



CASE STUDY

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Payments for Ecosystem Services

Energy from Invasive Species

This case study presents a scheme for ecosystem services payment from the Tisza River floodplains in Northern Hungary. The project was initiated by WWF who designed an innovative ecological and economic scheme to restore the Tisza floodplains, while generating incomes for all stakeholders involved.

Location:

active floodplain of the Tisza River between Tiszatarján village and Tisza Lake, Northern Hungary.

Total area: approx. 3,500 ha of a 30 km long river section, from 0,5 to 4 km wide, located “between the river dikes”

Population is decreasing and includes a fairly visible gypsy (Roma) minority while average population density is below the country average Tiszatarján – village in Borsod-Abaúj-Zemplén county, in the North of Hungary; population 1,456

32,000
Euro



was the amount made from
the sale of

400 tons

of bundled amorphous
biomass

Problem

Since the early 1970s, due to increasing yields from intensive agriculture traditional practices, such as extensive grazing for milk and meat production had been increasingly abandoned. With the end of communism and closing of many state-run agricultural co-operatives, land was distributed to small private landowners.

The size of newly established farms brought the quick decline of agriculture, as agriculture became less financially viable and it became difficult to find markets for local produce. Consequently, grazing stopped almost completely, leaving many lands unmanaged.

Resulting from all these changes, environmental degradation of the Tisza floodplains proceeded. Most wetlands disappeared from both sides of the dikes and many of the natural watercourses flowing to the area dried up, including streams from the nearby Bükk Mountains that were blocked and regulated. Groundwater levels dropped and saline soil replaced many former floodplain grasslands, reducing meadow fertility. The risk of floods increased as the riverbed deepened and the flood water retention capacity of the floodplains decreased. The invasive detrimental shrub *amorpha fruticosa* (False Indigo) had colonised thousands of hectares of the Tisza floodplain wetlands.

Stakeholders

The decline in the state of the wetlands went hand in hand with the economic decline of the region. Wetland restoration would bring economic benefits in the short run by payments for the biomass supplied and by creating jobs and ensuring resources in the long run by returning to traditional occupations and allowing eco-tourism to develop. Potential utilization of invasive species as biomass also decreases CO₂ emissions for the powerplant using it.

Solution

A first step towards restoring the floodplains was to eliminate the invasive bushes and then start restoring the freed wetlands. With the idea of an economic mechanism to drive restoration work, WWF persuaded the power station AES Hungary to carry out burning tests on the shrub for determining whether it carried potential for being used as biomass to generate green electricity. The shrub turned out to be suitable for utilization at the power plant.

Based on the successful tests, WWF went on to seek cooperation with representatives of all stakeholders involved. Their cooperation yielded an ambitious landscape and economic vision for the region, featuring the restoration of the typical Tisza landscape of woody grasslands, wetlands and floodplain forests. The scheme involved four stages: 1. new green energy production; 2. subsidized floodplain maintenance and restoration; 3. extensive grazing and 4. eco-tourism expansion.

The payment scheme

The municipal government of Tiszatarjan established Tiszatarjan Kft, a limited liability company to facilitate implementation of the scheme, lead by a local farmer. In 2008 with the intermediation of WWF, the company reached an agreement with the power plant AES Hungary to supply them with WWF-certified biomass for green energy. The agreement implied Tiszatarjan Kft hiring local, mainly unemployed and underskilled people for cutting the *amorpha* and selling it to the nearby power plant. It also implied that the profits made from selling the biomass would serve floodplain restoration purposes. Part of them went towards floodplain restoration as subsidy for farmers obliged by their supply contract with AES to set aside part of their formerly arable land for this purpose. On these lands grassland and wetland restoration takes place, allowing “nature to return”. The rest of the profits went to the remaining lands for plantation of fast-growing native willow trees which also yield profits on a three-year cycle when transported and sold to the power station.

As part of the restoration work, three indigenous animals – the beaver, nature’s “wetland hydrologist”, the Hungarian long-horned grey cattle and the water buffalo – have been reintroduced. All three animals are directly re-building the ecosystems damaged by the *amorpha* invasion. More than that, the cattle and buffalo have an additional role to play in that they eat the shoots of young *amorpha* plants on the newly exposed grasslands, and thus prevent the jungle from returning.

Thanks to the resulting improvements to the landscapes and biodiversity, the fourth goal of the scheme is reached: the area became more attractive to tourists and further development of local tourism facilities is encouraged (e.g. a new bike trail goes along the top of the dikes).

Benefits

The sale of 400 tons of bundled *amorpha* as biomass yielded €32,000, all reinvested into wetland restoration. Two full-time and more than 30 temporary jobs were created during the implementation of the scheme.

Far from a one-off economic and ecological boom, the mechanism is a sustainable cycle of *amorpha* clearance, nature restoration and green energy production.

This case study was prepared as part of THE DANUBE PES PROJECT: PROMOTING PAYMENTS FOR ECOSYSTEM SERVICES AND RELATED SUSTAINABLE FINANCING SCHEMES IN THE DANUBE BASIN.

This project promotes and supports land managers who help us sustain the benefits that we all get from nature. The project is implemented by the WWF Danube-Carpathian Programme with the financial support of the GEF through UNEP and the European Commission.



Why we are here.

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony and nature.

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