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led by Hulla & Co. Human Dynamics KG

# **EXTENDED ECONOMIC AND INSTITUTIONAL ANALYSIS IN THE AKHURYAN RIVER BASIN DISTRICT OF ARMENIA**

## **Inception Report**



**Project title:** Environmental Protection of International River Basins Project  
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**Report title:** EXTENDED ECONOMIC AND INSTITUTIONAL ANALYSIS  
IN THE AKHURYAN RIVER BASIN DISTRICT OF ARMENIA –  
Inception Report

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This inception report has been prepared by “ALVAK” LLC as a deliverable of the “Extended economic and institutional analysis in the Akhuryan RBD of Armenia” implemented within the EU “Environmental Protection of International River Basins” (EPIRB) project.

It summarizes the initial steps undertaken for the implementation of the project, the main approach and methodology that will be used for the analysis.

Proper and adequate water basin management can have significant impact on the national and regional economic development, where different economic sectors are often competing for the good quality and sufficient quantity of water resources.

With increasing scarcity of both water resources and financial resources allocated to the water sector, economic analysis and expertise is important to support decision-making process and help to understand the economic issues and tradeoffs in river basin.

The draft Basin Management Plan for Akhuryan River Basin District has been developed by the EU EPIRB project according to approaches and methodologies of the EU Water Framework Directive (WFD) and national water legislation of Armenia. The WFD gives specific emphasis on economic instruments applied in water management, and has a specific article dealing with water pricing tariffs. It also refers to economic and fiscal instruments as possible supplementary measures to be considered in the PoM. Different key issues are reflected in EU WFD:

- It puts the emphasis on **water pricing**, with a specific Article of the WFD (Article 9) dedicated to this economic instrument;
- It approaches water pricing from different angles: a **cost-recovery** angle (*do the revenues collected from the instrument cover costs of services?*); and a **efficiency and effectiveness** angle (*does the instrument provide an incentive for more efficient water use that will contribute to the achievement of the environmental objectives of the WFD?*);
- It refers to a **wide range of costs** to be considered, i.e. the financial costs of water services that are traditionally computed as part of wastewater or drinking water projects, and the **environmental and resource costs** that account for the remaining degradation of the aquatic environment. The key question with these costs is whether they are internalized in one way or another in somebody’s decisions.

However, our review of the draft RBMP for Akhuryan RBD shows that limited attention is given to economic instruments in that report. Thus, we will collect additional data and information to strengthen the application of economic instruments for water management in the Akhuryan RBD.

The extended economic and institutional analysis for the proposed measures in Akhuryan RBD will be conducted in close cooperation and consultation with the Water Resource Management Agency (WRMA) of the Ministry of Nature Protection, its Akhuryan Basin Management Organization and the EPIRB project team. Monetary assessment will be conducted where possible, as well as the cost of not implementing the program of measures, from a point of view of affected ecosystems, impacted human health and lost economic revenues, as well as quantitative and qualitative assessment of benefits of implementing of program of measures.

Contingent upon data availability, the economic analysis will try to address the following items:

- ❖ priority of measures;

- ❖ which environmental impact occurs;
- ❖ what will be losses related to not implementation of measures;
- ❖ what it costs;
- ❖ who pays;
- ❖ ecosystem, public health and lost economic revenue calculations.

While calculating the value of water, contingent upon data availability, the following economic values will be explored:

- Direct uses made of it (e.g. abstraction for public supply, agriculture, etc.);
- Indirect uses made of it (e.g. ecological services provided by water such as provision of habitat for species, pollution abatement, and so on);
- Option value: Not associated with current use of water but the benefit of making use of water resources in the future.
- Non-use value is associated with benefits derived simply from the knowledge that the natural resources and aspects of the natural environment are maintained (i.e. it is not associated with any use of a resource). Non-use value can be attributed to three motivations:
- Altruistic value: Derived from knowing that contemporaries can enjoy the goods and services related to natural resources.
- Bequest value: Associated with the knowledge that natural resources will be passed on to future generations.
- Existence value: Derived simply from the satisfaction of knowing that a natural resource continues to exist, regardless of use made of it by oneself or others now or in the future.
- Preferences for ensuring future uses of water; and
- Reasons that are independent of use, including ensuring a sustainable water environment for others to use, for the future generations and for the sake of a sustainable environment.
- All these value components sum up to the 'Total Economic Value', which provides a comprehensive description of the sources of economic value for river basin management.

