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Improving water quality in the Danube river and its tributaries by integrative floodplain management based on Ecosystem Services


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"The flow of nutrients in water does not stop at national borders. We have jointly connected our strengths in order to establish strategies for comprehensive water quality management. The floodplains along the Danube play a key role in this, as they are able to retain nutrients."

Prof. Dr. Bernd Cyffka
Catholic University of
Eichstaett-Ingolstadt, Germany

Context

From its source to its mouth in the Black Sea, the Danube covers a distance of more than 2,800 kilometers, flowing through ten countries, and its water even comes from 20 different countries. Thus, more than 80 million people live in the catchment area of the river, and - just like flora and fauna - are dependent on a good water quality.

Since half of the world population is living in a distance of less than 3 km to the next inland water body, a major part of ecosystem services that is used probably is provided by inland waters. Therefore, the preservation of the integrity of inland waters represents a necessary prerequisite not only for the preservation of the high biodiversity of inland waters, but also for a high availability of ecosystem services in river corridors.

Floodplains can retain nutrients in two ways: On the one hand, near-natural green spaces along rivers prevent fertilizers or pesticides from entering into the water. On the other hand, nutrients that have already been discharged into the river can be retained again during floods: Suspended matter in the river water, to which the nutrients are bound, is deposited in the floodplain and on its plants, where it serves as fertilizer. This is one reason why floodplains often have very fertile soils.

"In other EU countries, too, related aspects in the field of floodplain management - such as flood protection, agriculture or biodiversity - are often considered and managed separately for planning purposes. Moreover, the question of water quality as an ecosystem service of floodplains has hardly played a role so far. The aim of the IDES project is therefore to adopt a comprehensive perspective that takes this important aspect into account for the first time."

Barbara Stammel
Catholic University of
Eichstaett-Ingolstadt, Germany

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IDES project

10 countries unite for a common purpose

Ten countries along the Danube (Germany, Austria, Romania, Hungary, Slovenia, Slovakia, Bulgaria, Serbia, Croatia and Moldavia) joined forces in an EU-funded project to improve water quality in the Danube river and its tributaries by integrative floodplain management based on Ecosystem Services.
IDES project aims to develop and implement a transnational integrative ecosystem service approach to improve water quality management and thus, generating win-win-situations for multifunctional floodplains instead of trade-offs.
The IDES tool should enable the national key actors in water quality management to identify the most sustainable measures without neglecting the needs of other sectors. The innovative IDES tool will provide both in pilot areas and on the transnational level an ecosystem service assessment for floodplains that supports sustainable decision making in floodplain management.

Human benefit from healthy ecosystems

The basic idea behind the ecosystem service approach is connecting the needs of humans with nature, both mutually influence each other. Human activities have a direct or indirect impact on nature. Conversely, natural events can affect society and intact ecosystems serve human well-being. Thus, so called ecosystem services (ES) bring direct or indirect benefit to people. The aim of the ES approach is to illustrate these economic, health or even psychological benefits and values of ecosystems to society and thus to raise the awareness of the need of healthy ecosystems and to foster sustainable management.

Using the ecosystem service approach, trade-offs and even more synergies between different sectoral uses can be identified. ES can help to mediate between different stakeholders. In addition, they are a good tool to present the impact of management measures on the ecosystem and on its benefits holistically.

Three types of Ecosystem Services

Ecosystem services were distinguished in three different types: regulating, provisioning and cultural services. Provisioning services provide people with products of the nature like food, drinking water, fodder and raw materials like wood. Extreme water regulation, climate regulation, carbon fixation or the maintaining of lifecycle are regulating services. Services that have symbolic, cultural, aesthetic or intellectual value are considered as cultural services, e.g. recreation in the landscape and in/on the water or educational activities.

Provisioning ES

- agricultural product (all plant foods produced by agricultural cultivation)
- water (for drinking or irrigation)
- wood (for heating or creating wood products)
- fish or fish products offered for sale

Regulating ES

- local climate regulation
- air purification
- flood retention
- nutrient retention

Cultural ES

- recreational activity (hiking, cycling, jogging, birdwatching)
- water related activity (swimming, canoeing)
- tourism
- educational activities

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