



Payment for Ecosystem Services in Upper Hrazdan Pilot River Basin of Armenia

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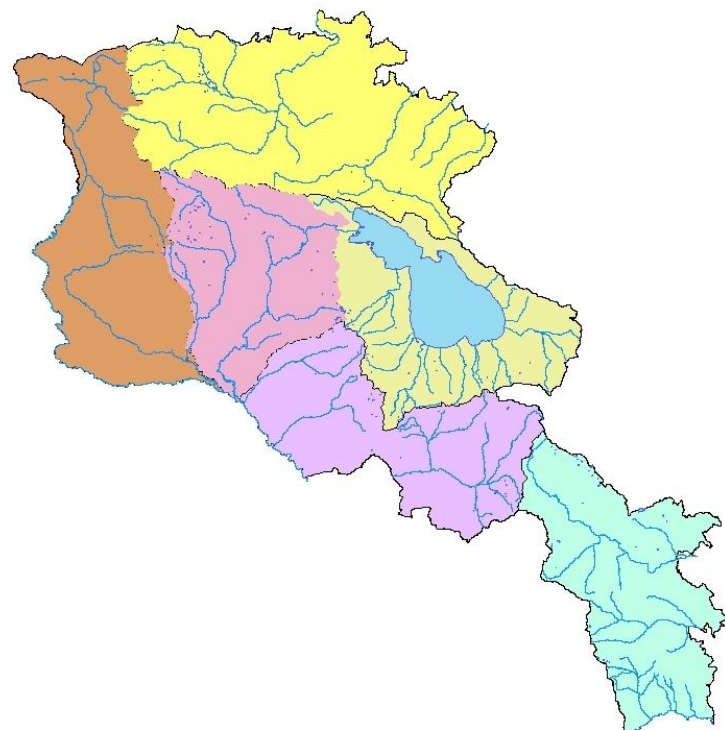
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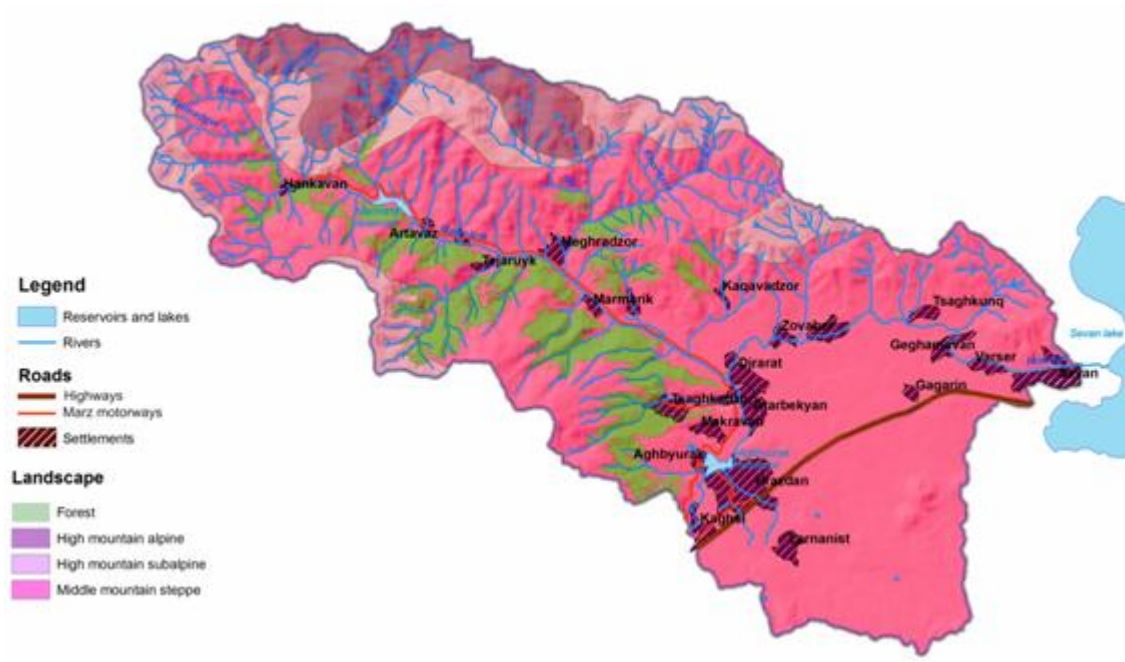
Selection of Pilot River Basin

- Area: 780 km²;
- Average altitude: 2170 m;
- Landscapes: steppes, forest, sub-alpine, alpine;
- Population: 102,000;
- Industry: mining, cement, thermal power station;
- Water uses: industrial, drinking, energy, irrigation, recreation;
- Inter-basin water transfer;
- Protected areas;
- Monitoring data;



