Biodiversity loss threatens our existence.

Biodiversity loss threatens our economy.
Climate change threatens our existence.

Climate change threatens our economy.
Economics of biodiversity – Experiences from the WWF Danube Carpathian Programme

8th October 2013
Budapest, Hungary
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Where we work in the region

• Geo scope: the lower section of the Danube
• Countries: Serbia, Romania, Bulgaria and Ukraine

About the Danube River basin:
Length: 2,780 km
Area: 800,000 km²
Population: 83 million
WWF and ecosystem services

- Policy level
- Piloting: assessment, valuation of ecosystem services and introduction of economic tools for ecosystems and the biodiversity
WWF Approach

- **Bottom-up approach** to investigate conservation and related socio-economic challenges, involving directly all relevant groups of interest

- **Transparency and participatory** approach when defining solutions

- **Testing and widely promoting successful** pilot solutions in media, to markets, to decision-makers

- **Work on policies and lobby at national, Danube region and EU level to promote ecosystem sustainable policies** or cease ones degrading our natural capital
Pilot projects and local level actions – interactions with land users and local management authorities for improved land management and protection of the biodiversity; development of pilot solutions with public/private support.

National level: participation in working groups at ministerial and inter-ministerial level, development of position papers (policy recommendations and lobby).

Regional level: ICPDR (active observer); Danube Strategy (stakeholder).

EU level: EHF & WWF Budget review work.

Policy papers and lobby

Design & PES market instruments, introduction of standards; physical restoration projects, (incl. CBA)

Critical review of policies and funding, development of position papers and policy recommendations, lobby; support the development of public payments for common goods – developed methodology and calculations.

Influence focus of Danube Strategy Action Plan; advocate for integration of biodiversity objectives.

Assessing and building capacity

Communication and awareness raising
Policy

- WWF sits in the MAES working group
- WWF works with national institutions to promote MAES in countries
- WWF works on legislation
Economic and Institutional Analysis of Feasibility of PES in Ukraine
Economic and Institutional Analysis of Feasibility of PES in Ukraine (2)

- Reedbed management
- Erosion control measures
- Water quality and water resources management
- Wetlands restoration and ecotourism
Pilots and project work
## Ecosystem services

### Annual euro values using CICES

<table>
<thead>
<tr>
<th>Type of ES</th>
<th>Group of ES</th>
<th>Description</th>
<th>Euro Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Provisioning</strong></td>
<td>Nutrition</td>
<td>Fruits and wild berries</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Game</td>
<td>230 000</td>
</tr>
<tr>
<td></td>
<td>Materials</td>
<td>Timber and wood</td>
<td>80 000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fodder (hay and fresh grass)</td>
<td>66 000</td>
</tr>
<tr>
<td><strong>Regulation &amp; Maintenance</strong></td>
<td>Mediation of flows</td>
<td>Food protection</td>
<td>7 500</td>
</tr>
<tr>
<td></td>
<td>Maintenance of physical, chemical, biological conditions</td>
<td>Water purification</td>
<td>15 340</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Carbon sink by forests and wet meadows</td>
<td>2 321 570</td>
</tr>
<tr>
<td><strong>Cultural</strong></td>
<td>Physical and intellectual interactions with biota, ecosystems, and land-/seascapes</td>
<td>Eco tourism</td>
<td>67 200</td>
</tr>
</tbody>
</table>
## Ecosystem Services
### Annual euro values using CICES

<table>
<thead>
<tr>
<th>Type of ES</th>
<th>Group of ES</th>
<th>Description</th>
<th>Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisioning</td>
<td>Nutrition</td>
<td>Fish production</td>
<td>592,000 (3,202 €/ha)</td>
</tr>
<tr>
<td>Regulation and maintenance</td>
<td>Maintenance of physical, chemical, biological conditions</td>
<td>Carbon sequestration (reed, soil vegetation and trees)</td>
<td>5,856</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Carbon storage (trees)</td>
<td>3,550</td>
</tr>
<tr>
<td>Biodiversity maintenance</td>
<td></td>
<td>Hunting penalties</td>
<td>19,500 (77 €/ha)</td>
</tr>
</tbody>
</table>
Pilot PES schemes
since 2010 we have been working on:

• a national public scheme for fisheries and aquaculture in Bulgaria
• 2 schemes supporting protection and biodiversity and cultural values of protected areas in Bulgaria and Romania
• 1 scheme for sustainable fishpond management in Romania
• 1 scheme for wetland management by harvesting biomass
Payments for sustainable fishpond management – Ciocanesti pilot, Romania

