

Ecosystem services – from theory to practice

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Future of European Waters

Ecosystem services

- Theory
- Practice

History

UN 2004 Millenium Ecosystem Assessment

- *provisioning*, such as the production of food and water
- *regulating*, such as the control of climate and disease
- *supporting*, such as nutrient cycles and crop pollination
- *cultural*, such as spiritual and recreational benefits



Threats generally

- air and water quality compromised
- oceans are being overfished
- pests and diseases are extending beyond their historical boundaries
- deforestation is exacerbating flooding downstream



Threats in numbers

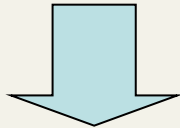
- 40-50% of Earth's land surface heavily transformed or degraded by anthropogenic activities
- 66% of marine fisheries are either overexploited or at their limit
- atmospheric CO₂ has increased more than 30% since the advent of industrialization
- nearly 25% of Earth's bird species have gone extinct in the last 2000 years



Approach

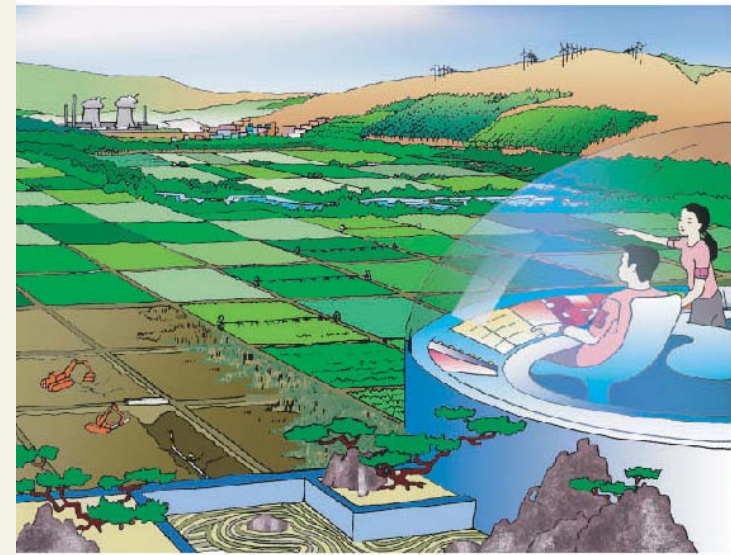
Ecosystem services (ES) are

1. limited
2. threatened by human activities



Need to better consider long-term ecosystem health and its role in enabling human habitation and economic activity

To help inform decision-makers: ES are being assigned economic values



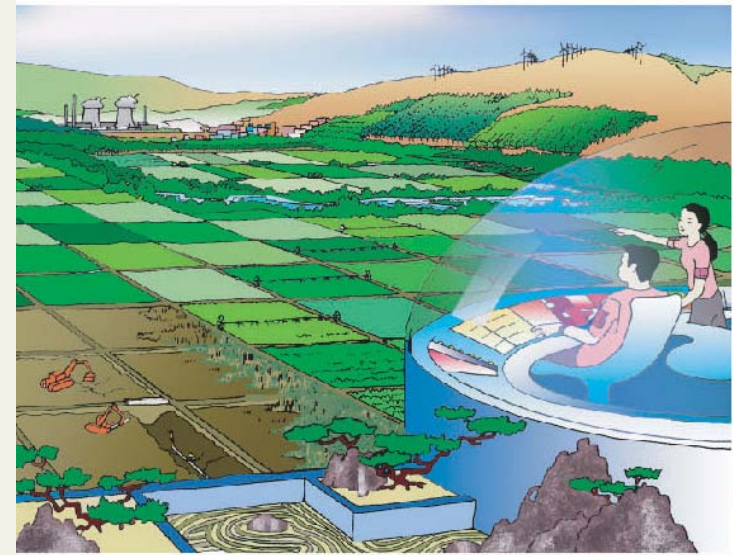
Approach

Most common methods:

- cost of replacement with anthropogenic alternatives
- biodiversity banking

Transdisciplinary shifts in

- environmental mgmt
- social responsibility
- business opportunities
- our future as a species



Freshwater ecosystem services (FES) Importance

Particularly vital role, by underpinning the viability of services provided by most other biomes.