Characterization of the Environment

- Climate
 - T - 5.5°C
 - P – 725 mm
- Landscapes,
 - Mountainous steppes: 67%,
 - Forest cover: 13%
- Economy
 - Large industries,
 - Livestock breeding & crop production agriculture
- Natural disasters
 - Mudflows, landslides



Characterization of the Environment

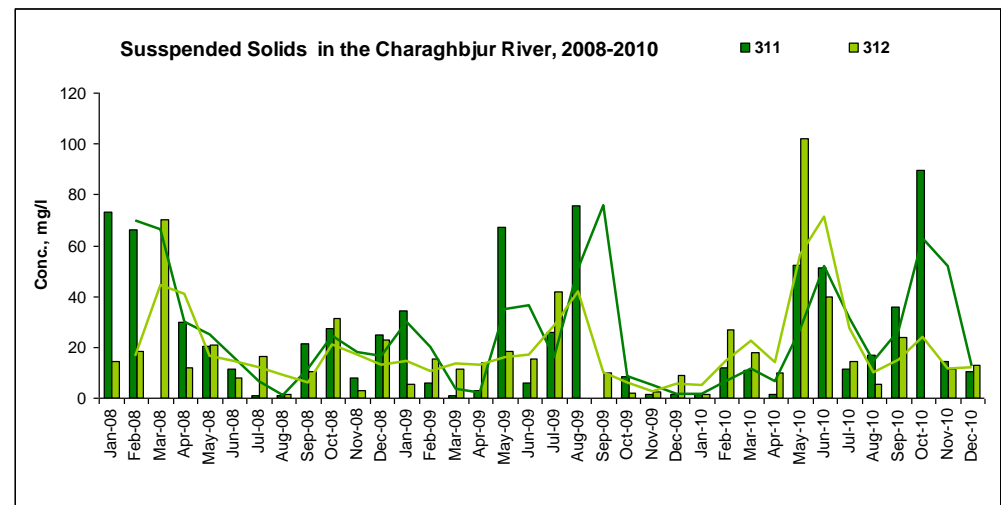
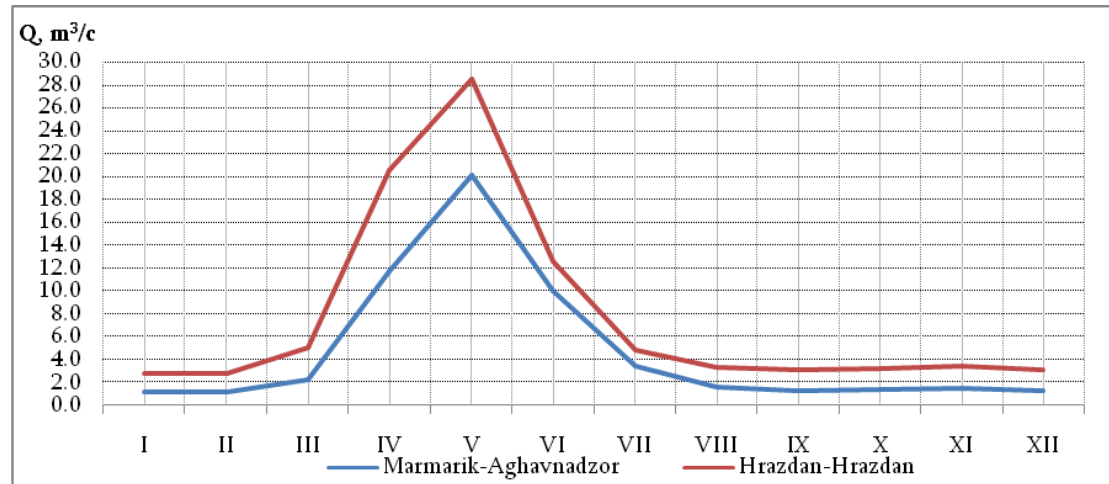
Hydrology

- Morphological characteristics of major rivers and tributaries,
- Flow regimes recorded in hydrological posts,

Reservoirs

Water quality

- Hrazdan, Marmarik and Tsaraghbyur Rivers - 1986-2010



Analysis of Use of Natural Resources

- Landscapes
 - degradation, energy crisis of 1990s
- Water supply and water use
 - deteriorated infrastructure, water loss, deficiencies in management
- Land resources
 - overgrazing



Diagnostic Analysis

- Problems identified
 - Water quality
 - Water quantity
 - Erosion
 - Deforestation
 - Land degradation

- Analysis of Legal Framework
 - Water Code
 - National Water Policy, National Water Programs
 - Other codes and laws (land, underground, forest, nature use)
 - Payment and rates of environmental fees and natural resources use fees

