

## **Project LIFE+ “Elbauen bei Vockerode”**

A natural paradise in the heart of Germany

The LIFE+ project “Floodplains of the River Elbe at Vockerode” started in 2010 and ended in 2018. It set a framework and executed measures in order to improve and secure the unique river landscape in the region of the Middle Elbe. The project reintegrated 212 hectares of former floodplain into the natural flooding regime.

The LIFE+ project prevented a reinforcement of the former flood protection structure, the “Gatzer Bergdeich” (Deich = dyke) which cut through the natural floodplain. Instead the project strengthened the existing flood protection structures dyke “Dianenwall” and other infrastructure, i.e. the motorway embankment in the southwest of the area, serve as. This allowed for the opening of the “Gatzer Bergdeich”.

The envisaged measures of the project promote the self-sustaining development of the region as a whole. They also improve and secure a unique river landscape and the ecological state of the water course. Opening of the former dyke created 212 hectares additional retention space and enhanced natural conditions and biodiversity. The quality of habitat in the listed conservation area according to Habitats and Birds Directive did not only improve but has also was enlarged by additional 60 hectares.

The overall aim of the LIFE+ project was to combine ecological and technical guidelines for a sustainable river landscape, the natural dynamics of floodplains and flood protection structures in order to secure the Natura-2000 area “Dessau-Wörlitzer Elbauen” (Auen = floodplains), SAC DE 4140-304 (FFH0067-LSA), SPA (DE 4139-401). Present and future floodplain forests are ecologically rehabilitated and adapted to future conditions, wetlands and new floodplain meadows were created and flood channels deepened.

### **The most important project objectives:**

- Acquisition of agricultural land
- Conversion from arable land to floodplain meadow
- Conversion from farmland to hardwood floodplain forest
- Rehabilitation of forest stands
- Creation of a wetland and restoration of a silted oxbow
- Establishment of a floodplain nature trail

The project partner „Landesbetrieb für Hochwasserschutz und Wasserwirtschaft Sachsen-Anhalt“ (LHW - state agency for flood protection and water management) conducted the following measures parallel to the LIFE+ - Nature project under separate budget:

1. Opening of a flood protection dyke (named *Gatzer Bergdeich* or “Vasenwall”)
2. Reinforcing the existing motorway embankment (A9) for flood defence purposes and redesign of the drainage system for the areas protected from flooding

## **Results:**

### **Acquisition of farmland**

The extended floodplain area includes approximately 60 hectares of former farmland. One of the first steps for the project implementation was to purchase the farmland in order to secure the conversion of farmland into typical floodplain habitats including the appropriate management and to establish a safe nature conservation status.

98 percent of the farmland was in private ownership. Under the lead of our project partner “Landgesellschaft Sachsen-Anhalt” (LGSA, state land management agency) negotiations with more than 70 property owners and communities of heirs have been conducted. Since summer 2013, WWF Germany is the sole owner of all the land required for conversion and extension of the NATURA 2000 area.

### **Conversion from arable land to floodplain meadow**

The conversion processes were started in October 2013. Step by step conventional agricultural use on the acquired areas has been abandoned. After a final tillage a mix of typical grassland seeds and herbs has been distributed on the raw soil, by drilling or by mowed material from selected qualified habitats. About one third of the area has been untreated, left for natural succession to grassland. Since autumn 2016, the entire former arable land on 43 ha is ready for the long-term evolution of floodplain meadow habitats and a flood compatible utilization.

The aim was to develop species-rich meadows with generic plant communities. Therefore, generic plant populations of the habitat types (LRT) 6440 (alluvial meadows of river valleys of the *Cnidion dubii*, “Brenndolden-Auenwiesen”) and 6510 (lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*), “Magere Flachlandmähwiesen”) which are located within and close to the grassland areas of the project area LIFE+ “Elbauen bei Vockerode” were used as seed donors. They were harvested by a special technology and spread on several small spots across the field. These initials served to develop characteristic floodplain meadows over the years due to natural seed propagation. In addition, certificated seed mixtures for floodplain meadows have been applied. The resulting mosaic of areas with natural seed material and sown seed mixture has been supplemented by areas of self-greening (succession).

In the long term, management measures are crucial for the development process from grassland to rich-flowering floodplain meadows. In adaptation to the different stages of single plant populations generic floodplain grass and herbs will be further promoted. At the same time, massive expansion of farmland wild herbs will be prevented. The monitoring to the end of the project so far showed significant success. On almost 21 hectares typical species for habitat type 6510 (lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*), “Magere Flachlandmähwiesen”) have been detected.

### **Conversion from arable land to hardwood alluvial forests**

In the period from October 2013 to autumn 2015, first initial measures have been implemented to foster and expedite the development process of a typical hardwood alluvial forest in the river floodplain landscape of the biosphere reserve Middle Elbe (“Mittelelbe”). Special emphasis was put on the usage of seeds and plants from native tree species.

