



United Nations Economic Commission for Europe

Meeting of the Parties to the Convention on the Protection and Use of
Transboundary Watercourses and International Lakes

PILOT STUDY ON INTRODUCTION OF PES SCHEME IN THE UPPER HRAZDAN RIVER BASIN OF ARMENIA

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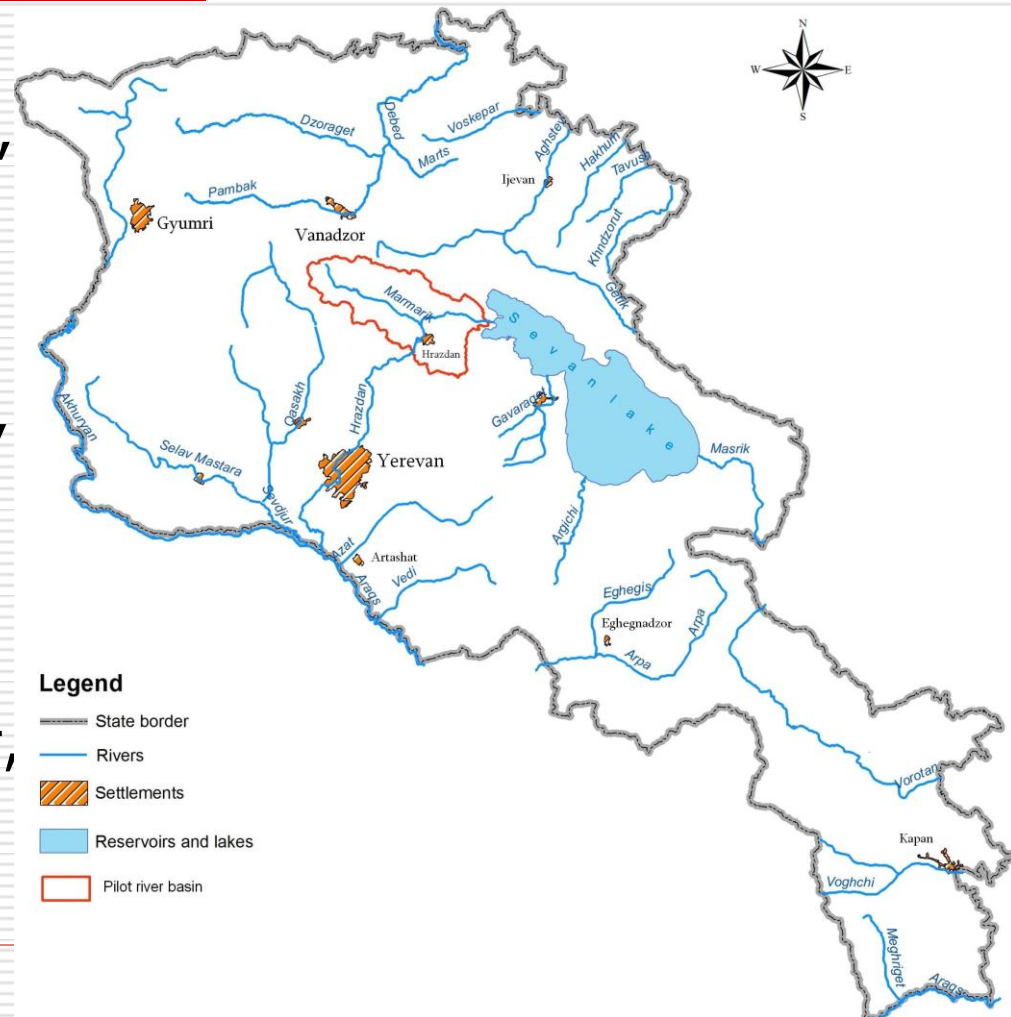
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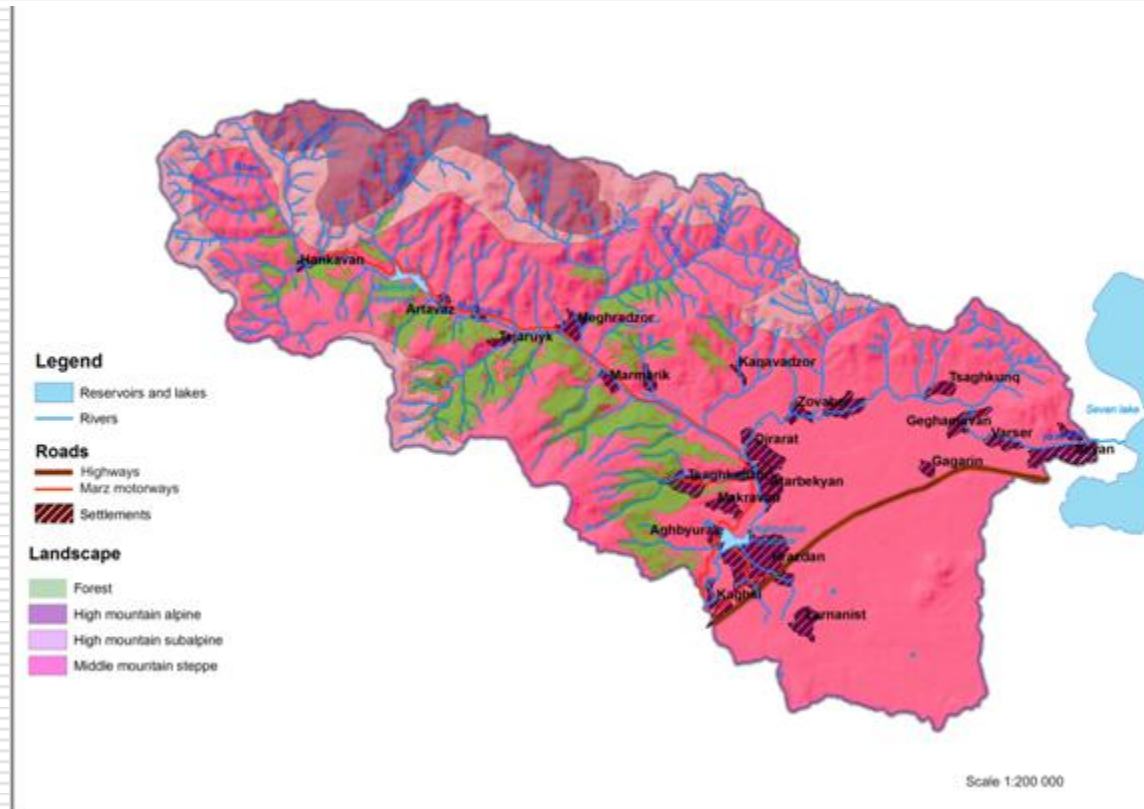
SELECTION OF PILOT RIVER BASIN

