The Economics of Ecosystems & Biodiversity

The Economics of Ecosystems and Biodiversity (TEEB): Water and Wetlands

Policy instruments to progress towards wise use

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What decisions do we take? Many different scales

- **Local** – e.g. site management, decisions on restoration, construction, individual regulatory decisions
- **Hydrological scale** (river basin, coastal area, etc.) – e.g. integrated water resource management, dams
- **Regional/national** – e.g. designing regulation, economic instruments, subsidies, policy prioritisation, sectoral policy planning
- **Transboundary** – e.g. transboundary river basins, coasts
- **International** – e.g. climate negotiations, international agreements

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Policy instruments – Regulations

- **Regulations that reduce pressures** on wetlands (e.g. regulation of water discharges, emissions standards)
- **Regulation of products** – restrictions on product use (e.g. re: endangered species; pesticides, detergents) or production standards
- Establishment of **Protected Areas**
- **Land-use planning**
  - **Integrated Water Resource Management (IWRM)**
  - **Integrated Coastal Zone Management (ICZM)**
  - **Marine Spatial Planning (MSP)**

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IWRM, ICZM, MSP

- Focused on **landscape scale** (e.g. river basin, coastal area, marine region)
- **Multi disciplinary approach**
- **They engage the key stakeholders**:
  - Source of knowledge on ecosystem services
  - Allows buy-in into relevant decisions
- They allow policy makers to address **multiple objectives**, **identify synergies among them, discuss trade-offs**

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The Pangani River Basin IWRM (East Africa)

(www.panganibasin.com)

- The Pangani River Basin provides **livelihoods to over three million people,** mainly from agriculture and fisheries
- Between 2002 and 2010, the IUCN Water and Nature Initiative (WANI) carried out a **IWRM to provide information to the government on costs and benefits of different water resource management strategies** (US$4.78 million). Objectives:
  - To understand the **hydrology** of the river basin, the **functioning of ecosystems and their link to human economy**
  - To **discuss trade-offs** (e.g. between maximising agricultural production, hydropower production or ecosystem services)
- Used to **help planning** in situation of assumed increase in water demand

Source: TEEBcase by Cross and Förster, mainly based on PBWO/IUCN (2009) and Turpie et al. (2005)

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Restoration

- **Restoration and rehabilitation of degraded ecosystems** can bring considerable benefits to people, also economic. Examples:
  - **Climate change mitigation** and **adaptation**
  - **Flood risk prevention**
  - **Reduction of damage** of storms
  - **Livelihood** for local communities

  - Sometimes natural systems present cheaper options than man-made systems

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An example of good on-site management: the Essex Marshes, UK

- Over 25 years the Essex coast **lost approximately 50% of its 30,000 ha of salt marshes**, and 1% continues to be lost every year
- In 2002, the Essex Wildlife Trust created the **largest EU coastal re-alignment project to restore the salt marshes** (81 ha of intertidal habitats created)
- Over the next 20 years **expected savings** of £500,000/ year **on sea wall maintenance**
- **Additional benefits** include: **improved water quality, flood defence, ecotourism and recreation opportunities**

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Source: http://www.natura.org

Market–Based Instruments

- **Taxes, fees, charges**, including Environmental Harmful Subsidies (EHS) reform
- **Tradable permit schemes**, water banks/water funds
- **Voluntary schemes**, including offsets
- **Payment for Ecosystem Services** (PES)

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An EHS: low price for irrigation in Italy and Spain

- **Irrigation is responsible** for a **large share of total water consumption** (≈ 68% of total water use in Spain and 57% in Italy)
- **Low water availability**, but **low water prices**
- Water tariffs are based (with few exceptions) on the irrigated area and not on water use ⇒ **farmers are not encouraged to save water**
- In **Italy**, **cost recovery rates** vary between 20-30% in the south and 50-80% in the north
- **Total subsidies** to irrigated agriculture in the most important Spanish basins have been calculated at €906 - €1,120 M/yr, including capital and O&M costs