Ensuring the sustainability of FES is inevitable to achieve

- food and energy security,
- climate change adaptation and mitigation
- flood protection



Freshwater ecosystem services Uses

The payment for ecosystem services approach is a valuable tool in addressing water management issues, e.g.:

- quality and quantity of water,
- competing water uses,
- differing upstream and downstream interests
- etc.



Freshwater ecosystem services Monetize or not?

Payment for ecosystem services (PES):

- tool to address the trade-offs and balances between different uses of freshwater in the midst of increasing demand

NB:

Not all freshwater ecosystem services can be fully monetized therefore need to be protected through non-market based approaches



Freshwater ecosystem services

Examples

- According to cautious estimates Danube floodplains provide a range of different goods and services whose value per hectare ranges from 1 to 2.5 times the income generated by agricultural land (excluding subsidies) in the same region.
- According to a 2008 EC report, cumulative loss of biodiversity and associated ecosystem services between 2000 and 2050 could be equivalent to 7 % of the 2050 world Gross Domestic Product (GDP)
- Biodiversity providing ecosystem services worth 50 billion Euros per year is currently being lost every year



Existing instruments to apply PES principle

EU, national and international policy instruments that are in place, including e.g. the Water Framework Directive and Natura 2000 network, provide a good framework for sustaining freshwater ecosystem services



Recommendations

Mainstreaming values of ecosystem services requires that natural capital is considered routinely in:

- economic, trade and development policies, for example in the impact assessments for new legislation and investment,
- transport, energy and mining activities, for example in funding and investment decisions and in permitting, inspection and enforcement,
- agriculture, fisheries, forestry practices, for example by integrating the value of biodiversity (or the costs of its loss) into the reform of existing policies and instruments,
- corporate strategies and operations,
- development policies and planning at local, regional and national levels, and
- public procurement and private consumption, for example via further developing certification and eco-labelling approaches.

Recommendations

All subsidies harmful to biodiversity and ecosystem services should be recognized, tracked and reformed or eliminated, both at national and EU level. E.g. the reform of the Common Agriculture Policy should reorient the subsidies toward sustainable farming practices that preserve the ecosystems and deliver public goods (such as biodiversity and the functionality of freshwater ecosystems).



Recommendations

It is crucial to give a broad interpretation to “Resource Efficient Europe”, encompassing all natural resources including energy and non-energy resources, biotic and abiotic materials, water, air, soil, living organisms, ecosystems and biodiversity, and to aim at achieving a higher resource productivity, at managing limited resource availability, and at decreasing environmental impacts. An innovative fiscal and taxation reform that evolves from taxes charged on income, generated by human work towards charging use of natural resources, would enhance resource efficiency, investment in “Green infrastructure”, and sustainable and inclusive growth.



Recommendations

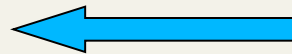
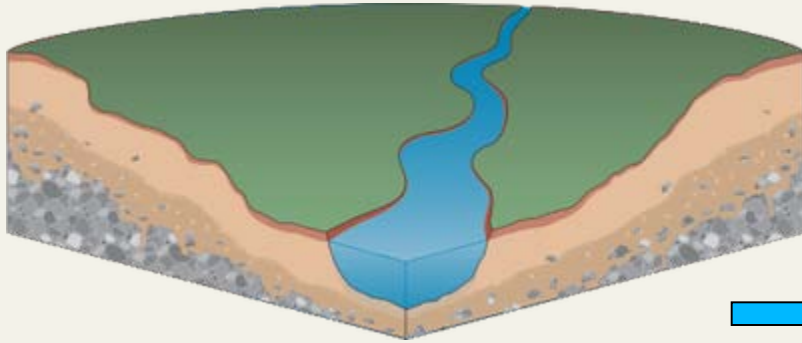
- Values of ecosystem services and costs of natural capital losses should be incorporated into the indicators of national welfare and systems of national accounts.
- Implementation of the WFD will need to be strengthened in the next planning cycle, including the use of economic measures, to achieve sustainability and support conservation of freshwater economic services.
- The principles of 'polluter pays' and 'full-cost-recovery' are powerful guidelines for the realignment of incentive structures and fiscal reform. The principle of 'beneficiary pays' can also be invoked to support new positive incentives such as payments for ecosystem services, tax breaks and other fiscal transfers .