- ❑ 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



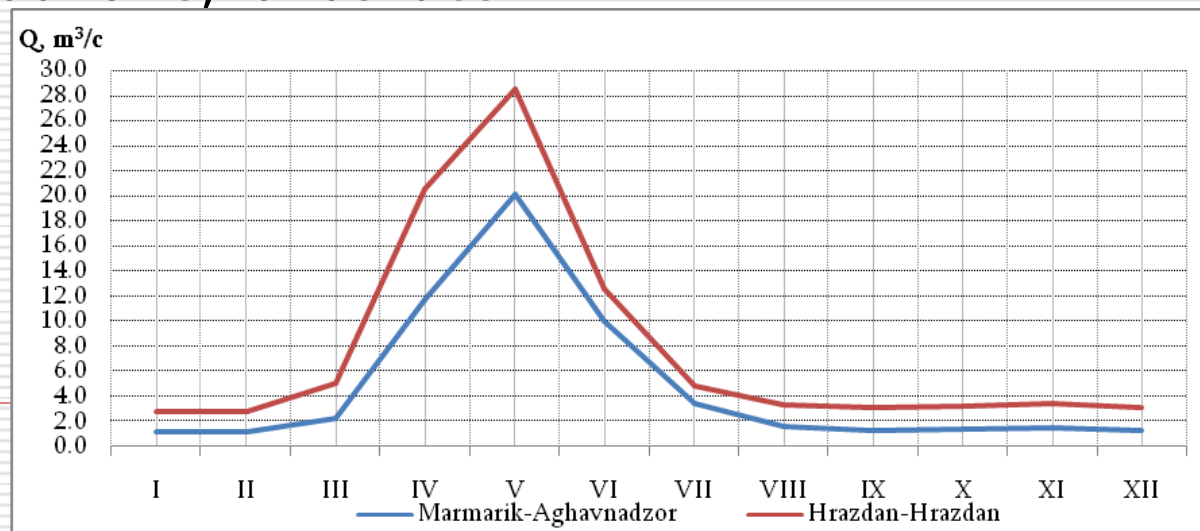
CHARACTERIZATION

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



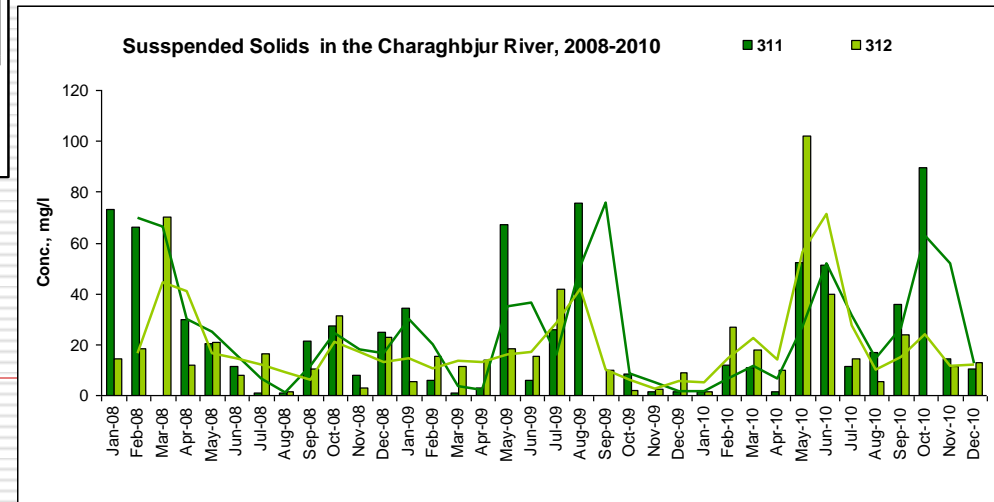
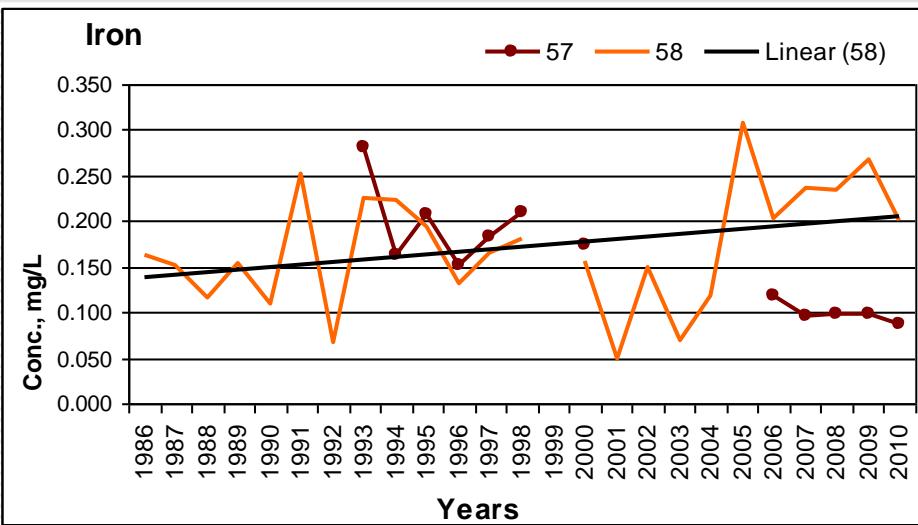
CHARACTERIZATION

- Hydrology
 - Morphological characteristics of major rivers and tributaries,
 - Flow regimes recorded in hydrological posts,
 - Reservoirs
- Natural disasters
 - Mudflows, landslides



CHARACTERIZATION

- 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



Next steps: Proposing public PES schemes
