

# Chapter 18

## Relocation of Dikes: Governance Challenges in the Biosphere Reserve “River Landscape Elbe-Brandenburg”



Barbara Warner and Christian Damm

As model regions for sustainable development, biosphere reserves have to protect large landscape units on the background of uncertain effects of climate change. They have to implement a suitable management for sustainable development of nature, and they have to include many stakeholders in their governance-processes. Long-lasting solutions for conservation, flood protection and socioeconomic approaches are required.

The focus of this article lies on a riparian landscape area, the biosphere reserve Elbe-Brandenburg River Landscape. Against the background of strained socioeconomic conditions and many requirements from stakeholders, the project “dike relocation near Lenzen (Brandenburg)” had to secure and improve the ecological conditions of floodplains, including forests, largely by turning private (agricultural) land back to floodplain forests and other floodplain-specific habitat types. Achieving acceptance for the goals of the project among the stakeholders and the residents and the need for suitable land use on a large scale were of great importance. The consequent involvement of different stakeholders was essential for a successful project combining ecological restoration and flood mitigation.

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## Introduction

Flood retention and ecological demands have their specific relevance concerning climate change. Adaptive nature conservation management is affected by a lack of sufficient understanding of the functional relations in natural systems (and therefore in the conservation areas as well). It is affected also by current uncertainties concerning the impacts of climate change. For the implementation of large projects concerning flooding, linkages between different actors or stakeholders and their specific approaches are to be taken into account.

### *Climate Change and Land Protection*

Climate change requires flexible solutions. The inherent uncertainty contradicts the demand for specificity and unambiguity in planning, and this affects strategies of spatial (landscape) planning. Planning instruments and strategies in Germany are not suited for the flexibility required for climate change adaptation. Planning with flood scenarios, for example—as the European Floods Directive requires (see Hartmann and Spit 2016)—has an impact on the use of instruments like Strategic Environmental Assessment. For some consequences of climate change, even scenarios are not suitable. Instead they require individual adaptation of strategies or instruments. This causes problems in areas or situations when different interests have to be weighed—as this is normally a standard for integrative managing in conservation areas. What does climate change mean for the protection grounds? As an effect of renaturation of meadows, for example, biodiversity is strengthened and fortifies ecosystems against decline with its variety of species (“insurance hypothesis”, see Yachi and Loreau 1999).

The dilemma between the legal certainty of planning instruments and the requirement of flexibility asks for different ways to use (planning) instruments. Communication and “good governance” are the key for this challenge (Kreibich et al. 2011) and important to implementing climate adaptation.

### *Dike Relocation as a Challenge for Nature and Governance*

But how to organize the process of adaptation to climate change in concrete fields of action? For conservation areas, recommendations for adaptation are not specific enough to support their management with its special characteristics and communicative challenges. Narrow compartmentalization of responsibilities may strengthen the capacity to act for administration, state actors or municipalities; on the other hand, it encourages sectoral breakdowns of challenges and leads to thinking in delimited areas.

Could an ecosystem-based approach lead to win–win-situations or does the approach stay within the limits of the specific professional responsibilities (Warner and Rannow 2016)? Conservation strategies for the regional or national level have to consider the specific management practice. A practice-oriented approach for strategies is required, which includes species conservation, policy, law and governance, land and water management and protection, research, knowledge and science, involvement of local stakeholders, citizens and external or local experts.

Some basic questions could be figured out concerning a process of adaptation of climate change (Warner and Rannow 2016, shown in Wilke and Rannow 2013): Where could suitable and specific information about potential effects of climate change be found? And how should different stakeholders be included?

The example of a dike relocation project in the biosphere reserve Elbe-Brandenburg River Landscape shows a successful management of demands concerning protection (nature and land), properties (land use strategies and means) and participation (governance). To enable flooding, dikes had to be remodeled on a large scale. This process affected mainly agricultural land. The main challenge was to convince farmers to sell their land, and to keep them as stakeholders in the whole project.

Fostering acceptance in a remote region of East Germany was one challenge and of major importance for the project. It was solved mainly by a close cooperation between the administration of the biosphere reserve and the local agricultural holding company as the sole tenant of most of the agricultural acreage in the project area. With state subsidies and a powerful NGO's support, it was possible to create and secure large flooded areas—based on “good governance” with all parties.

### ***Main Points and Structure***

The article identifies challenges for the planning of and for large protected areas. It uses the example of a planning project in northeastern Germany to show how flood protection can be implemented. We show how a combination of ecological restoration and flood mitigation has been successfully realized. The project “dike relocation near Lenzen (Brandenburg)” illustrates how land consolidation schemes and land users' participation could be used to obtain land availability. The planning phase started in the 2000s, and acceptance among the local public was a main barrier to implementing the dike relocation part of the project. The main key to the solution proved to be communication and adequate governance that involved all stakeholders.