Today, the following main tree species grow on the former 7 hectare-sized farmland: English oak, field elm and European white elm (*Ulmus minor* and *Ulmus flaevis*), European ash, European wild apple and European wild pear.

Different methods of tree planting were applied:

The predominant part of small trees was planted in line because of safe and economic maintenance and protected by a two meter tall fence. Next to it, trees were planted in troops and coated with biodegradable tree shelter (to avoid game browsing). On an adjoining area only English oak grow. These developed from sown acorns, collected in the biosphere reserve from old regional native English oaks to preserve their genotype. A similar approach was applied for wild fruit trees.

All afforestation measures also comprise the placement of single shrubs as an initial for a natural edge of the future forest. During the first five to ten vegetation seasons all measures needed protection and maintenance until the young trees and shrubs were tall enough to, firstly, prevail against the needs of light and space of competing farmland wild herbs, and secondly tolerate game browsing.

### **Restoration of forest stands**

Non-native tree species grew in some stands in the forest of the LIFE+ project area. The conversion towards a hardwood floodplain forest with characteristic endemic species started in 2010 and was successively continued until 2015. Due to complete harvesting of hybrid poplar and red ash (*Fraxinus pennsylvanica*) openings developed which subsequently have been replanted with typical tree species of hardwood floodplain forests.

Another goal of the LIFE+ project was the adaptation of forest stands of the extended floodplain area. Taking into account the portion of old and dead trees of the main tree species and the emerging natural rejuvenation, selected areas were selectively harvested on a total forest area of 40 hectares. Subsequently, the open areas were replanted with English oak, field elm and European white elm (*Ulmus minor* and *Ulmus flaevis*), as well as small-leaved lime (*Tilia cordata*). All planting measures are subject to three-year maintenance.

### **Creation of a wetland and restoration of a silted oxbow**

In autumn 2014, the biggest construction works of the LIFE+ project “Elbauen bei Vockerode” have been implemented – a silted oxbow was deepened and a new wetland was created.

The flood channel in front of the *Sieglitzer Berg* (natural landscape feature as a natural dune from post-glacial period) has been covered with water again. Hundred years ago the Elbe passed this site; today the river course lies in 200 metre distance because of human intervention. The oxbow left behind has silted up and stayed dry most of the year. In order to reduce the dry periods, the channel of the oxbow was deepened without reconnecting it with the River Elbe. As a consequence the channel fills up whenever the river Elbe water table rises above bankfull stage (approx. 1.3 m above mean discharge).

This measure also serves cultural heritage conservation. The landscape park on Stieglitzer Berg was developed 250 years ago along the banks of river Elbe. The view on water was integral part of the landscape design. Therefore, by deepening the oxbow, targets of nature conservancy and cultural history have been successfully combined.

The excavated earth mass was utilized for the establishment of a hill where wildlife can find refuge during flooding (wildlife refuge hill). The artificial structure is considered a necessary measure for nature protection, whereby wildlife can find a dry and undisturbed location to retreat within the floodplain area during flooding.

A new wetland was created as a result of strengthening measures at the motorway A9. 5.000 cubic metres of alluvial soil were excavated from the acquired farmland to secure the embankment of the motorway A9. The extraction site left a pit of more than 1 metre depth which then was shaped to a near natural wetland habitat. Furthermore, existent shallow depressions on the acquired farmland were further lowered to restore former floodplain channel features.

According to the original outline of the LIFE+ project “Elbauen bei Vockerode” the creation of another wetland biotope which was planned in the course of the opening of the *Gatzer Bergdeich* (dyke). The extreme flood in June 2013 caused two breaks in the dyke and left a deep scour hole (*Kolk*). The plans have been adapted to the new circumstances; the valuable scour hole was preserved.

### **Establishment of a floodplain nature trail**

In April 2016, a new floodplain nature trail was opened. Three information boards were established alongside the River Elbe cycling track to welcome visitors in the LIFE+ project area. Moreover, the new App “Biosphere reserve Elbe” invites visitors to explore the area electronically. 14 stations provide information about the project measures and the effects in favour of endemic plant and animal species living in the floodplain as well as cultural history.

### **Opening of a flood protection dyke**

A fundamental goal of the LIFE+ project is the reclamation of former floodplain areas through the opening of the *Gatzer Bergdeich*, also called “Vasenwall”. The Vasenwall meanders through the LIFE+ project area and was designed as flood defence for forest and agricultural land as well as the nearby village Vockerode. In June 2013, during the extreme flood this historical dyke system was damaged at two locations. In the interest of flood protection, the Vasenwall was fully opened at both locations. Now medium-sized floodwaters can spread naturally on an additional floodplain area of 212 hectares.

### **Reinforcement of the existing motorway embankment (A9) for flood defence purposes**

In order to rehabilitate floodplain habitats by reconnecting to flooding processes, Vockerode required a new flood protection system. The motorway A9 passing the village Vockerode serve as defence structure today. The construction works started in 2014 and were finished in the year 2017. The final redesign of the drainage system is still to be completed.