Picture: © WWF
The Ciocanesti fishpond

**Location:** Ciocanesti fishpond, Lower Danube, Romania; 255 ha

**Problem:** Fish-eating birds of high conservation value feed on this private market-oriented fishpond. The fishpond owners suffer loss of yield to up to 70%. More than 20,000 bird individuals visiting the place

**Solution:** Introduce payments awarding the managers of the fishponds for their efforts to protect the birds and maintain water quality

**Cost:** A package of 5 measures was developed with different values for each measure: 70 - 6,000 Euro/ha/ year

**Benefit:** Protection of the 31 protected bird species, improved water quality, reduction of GHGs
Measures

Biodiversity protection

Measure 3: Maintaining (cutting) the reed after birds breeding season (manual or with aquatic mowing machine) - non fragmented area and/ or waterholes in reed

Level of compensation:

• 189 €/ha of cut reed (manual) or

• 60 €/ha of cut reed (renting mowing machine)

Results: improved environment for birds nesting; reduction of GHG emissions
Podiceps cristatus – Great crested grebe (Foto: Cosmin Melinte)

Foto: http://dl/to/pasarea-starcul-mic-xoibychus-minutus.html
Market payments for wetland restoration and management – Persina pilot, Bulgaria

Picture: Arial photo of Persina Nature Park, © Alexander Ivanov
Persina Pilot

- **Location**: north of Bulgaria, 77 000 ha (150 ha pilot)
- **Status**: Protected area of inland marshes and flooded forests, including 24 islands, 3 reserves, 2 natural landmarks, 1 protected area
- **Socio-econ**: Rural area including 3 municipalities within approximately 27 000 residents
- **Problem**: problems in the water regime of the wetland area
- **Solution**: improve the water regime of the wetland through reed harvesting – contributing to local economies and reduction of GHGs
Annual volume of biomass from the Persina pilot

<table>
<thead>
<tr>
<th>Type of culture</th>
<th>Sown area (ha)</th>
<th>Average yield per ha (ton)</th>
<th>Overall biomass production (tons)</th>
<th>Biomass average yield in sustainable nature way (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat and barley</td>
<td>1400</td>
<td>4</td>
<td>5600</td>
<td>1867 t</td>
</tr>
<tr>
<td>Corn</td>
<td>2650</td>
<td>7</td>
<td>18550</td>
<td>12057 t</td>
</tr>
<tr>
<td>Sunflower</td>
<td>1027</td>
<td>2.5</td>
<td>2567</td>
<td>2053 t</td>
</tr>
<tr>
<td>Reed</td>
<td>2000</td>
<td>2.9</td>
<td>5800</td>
<td>1160 t</td>
</tr>
<tr>
<td><strong>Total of area and product.</strong></td>
<td><strong>7077</strong></td>
<td></td>
<td><strong>32 517</strong></td>
<td><strong>17137 t</strong></td>
</tr>
<tr>
<td><strong>Annual market price of pallets 185 Euro/t</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>~ 3 120 000 Euro</strong></td>
</tr>
</tbody>
</table>
Payments for cultural ecosystem services - Rusenski Lom pilot, Bulgaria

Picture: © WWF
Rusenski Lom pilot

**Location:** Northeast of Bulgaria, 3408 ha
**Status:** Protected area – nature park, IBA, Natura 2000 site

**Problem:** unregulated tourism impacting negatively BD and Ecosystems

**Solution:** Private deal between the tourism entrepreneurs, from one side and the Directorate of Rusenski Lom Nature Park, from another

**For:** visitors control and conservation activities of emblematic species: feeding of Egyptian vulture, creation of artificial water bodies, restoration of existing fishponds and fish-stocking for the Black stork, restoration of the ground souslik and Crex crex habitats
Maramures pilot

Location: Oas-Gutai Platou, Carpathian mountain, 47000 ha

Status: 2 Natura 2000 sites, 7 small PAs

Problem: unregulated tourism and lack of funding for PAs management,

Solution: Conservation and Sustainable Development Fund (CSDF) allocating financial resources in equal proportion to nature conservation and to development needs associated with ecotourism. To restore the integrity of landscapes in pilot areas within the selected protected areas with the purpose to deliver the benefit represented by landscape beauty, a key ES for individuals (tourists), businesses (local guesthouses and tour-operators), and local communities.
Lessons learnt from developing pilot schemes

– Development of schemes requires constant communication
– It is necessary to invest time and money in data collection and analyses
– It is necessary to ensure multiple sources of income to guarantee the financial sustainability, especially of private PES
– Support by national institutions is highly necessary!
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WWF was founded in 1961

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WWF is in over 100 countries, on 5 continents

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