

Natural Capital Germany – TEEB DE case study

Facilitating rivers to flow and saving costs:

Natural flood protection with ecological services at the Elbe

Unimpaired river flood plains provide valuable habitats for a highly diverse flora and fauna. In addition, they serve as natural buffer against floods and they help to decrease nutrient loads in our rivers. Therefore, costs for building expensive dike systems and water treatment plants can be saved. Due to climate change the number of flood events is likely to increase over the next years. Thus, cheap solutions for flood control have to be found. Cost-benefit-analyses have shown that dike relocation with flood plains is a cost-efficient protection against flood damages and it can simultaneously support ecosystem services.

Location:

Roßlau

Actors:

Science, Citizens, Associations, Federal state, Federal government, Municipality

Project description:

In 2002 the catastrophic Elbe-Flood caused an economic damage of 9 billion Euros. Over 370 000 people were affected, 21 of them died. In consequence, traditional flood control was widely questioned and new solutions had to be found. In 2005 the federal ministry for the environment passed a new flood protection law, which obligates the states to designate more areas as flood plains than before. Through dike relocation former water-meadow landscapes are supposed to be reconnected with the river to provide more area for draining-off water in case of a flood event.

A case study on the Middle Elbe, conducted by a research team from the TU Berlin, has shown that the benefits of nature compatible flood prevention can be three times higher than their costs by relocating dikes and by creating 35 000 hectare flood plain. From a conventional point of view – without considering the natural services – these actions wouldn't pay off: investment costs of around 407 Million Euro would be inefficient compared to lessened flood damages of just 177 Million Euro. However, the research team performed a holistic cost-benefit-analysis considering the direct project costs, the agricultural losses of production, the annually avoided flood damages, and the benefits of the varied ecosystem services, which arise from additional nutrition storage and recreational value of the flood plains. Displaying these positive effects of the ecosystems, the dike relocation provides a drastically higher benefit of 1182 Million Euro in comparison to, for example, technical infrastructure (Grossmann et al., 2010).

“From an ecological point of view, dike relocating and creation of flood areas is a very practical solution” says Dr. Jürgen Meyerhoff from the TU Berlin. Saved costs for avoided flood damages and enhanced nutrient degradation in bodies of water easily outweigh the expenses for the actions.”

Since 2009, the World Wildlife Foundation Germany is directing a conservation project of around 9 000 hectare at the Middle Elbe in the area between the rivers Mulde and Saale, where they relocating a dike and allowing for floodplain area of around 600 hectare. Simultaneously, they are building a new seven kilometers long dike, that is a hundred meters behind the present flood protection dike. In this way, the danger of floods from dike bursts is reduced. “In that case, conservation, natural flood prevention, and security of the region go hand in hand”, explains WWF project head Astrid Eichhorn. Conservation pays off.

Literature:

Grossmann, M.; Hartja, V.; Meyerhoff, J. (2010): Ökonomische Bewertung naturverträglicher Hochwasservorsorge an der Elbe. Naturschutz und Biologische Vielfalt 89, Bundesamt für Naturschutz, Bonn.

Ecosystems:

Rivers and floodplains

Ecosystem services:

Regulating service: moderation of extreme events
Cultural service: recreation

Contact:

Dr. Astrid Eichhorn
Head of WWF project office "Mittlere Elbe"
Phone: +49 340 - 216 871 0
E-mail: astrid.eichhorn@wwf.de

Dr. Jürgen Meyerhoff
Technische Universität Berlin, Institute for Landscape Architecture and Environmental Planning
Phone: +49 30 - 314 733 22
E-mail: juergen.meyerhoff@tu-berlin.de

More Information

Link to the projects' website:

<http://www.wwf.de/themen-projekte/projektregionen/elbe/projekt-mittlere-elbe/>

„Natural Capital Germany – TEEB DE“ is the national follow-up project to the international TEEB initiative (The Economics of Ecosystems and Biodiversity). It was commissioned by the Federal Agency for Nature Conservation (BfN) with funding from the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) in order to analyze the manifold values of nature and of the so called ecosystem services in Germany as well as the consequences of species loss also in economic terms and to make them visible. The project is coordinated at the Helmholtz Centre for Environmental Research (UFZ) within the period 2012-2015. More information can be found at: www.naturkapital-teeb.de
