

Floodplain restoration

Floodplains are areas bordering rivers that naturally provide space for the retention of storm waters. Within the EU, almost all major and many minor rivers have been separated from their floodplains by dikes, sluice gates and other structures designed to control water flow, or the floodplains have been drained for agriculture or development. A number of LIFE projects have restored floodplains to enhance biodiversity and to restore ecosystem functions, which build resilience against flooding and climate change impacts. By allowing streams to function naturally, with controlled flooding, floodplain restoration measures reduce the risk of flood damage.

In the case of the ongoing Dutch project, **Floodplain development**, the goal is to enlarge the floodplains of the River IJssel to increase their water storage capacity, thereby improving water safety and reducing the risk of flooding in more heavily populated areas. The use of buffer zones and storage infrastructure will slow water transfer between the floodplain and the river, thereby spreading the flow and thus decreasing flood intensity. The restoration work will also improve ecological connectivity between Natura 2000 network sites for species susceptible to climate change. This LIFE initiative is part of a more ambitious project, Rivierklimaatpark IJsselpoort, the aim of which is future-proof, climate change adapted spatial development in the upper floodplains of the IJssel.

Showing the variety of LIFE's work in this area, by contrast the LIFE RII project is restoring a floodplain in a largely urban area (see box).

Floodplains and afforestation

Afforestation is a natural water retention measure for floodplains that can reduce soil erosion, enhance water-holding capacity, and improve water quality in cases where precipitation infiltrates forest soils before flowing into reservoirs. The Emericher Ward project in Germany is “establishing a new area of floodplain forest along a secondary river channel that is being reconnected with its floodplain,” explains project manager Klaus Markgraf-Maué. This is being done to counteract flooding caused by changing precipitation patterns. Reconnecting the river to the floodplain will improve its ecological and hydrological functioning. Furthermore, the afforestation techniques will

minimise the barrier effect of the forest in the event of flooding by integrating forest aisles with the side-channel and with an amphibian transition zone.

Also in Germany, the Elbauen bei Vockerode project is restoring a natural floodplain landscape in the middle Elbe using a range of different afforestation techniques, “depending on the local situation and taking into account the land users’ objectives

Restoring an urbanised floodplain in Italy

The LIFE RII project is implementing large-scale floodplain restoration at the base of the Apennine mountains, where urbanisation makes interventions difficult. The goal is to increase the area's water retention capacity and its resilience to climate change. Project actions have focused on hydraulically-critical points within a network of canals and creeks.

The project is testing a number of novel management tools, such as ‘flooding servitude’ – payments to landowners for temporary, planned flooding of their fields to avoid more damaging floods in urban areas downstream. “This will allow substantial savings compared to more costly interventions such as creating temporary flood reservoir areas or compensating for damage after flood events,” says project manager Alfredo Caggianelli.

Techniques being trialled include the use of vegetation-filled gabions to slow flood water flows, selective weirs to remove branches and other material that could stop water flowing smoothly, and maintaining embankments along some stretches of waterway.

“In the integrated approach of LIFE RII, the interventions for flood risk are simultaneously solutions to improve the ecological status of watersheds,” says Mr Caggianelli. He notes that the first field surveys already indicate the start of a new dynamic in the waterways. A restoration programme is being implemented through a public agreement, signed by multiple public and private stakeholders, which will identify how shared objectives are to be achieved.

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