quotas for fisheries.[15]

Designating marine protected areas
Ecological communities are especially hard hit by global warming. Biogeochemical cycles, distribution ranges and reproduction rates change. Ecosystems are increasingly invaded by non-native species. Established food chains among species are destroyed.[16]
Setting up sufficiently large, well-managed protected areas is an important way of improving the survival chances of species that suffer under climate-related stress factors by at least shielding them from additional anthropogenic pressures in the areas concerned.[17]

Coastal protection
Traditional coastal defences include building and reinforcing dykes, foreshore protection, and coast preservation using permanent structures and sand replacement.[18] Such defences will continue to play a key part in the close future. For many stretches of coast, dykes with appropriate

[13] Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU), National Strategy for the Sustainable Use and Protection of the Seas.
[14] HELCOM, Climate Change in the Baltic Sea Area, 2007, URL: http://www.helcom.fi/stc/files/Publications/Proceedings/bsep111.pdf (accessed 10.08.2010), p. 8.
[15] OSPAR, Assessment of Climate Change Mitigation and Adaption, 2009, URL: http://www.ospar.org/documents/dbase/publications/p00464_climate%20change%20mitigation%20adaptation%20final.pdf (accessed 10.08.2010), p. 21.
[16] HELCOM, Climate Change in the Baltic Sea Area, 2007, URL: http://www.helcom.fi/stc/files/Publications/Proceedings/bsep111.pdf (accessed 10.08.2010), p. 46; Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU), National Strategy for the Sustainable Use and Protection of the Seas, 2008, p. 17.
[17] Federal Government, German Strategy for Adaptation to Climate Change, 2008, URL: http://www.bmu.de/files/english/pdf/application/pdf/das_gesamt_en_bf.pdf (accessed: 9.8.2010), p. 24.
[18] Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU), National Strategy for the Sustainable Use and Protection of the Seas, 2008, p. 21.

reinforcements will remain the most effective and economical approach to coastal defence for this century at least.[19]
Most existing national coastal protection strategies do not extend beyond 2020.[20] Much remains to be done regarding coastal adaptation for the long term. The OSPAR Commission stresses the need for cooperation and burden sharing between contracting parties for research and planning in coastal adaptation, particularly where stretches of coast extend across national borders.[21]
Adaptive measures must primarily be implemented under the framework of integrated coastal zone management (ICZM).[22] Integrated Coastal Zone Management (ICZM) aims to help develop and preserve the coastal zone as a safe, ecologically intact and economically prosperous place for people to live.[23] Its cross-cutting, strategic approach makes this instrument particularly well suited for achieving the coordination needed between the various aspects of coastal adaptation.[24]

The *Forum: Protection of the Marine Environment and Climate Change* aims to ensure that implications of climate change specific to the marine environment are given greater consideration in the international debate on greenhouse gas reduction. Marine conservation should be accorded greater weight overall in this regard. Marine-specific conservation activities need to be discussed and further developed.

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[19] As for Germany's coasts, Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU), National Strategy for the Sustainable Use and Protection of the Seas, 2008, p. 21.
[20] For a survey of existing national adaptation strategies, see OSPAR, Assessment of Climate Change Mitigation and Adaptation, 2009, URL: http://www.ospar.org/documents/dbase/publications/p00464_climate%20change%20mitigation%20adaptation%20final.pdf (accessed 10.08.2010), p. 24.
[21] OSPAR, Assessment of Climate Change Mitigation and Adaptation, 2009, URL: http://www.ospar.org/documents/dbase/publications/p00464_climate%20change%20mitigation%20adaptation%20final.pdf (accessed 10.08.2010), p. 26.
[22] See Recommendation of the European Parliament and of the Council of 30 May 2002 concerning the implementation of Integrated Coastal Zone Management in Europe (2002/413/EC), OJ L 148, 6.6.2002, p. 24; and Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Integriertes Küstenzonenmanagement in Deutschland, Bestandsaufnahme 2006, URL: http://www.ikzm-strategie.de/dokumente/endbericht_kabinettversion_30032006.pdf (accessed 11.08.2010)
[23] Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU), National Strategy for the Sustainable Use and Protection of the Seas, 2008, p. 59.
[24] See Federal Government, German Strategy for Adaptation to Climate Change, 2008, URL: http://www.bmu.de/files/english/pdf/application/pdf/das_gesamt_en_bf.pdf (accessed: 9.8.2010), p. 48.