Sources: Arcadis et al. (2012), Berbel et al. (2007), Calatrava and Garrido (2010), OECD (2010), Zoumides and Zachariadis (2009)

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The salinity credits in Bet Bet, Australia

- **Salinization threatens agriculture** in the area, **damages infrastructure** and has a **negative impact on the river ecosystems**
- It is caused by the **reduction in aquifer recharge** produced by a **reduction in permanent vegetation with deep roots**
- **The Bet Bet tradable salinity credits auction:** farmers could offer their commitment to undertake actions to reduce salinity in exchange for a certain payment
- The farmers who won the auction could fulfil the obligations by reducing salinity in their fields or by buying salinity credits from other farmers who had achieved higher reductions than those established in their contracts

Source: Connor et al. (2008)

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The MoorFutures programme (restoration+offsetting credits)

- Around 930,000 ha of peatlands have been drained in Germany for agriculture, 300,000 of which in the area of Mecklenburg- Vorpommern. **Peatland drainage causes emissions of around 20 million tonnes of CO2-eq. per year**
- Between 2000 and 2008, **29,764 ha of peatlands have been restored**, by raising the water level in order to prevent further oxidation of the peat
- Also, a **system of carbon credits (MoorFutures**) for the **voluntary market** was established
- 1 MoorFutures= 1tCO^2/yr = 35€

- **8,000 MoorFutures sold** in M-V so far ⇒ **restoration of 55 ha**

Source: TEEB case by Förster (2009), mainly based on MLUV - Mecklenburg-Vorpommern (2009), Schäfer (2009)

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Payment for Ecosystem Services

- Wunder's definition (Wunder, 2005):
  - (a) a voluntary transaction where
  - (b) a well-defined ES or a land use likely to secure that service
  - (c) is being 'bought' by a (minimum one) service buyer
  - (d) from a (minimum one) service provider
  - (e) if and only if the service provider secures service provision (conditionality)

- They can be funded by **governmental bodies**, **private business** or **foundations/NGOs**
- Payment usually based on the **opportunity costs of conservation** and not on monetary evaluation $\Rightarrow$ long process of negotiation

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It works when:

- The barrier to conservation is mainly **economic** in nature
- A **small fee** may change the individual decisions of the owners or managers of natural resources
- **Property rights** are well defined and the environmental services are definable
- **Buyers** and **suppliers** can be identified, and a transaction between these two categories of actors is possible

It should not be regarded as a panacea or blueprint for environmental conservation

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Vittel, France

- PES programme to **preserve the quality of Vittel's bottled water**, threatened by the presence of nitrates and pesticides due to the intensification of agricultural and livestock raising practices upstream

- **10 years of negotiations**
- **Package of incentives** available to farmers:
  - **18 and 30 year-contracts** to ensure continuity
  - **abolition of the debt** associated with the purchase of land by farmers
  - an **average of €1000/ha** to cover the costs related to the transition
  - a **lump sum** of up to €150,000 per farm to meet the initial costs
  - **Technical assistance**
- Success: **protection of 92% of the water catchment area**

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Scope of MBI – they are useful to

- Offer **incentives for more sustainable practice**
- Engage **new stakeholders**
- **Improve funding** opportunities
- Allow **more flexibility** to private actors
- Act as an **educational tool**

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Limitations of MBI

- Are **complementary** – not substitutes – to regulation
- **Not advisable to protect high-value ecosystems** or in cases where failures can lead to severe/irreversible impacts
- Only effective when the cause for environmental degradation is mainly **economic**
  (e.g. not useful in case of corruption, or to prevent illegal water abstraction)
- **Risk of commoditisation of nature**?
- **Crowding-out** of moral motivations?

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Transforming our approach

- Wetlands protection/improvement should be **integrated in policy-making** at all levels, in order to progress towards wise use
- In order to do that, the ES provided by wetlands need to be assessed – using **qualitative, quantitative and monetary methodologies** – depending on the objectives, the available information, time and resources
- A **variety of policy tools can contribute to wise use**, including regulation, establishment of PAs, integrated management and MBIs

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