Ecosystem services

- Theory
- Practice



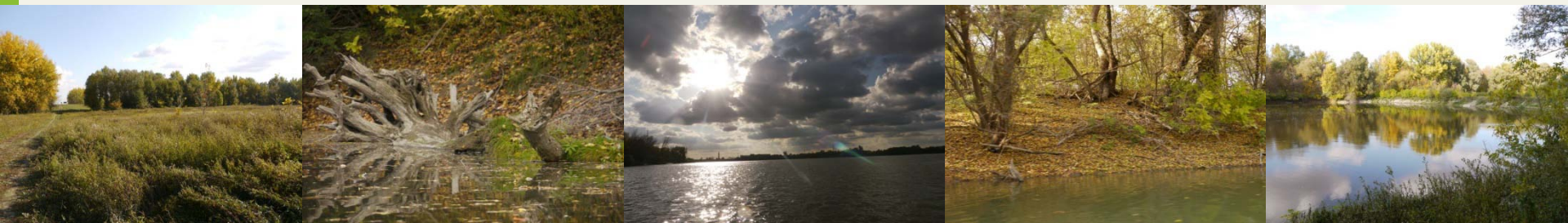
From the river to the tap





A healthy river has...

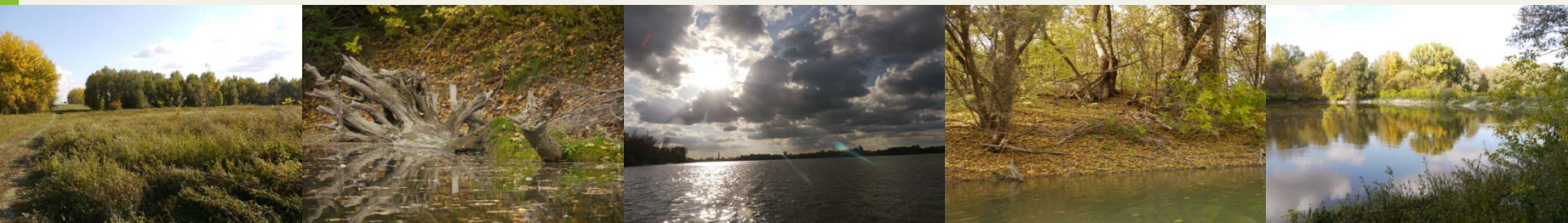
- main branch
- side arms
- wide floodplain
- meanders
- natural ecosystem in the river and in the floodplain





Side-arms...

- are vital for spawning for fish
- have divers ecosystem differing from the main branch
- are not formed any more in the Hungarian section of the Danube, due to river regulations
- threatened by silting up due to deepened main branch
- threatened by invasive species





Liberty Island

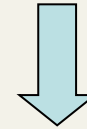




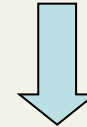
Liberty Island



- Closed side-arm by a rockfill dam



- Silted riverbed



- Degraded ecosystem, expensive drinking water

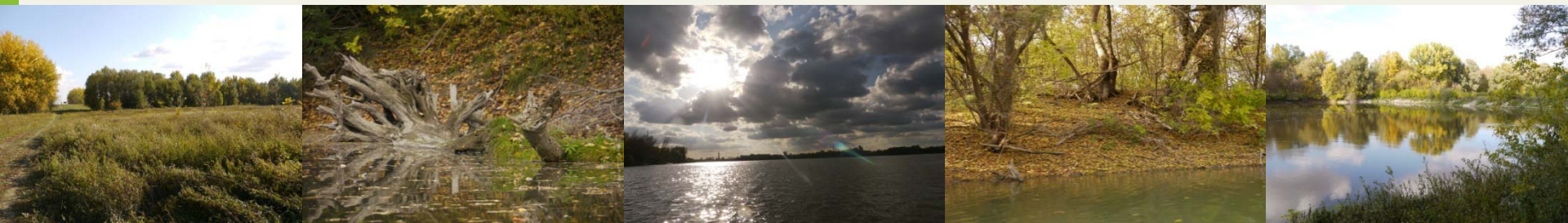


The solution

- re-vitalising the side-arm
- removing colmated sediment to allow natural filtration to work again
- providing more active groundwater flow towards the wells by re-vitalising water flow in the side-arm

How to achieve?

- WWF gathered with partners
- successfully submitted a LIFE+ proposal to the European Commission
- with the unique alliance the revitalisation was able to start in 2009





Removing the sediment





Opening the rockfill-dam





Forest management





Thank you

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