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ECOLOGICAL FLOW METHODOLOGY IN ARMENIA: FROM WATER USE TO ECOSYSTEM PROTECTION



Water Management in EaP Countries: Recent Innovations

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OUTLINE

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RATIONALE

- Water Code of Armenia, EU WFD, Birds and Habitats Directive set binding objectives on protection and conservation of water-dependent ecosystems, which can be only reached if supporting flow regimes are guaranteed
- Different methodologies of ecological flows were applied in Armenia (**2003** Government Resolution No 592-N, **2011** Government Resolution No 927-N), but they all had significant drawbacks and shortcomings
 - “Sanitary flows” rather than “Ecological flows” and the focus was on water use;
 - “Fixed value” for the entire year without taking into consideration the seasonal dynamics of rivers;
 - Significant mistakes in calculations due to shortcomings in actual water abstraction data;
 - Feeding sources of rivers (e.g. groundwater feeding, snowmelt) were not taken into account



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KEY RESULTS

- With the support of USAID Clean Energy and Water Program a multi-disciplinary team was established to develop new methodology for ecological flows, which worked over the period of 2013-2016
- In 2018 new methodology was adopted by Government Resolution No 57-N
 - Monthly ecological flow values
 - Differentiation according to feeding source of rivers
 - Rivers with predominantly surface feeding
 - Rivers with predominantly groundwater feeding
 - Differentiation according to “gauged” and “ungauged” hydrological regions
 - Due to lack of **hydrobiological**, hydrogeological and hydrochemical monitoring data a “safety factor” of 33% is being added to the calculated flow to ensure hydromorphological, oxygen and thermal conditions in a river, thereby securing survival and reproduction of aquatic organisms



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SUCCESS FACTORS

- As part of the RBMPs ecological flows are calculated for all rivers in Armenia
- The decision-support system, developed with the assistance of USAID-funded projects, significantly helps in the process of calculation
- With introduction of online flow meters for all water abstraction points since 2024, the compliance with the ecological flow requirements has significantly improved
- On average 20-25% more water is left in rivers, compared to the previous methodology





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CHALLENGES

- While estimating the “natural flow” the methodology still uses “standard” flow return coefficients (20% for irrigation use, 80% for drinking water supply), but nothing is mentioned about the change in natural flow caused by overuse of groundwater (e.g. in Ararat valley);
- The “safety factor” of 33% is only a temporary solution, and should be better defined upon obtaining hydrobiological monitoring data;
- There are still certain difficulties for calculation of the ecological flow values in certain “ungauged” sub-basins



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LINKS FOR ADDITIONAL READING

- USAID Clean Energy and Water Program, “Development of Ecological Flow Assessment Methodology for the Armenian Rivers”, 2015 (English, 102 pages)
- USAID Clean Energy and Water Program, “Method for Calculation of Ecological Flow for the Armenian Rivers: Users Manual”, 2015 (English, 48 pages)
- Government of Armenia Resolution No 57-N of January 25, 2018 “On Approving the Methodology for Calculation of Ecological Flow” (unofficial English translation available)
https://www.e-gov.am/u_files/file/decrees/kar/2018/01/18_0057.pdf



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