

## PROJECT

Adaptation  
Cities  
Climate

# Economic Impacts of Climate Change and Costs of Adaptation for the City of Hamburg



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In light of the growing importance of climate change adaptation, the project objectives are to assist the City of Hamburg in the preparation of their adaptation strategy to climate change. Adaptation to climate change must be decided and implemented mainly on the regional and local level. An economic evaluation of possible climate change adaptation measures is essential to their implementation. In times of limited public and private budget, only cost-effective measures can be implemented. In this project, the current knowledge on the economic evaluation of climate change costs and of the costs and benefits of adaptation measures is presented and, to the extent possible, applied to Hamburg. In addition, several cost-benefit analyses of adaptation measures at the local level were also prepared. Based on this economic analysis, recommendations for the implementation of adaptation measures can be developed. The project report is available for download.

## Background

The German National Climate Adaptation Strategy from 2008 and the "Adaptation Action Plan" from 2011 provide a framework for coordinated action on climate change adaptation at the national level. It is known that only a relatively small number of adaptation actions can be taken by federal authorities at the national scale. Against this backdrop, some German Federal States

(Bundesländer), such as North Rhine-Westphalia and Thuringia, have developed regional adaptation strategies and programs. The other federal states where such adaptation strategies have not yet been developed, are at the very least publishing Climate Impact Reports or, as in the case of Hamburg, have adaptation strategies in the preparation stage. The City of Hamburg plays a special role in this context because it is not only a federal state but an important German city.

The UBA/KomPass commissioned by the Hamburg Ministry of Urban Development and Environment (BSU) prepared an analysis of the expected climate change impacts in Hamburg. This analysis is used as the basic framework ("Fachlicher Orientierungsrahmen") for our project. It includes both a general overview and analysis of individual sectors, like health, transport or agriculture. Furthermore, first results from the adaptation research project KLIMZUG-Nord, which are relevant for assessing the impacts of climate change and also for the development of an adaptation strategy, are integrated.

## **Objectives**

Within the project, Ecologic Institute, together with the project coordinator Hamburg Institute of International Economics (HWWI), analyzed the economic costs and benefits of climate change and appropriate adaptation measures to climate change in priority sectors.

The project is structured as follows:

- An overview of the current knowledge of the economic adaptation research with special emphasis on cities and urban areas.
- Cost-benefit analysis of adaptation measures in Hamburg:
  - Water Management Sector: Rising groundwater levels
  - Buildings Sector: Green Roofs for Hamburg
  - Agriculture Sector: Adapted plant species
  - Civil Protection Sector: The extreme rain in June 2011
- Recommendations on necessary measures to be implemented in the adaptation strategy of the City of Hamburg.

## **Methodology**

The analysis is based on a literature review of the economic analysis of climate change damages and on the costs and benefits of adaptation measures with a focus on urban areas. For four case studies in relevant fields of action for Hamburg the costs and benefits of adaptation measures are estimated. The case studies are chosen and implemented in cooperation with the Ministry of Urban Development and Environment (BSU) of the City of Hamburg.

## Conclusion

Adaptation to climate change is a dynamic process with many uncertainties. A core message for public sector institutions is to "bear climate adaptation in mind". That is to say, institutions should integrate climate adaptation into future decision making processes and implement measures which have recognized co-benefits for other areas of policy.

In particular, information exchange and provision are essential for an integrated approach - both within the public institutions as well as to the public or companies. The Hamburg adaptation strategy can contribute to this by recognizing and taking responsibility for coordination and cooperation needs. By doing so, the Hamburg adaptation strategy can contribute to the climate adaptation of one of Germany's largest cities.

## Ecologic Related Websites

- Publication: Gutachten zu den ökonomischen Folgen des Klimawandels und Kosten der Anpassung für Hamburg
- Project: Economics of climate change: costs and benefits of adaptation measures for climate change
- Project: 'Climate proofing' of key EU policies - short term actions
- Project: Climate proofing of Cohesion Policy and Common Agricultural Policy (CAP)
- Project: Coordination of Climate Change Mitigation and Adaptation on the German Coast
- Project: Economic Aspects of Climate Change Adaptation
- Presentation: Economic Impacts of Climate Change and Costs of Adaptation for the City of Hamburg

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Ecologic Institute, Germany

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