

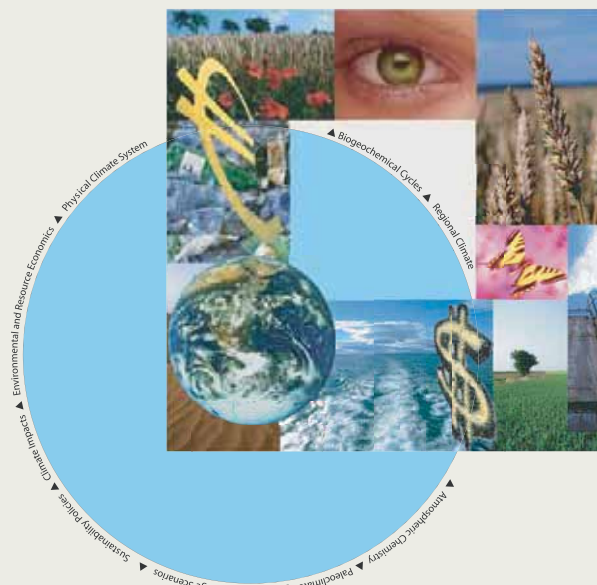


International Max Planck Research School on
EARTH SYSTEM MODELLING

Future Perspectives for the
Lower Elbe Region 2000-2030:
Climate trends and Globalisation

Iris Grossmann

PhD Thesis prepared within the
International Max Planck Research School on
Earth System Modelling



GKSS 2006/7

Future perspectives for the Lower Elbe Region 2005–2030: Climate Trends and Globalisation

(Vom Fachbereich Geowissenschaften der Universität Hamburg im Jahr 2005 als Dissertation angenommene Arbeit)

Iris Grossmann

175 pages with 29 figures and 13 tables

Abstract

This thesis investigates development trajectories for the Lower Elbe region until 2030 in the context of present global change processes, both in the natural and in the human environment. Of particular significance are a) the transition of the region to a post-industrial service economy, b) climatic changes, c) environmental degradation and the protection of the region's ecosystems, d) the influences of globalization and the framework of the European Union, and e) increased international competition between city regions against the background of population aging and shrinking. Due to the strong interdependence of these fields, consistent results regarding the future of the region cannot be made through the isolated study of just one or two of those fields. The choice of methods reflects this need to study the dynamic behaviour of different human as well as natural fields, and great emphasis is placed on the study of the interplay between the different fields. Applicability of the results has been sought through a stakeholder workshop and interviews with more than 50 experts and stakeholders.

The study is in four parts. In part I, climate change in the region with respect to changes in temperature, precipitation and storm surge levels and expected impacts on agriculture, port businesses and the river ecosystems are investigated through a localization of the IPCC A2 SRES-scenario. Part II presents two scenarios for the future viability of the rural part of the region against the background of structural changes and new environmental regulations as well as a policy analysis for agri-environmental programs and the establishment of naturally flooded areas. In part III a cost-benefit analysis for the port of Hamburg is carried out given technological change and the declining position of the port in the regional economy. Part IV presents firstly an assessment of urban renewal processes in Hamburg on the basis of a comparative analysis of different metropolitan regions in Europe. This is then combined with the results of the previous three parts into three integrated scenarios for the greater Hamburg region.

Identifying and implementing suitable responses to climate change is a common concern for regions worldwide. Climate changes occur simultaneously with other major changes related to economic development and urban renewal, population patterns, changes in politics, governance and attitudes. Both impacts of climate change and the space for response depend decisively on developments in these other fields. Therefore it is essential to investigate these issues in conjunction. On the basis of such an integrated analysis, the scenarios in part IV of the thesis describe different possibilities of response for the study region. The long-term outcome of different strategies and the interrelatedness of the different fields within which decisions and changes occur are made visible. As a conclusion to the scenarios, likely threats and problems for the region and recommended strategies are extracted. It is hoped that the results will be of interest to planners or decision makers involved with the creation of a highly viable and attractive future for the region.

Zukunftsperspektiven für die Untere Elbe Region 2005-2030: Klimatische Trends und Globalisierung

Zusammenfassung

Diese Forschungsarbeit untersucht Entwicklungsperspektiven für die Untere Elbe Region vor dem Hintergrund von Prozessen des globalen Wandels in natürlichen und sozialen Systemen. Hierzu gehören insbesondere a) der Übergang der Region zu einer post-industriellen Dienstleistungsgesellschaft,