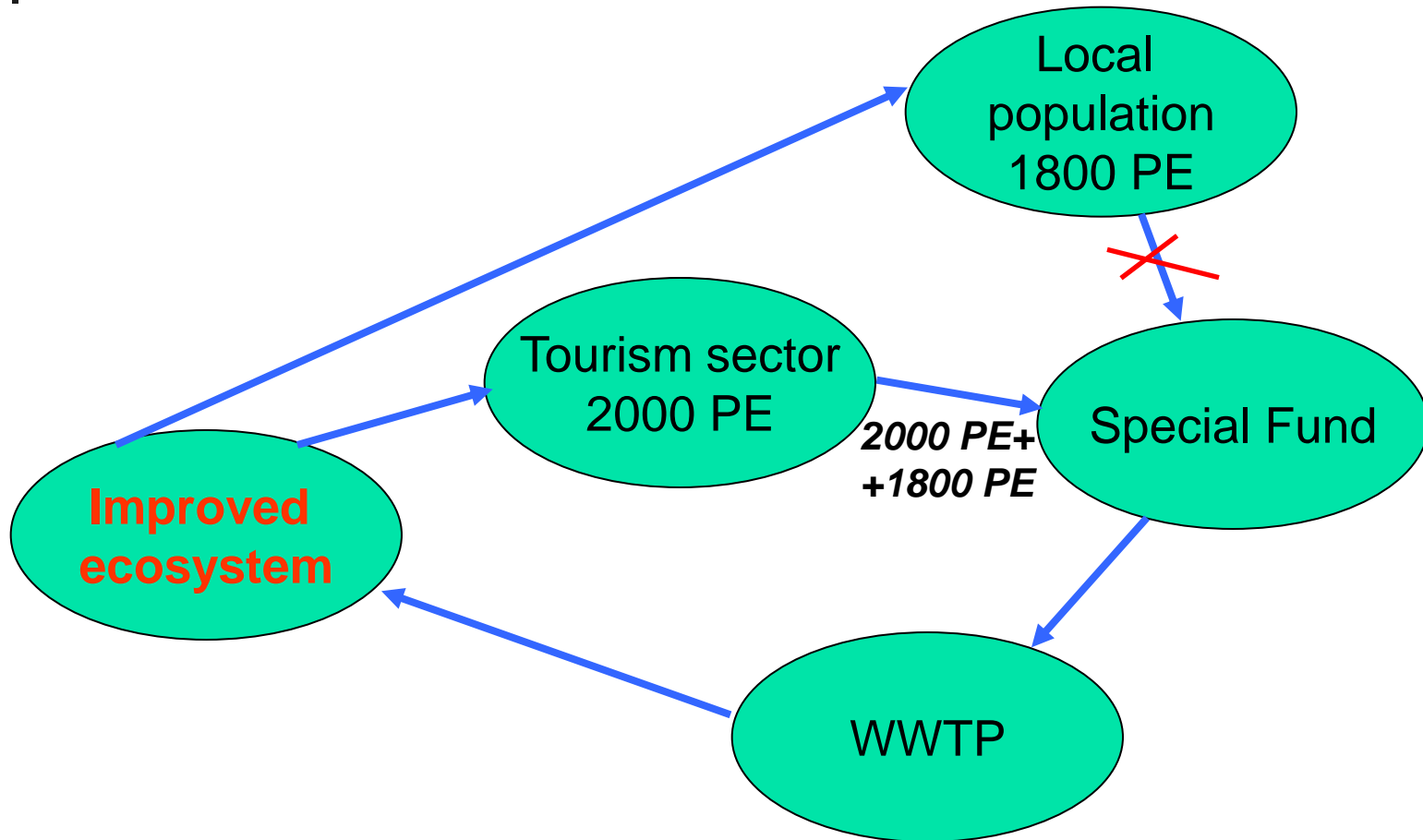




Proposed PES Scheme

Water-related ES	Description	Buyer	Seller
Improved water quality, and improved water habitat and fauna	Tourism accounting for some 2000 persons pays for the reconstruction of a wastewater treatment facility for 3800 persons (tourists and local population)	Tourism sector, represented by resort houses and hotels	Local community through giving the right of activities, which crease additional pressure on water quality

Proposed PES Scheme





Next Steps

- Proposed law “On Payment for Ecosystem Services”
 - Subject of regulation,
 - Main concepts,
 - Types of PES schemes,
 - Rates for PES,
 - Procedures for calculation of fees and making payments,
 - Rights and obligations,
 - Control over the process



Other Activities in Armenia

- OECD component of the UNPD in Armenia
 - Review if and how economic instruments are being used in the Debed river basin and in the water management plan
 - Explore ways to strengthen their use to manage the demand for water, promote low costs options, and raise additional revenues for water policies in the basin
- USAID Clean Water and Energy Program in Armenia (2011-2014)
- UNDP/GEF “Reducing Transboundary Degradation of the Kura-Aras River Basin” (2011-2014)
- ENPI East 2010 “Environmental Protection of International River Basins” (2012-2015)