## **Dike Relocation in the UNESCO-Biosphere Reserve Elbe-Brandenburg River Landscape**

The example of the UNESCO-Biosphere Reserve Elbe-Brandenburg River Landscape shows concrete fields of action concerning climate change in protected areas. It names expedient approaches to solve existing conflicts of interest concerning nature conservation, climate change and flood retention. Here a coordinated and balanced management is particularly important. Private landowners, farmers, forestry, municipalities, environmental organisations, flood protection agencies and other (public) authorities form a pool of “experts” for the overriding topic of water retention (flood prevention) measures and for all topics of land use and management. Main challenges in this case are the local socioeconomic conditions and the integration of a variety of stakeholders into a project that is primarily aimed at management objectives represented by the biosphere reserve. The dike relocation was planned as a conservation project and provides, as a “side effect”, considerable positive impact on water retention in the biosphere reserve (Gorm et al. 2015).

### ***Brief Description of the Dike Relocation Project***

The project area is situated in north-central Germany half-way between Hamburg and Berlin in the biosphere reserve “Flusslandschaft Elbe-Brandenburg”, the latter being part of the 400 km biosphere reserve covering five German states along the Elbe River floodplain.

The general idea of the 420-hectare project “dike relocation near Lenzen (Brandenburg)” (Fig. 18.1) was to improve the ecological state of a lowland floodplain, which, over the past centuries, had been turned from a naturally wooded landscape into a mainly agriculturally used landscape dominated by monotonous grasslands. Re-establishing floodplain forests has become an important conservation goal since they are the most species-rich type of forest in central Europe and have become a largely reduced and highly endangered habitat type. Floodplain forests (EU-codes 92E0 und 91F0) are protected by the EU Habitat Directive (European Community 1992). The area is protected by dikes close to the river that largely reduced the floodplain area. In order to reestablish an ecologically functional floodplain, which is primarily an inundatable floodplain, the relocation of the dikes to regain a natural flooding regime was essential. Turning agricultural land back into floodplain forest was a main objective of the project. For this purpose, it was implemented within the federal conservation programme “chance.natur” (‘large scale conservation project’), covering 75% of the project expenses. It was furthermore funded by the federal state of Brandenburg—in Germany the states are responsible for conservation issues. The programme requires implementation by a non-governmental organization; accordingly, it was carried out by a local association called “Traegerverbund Burg Lenzen”, which is an alliance of the NGO “Friends of the Earth” (BUND) with



**Fig. 18.1** Project area in Brandenburg

the local municipality and a number of conservation foundations. This institution already runs a regional environmental education center in the adjacent and historically important castle of Lenzen (Brandenburg)—which also houses a biosphere reserve visitor center.

Availability of suitable land for such large-scale projects is usually a difficult issue. In this case, conflicts over the land use were relatively smoothly solved due to close cooperation of the biosphere reserve administration and the local agricultural holding company, which was the sole tenant of the majority of the agricultural acreage in the project area. Most important, as well as unusual, was the supportive position of the holding company throughout the process. The company's management rated the beneficial effects of the project for the regional development higher than the land loss for the enterprise. Additionally, property issues were solved by a successful 2000-hectare land consolidation scheme that was implemented in order to convert the 420-hectare dike relocation area into public property (Fig. 18.2). A preceding EU-LIFE project targeting the following dike relocation was used to purchase about 550 ha private land (ca. EUR 2 Mio.) spread over a wider region. The land consolidation scheme later swapped this land purchase into the dike relocation area. The tenant was financially compensated for the loss of agricultural area.



**Fig. 18.2** Property situation pre and post project implementation

### ***Stakeholder Process, Project Results and (Public?) Perception***

Creating acceptance in the rural environment was of major importance for the project. This was a tedious task concerning the generally difficult economical situation in a remote East German region. A moderation process parallel to the technical planning process was successfully established within the large-scale conservation project. Apart from more than 20 field excursions, nine meetings with representatives of different stakeholder groups and public meetings were held under external moderation. These activities led to an increase of public acceptance and a subsequent planning approval procedure unimpeded by public objections.

Main concerns among local inhabitants were worries about seepage water in housing areas due to a dike line closer to settlements, expected restrictions for hunting and fishing activities and general accessibility of the area. The concerns could mostly be addressed by giving information and a participation process in close connection with the planning process. Scientific evidence was also very helpful in the process: a research program supported by the Federal Ministry for Education and Technology (BMFT) had been carried out before with the intention to assess the options and effects of the dike relocation. The results of this research greatly aided in designing the project and answered many of the questions raised during the moderation phase.

The project attracted national and international attention, as it was the largest dike relocation in Germany at that time. In the beginning, public relations activities focused on a local scale. However, with increasing recognition regionally and beyond, these activities expanded. As a successful pilot project, it proved the beneficial effects of such measures right after its implementation. Main result is the restoration of 420 ha of inundatable floodplain with a mosaic of different floodplain-specific habitat types like wet meadows, reeds, flood channels, softwood and hardwood floodplain forest. Fast successional processes of vegetation and fauna have been observed and are, to some extent, still being monitored. The ecological restoration success was coupled with a considerable effect of flood peak reduction, which was monitored by the Federal Waterways Engineering and Research Institute (Faulhaber 2013) as well as by the Federal Hydrology Institute (Promny et al. 2014). The successful

combination of ecological restoration and flood mitigation in particular is widely acknowledged (e.g., European Water Framework Directive 2000/60/EC and Flood Risk Management Directive 2007/60/EC), making the project a blueprint for urgently required water management actions on many other rivers.

An additional result was a positive effect on regional development, for example, in the field of tourism, drawing considerable attention to the region, which is still striving to compensate for the extensive economic losses after the German reunification and the subsequent breakdown of the former socialist economy. The development of its touristic potential, especially eco-tourism, is an explicit objective of the region.

### *Lessons Learned?*

An evaluation of the project was carried out on its technical, conservation-related and social results. As mentioned above, the flood peak reduction was measured during several subsequent flood events as well as a successful reactivation of natural groundwater fluctuations. Considerable increases of populations of birds and fish species have been recorded. On the other hand, reforestation efforts have proven to lag behind expectations, mainly due to the harsh conditions of flooding, drought as well as ice, which plantings have to stand in floodplain situations.

An evaluation of the social environment assessed twice the level of acceptance for the project (Table 18.1). Even though the sample size of the first survey is small, the overall trend of an increase in acceptance becomes obvious.

Although the project's effects toward flood peak reduction reached an extent unprecedented in Germany, addressing climate change as a driver of the project has so far not been an issue. During the planning phase in the early 2000-years, climate change had not been on the agenda in most of Germany, whereas other topics dominated the local and regional discussion of the project. Acceptance among

**Table 18.1** Results of a survey on project acceptance within different stakeholder groups: attitude of interviewees towards the conservation project in 2009 compared to the interview in 2004

<i>What is your attitude towards the project (Nov 2009)?</i> (n = 51)	Tenants (n = 4)	Touristic service providers (n = 24)	Other stakeholders (n = 23)	Total	Survey results 2004 (n = 12)
Disapproval	0	1	0	1	4
Mixed feelings	1	5	7	13	5
Indifferent	0	3	0	3	0
Supportive	3	15	16	34	3

(Luley et al. 2010)

the local public was a main issue in the beginning as scepticism mainly toward the dike relocation part of the project ran high. Forest reestablishment and other conservation measures were not criticized as severely. However, a relocated dike, being located more closely to the settlements was largely perceived as an unpredictable threat (Stelzig 2000). Even though scientific data and modelling had demonstrated the measure would result in a significant increase of flood safety by reduced water levels and have only insignificant adverse effects on local hydrological conditions, even local experts remained skeptical for much of the planning phase.

One effect to be considered concerning the background of this hesitant attitude might be seen in the project area's location in eastern Germany, immediately adjacent to the formerly fortified east-western border. The region, of course, has a very special history of limitations and an intense experience of restrictions. A very pre-cautious perception is understandable where large, externally driven projects are seemingly imposed by authorities and not the result of local decisions. One interviewee described this as restrictions formerly imposed by a totalitarian state that will now be imposed by some conservation administration. Widespread prejudices between citizens and actors from East and West Germany, which have been (and to a diminishing extent still are) a side effect of the German unification, also have fostered these conflicts. Given this situation, much of the process concerning the project's contents was not as much a discourse of facts but a projection of societal processes in a region of strong political, economical and societal transitions.

Even though climate change as such had not been addressed specifically, flood protection as a primary reason for the project has been regarded an undisputed asset of the project from the beginning. Increased flood activity has long been known as one of the most easily observed effects of climate change. The considerable effect of this dike relocation on flood peak reduction has been a most convincing argument from the beginning, with particular importance after a catastrophic flood in Eastern Germany in August 2002. Since physical measurements in a number of subsequent flood events furnished this data, the positive effects on flood retention became at least as important for the public perception of the project as the primarily intended ecological improvements. Both issues, flood retention and ecological objectives, have their specific relevance to climate change. In this regard the project's implementation can be interpreted as part of an intended strategy against such developments.

Improving the ecological integrity is considered a conservation strategy in order to increase the resilience of natural systems. The ability of natural systems to withstand disturbance increases with its ecological intactness/state. This applies also to flood-plain ecosystems. The well-documented success in species recovery, for example, among wetland bird species already during the implementation of the dike relocation proves a positive effect on species populations. This positive effect is likely to increase their ability to withstand future adverse developments. Thus the implementation of such measures in significant dimensions can be regarded as a strategical mean for an adaptation to climate change on the ecosystem and landscape scale.



## Conclusion

Flood prevention in large conservation areas must take into account specific requirements. This applies in particular large-scale structural changes like dike relocations. The described relocation takes place in a region that has to face demographical shrinkage and a lack of economical perspective. Water management as well as natural resource management require an ongoing discussion with private landowners, farmers, public authorities and other stakeholders. As the case study shows, numerous actors with various perspectives have to be involved in decisions, which is an essential element for such complex projects to succeed.

The coexistence of uncertain effects of climate change, various interests of different stakeholders and the requirements of nature protection and sustainable rural development may cause conflicts concerning the need and practical implementation of water retention measures. Within these processes, flood control proves to be a “stronger” aim than nature conservation. The article describes project aims, its implementation in the regional social context and factors considered important for the project success. The case of a dike relocation shows the need for appropriate management to resolve differing demands on land use like agriculture, nature conservation as well as flood protection.

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