Our analysis should not focus solely on cost information of infrastructure. Measures such as wetland restoration, demand management measures, new pricing, voluntary agreements, should be included. A key first step will be to provide an initial specification of the sort of measures that might be included in RBMP for Akhuryan RBD:

1. A range of costs should be collated (minimum, average, maximum) as opposed to single average values. Key parameters influencing costs should be identified to facilitate extrapolation of figures to specific sites/conditions;
2. Costs to be collected should include all costs that are non-site-specific, e.g. limited to financial costs of the measures or specific environmental costs (e.g. air-related), and also indirect economic costs whenever considered relevant; and
3. Wider economic benefits that are non-site specific may also be added to the database whenever considered relevant. This information would facilitate follow-up disproportionate cost analysis and support to derogation.

The preliminary estimated cost of the program of measures proposed in the Akhuryan RBD plan is 60.7 million EUR. Specific measures are prioritized and presented in three priority classes.

Cost of the proposed program of measures has been included in the respective section of Akhuryan RBD plan. Preliminary costs for implementing the proposed basic and supplementary measures in Akhuryan RBD are estimated based on comparative analysis of costs for implementing similar measures as part of public expenditures or donor supported initiatives, localization of respective financial and cost estimates conducted by various institutions, as well as consultations and discussions conducted with respective authorities.

Economic analysis of the program of measures for the Akhuryan River Basin District will be based on the accepted methodology for “cost-benefit” analysis. The analysis, to the extent possible, will be conducted for each specific measure separately, considering their priority level.

An integrated approach will be applied in order to evaluate the strengths and weaknesses of available options and allow identifying those options that ensure the best approach. Comparative analysis will be conducted for overall expected benefits and costs attributed to each option. The following main approaches will be used for the assessment (where possible, in monetary expression) to allow for the most detailed comparative analysis:

- benefits expected in case of implementation of the measures proposed in the Akhuryan Basin Management Plan (including the secondary/indirect benefits)
- potential losses and external impacts due to non-implementation of the measures

In case the costs of implementing the program of measures exceed the calculated benefits, assessment of costs for alternative measures will be conducted.

In order to get a complete image it is planned to conduct analytical work for specific sectors such as:

- Agriculture,
- Fishery
- Hydropower production
- Water abstraction for domestic water supply and irrigation purposes
- Industry
- Other services
- Transport
- Future development of infrastructures

The above-mentioned analytical work will be based on the EU WFD and the information, data, definitions and materials provided in relevant official statistical publications and the draft Akhuryan RBD plan.

Practical application of economic valuation can be described as a three-stage process that requires information from a range of disciplines. For example, for an environmental good or service, information from environmental science disciplines (e.g. hydrology, ecology, etc.) is needed to define the good or service and the expected change in its provision resulting from some policy measure. Consequently undertaking each stage of the process is dependent on the requisite scientific and technical information being available. The three stages are:

- Qualitative assessment of the good or service.
- Quantitative assessment of the good or service.

- Monetary assessment of economic values: here economic valuation methods are used to estimate the monetary value of the change in the provision of the good or service.

The particular approach to economic valuation will depend on the type(s) of costs and benefits to be estimated, related context-specific details, and also data availability, particularly in terms of the quantitative assessment stage. The economic valuation evidence that is generated allows for a direct comparison of environmental costs and benefits to financial costs and benefits in policy-making. This is done most commonly via Impact Assessments and Cost-Benefit Analysis.

Overall, there are three main types of economic valuation methods.

1. Market prices:
2. Revealed preference methods:
3. Stated preference methods.

Where primary research using the above methods is not possible, ‘value transfer’ can be undertaken to use evidence from previous economic valuation studies.

Above-mentioned methods will provide input into the definition of the program of measures and help ranking possible measures based on cost- effectiveness criteria;

1. Estimate the costs of each measure;
2. Estimate the effectiveness (environmental impact) of each measure.
3. Assess and rank cost-effectiveness of measures;
4. Select the most cost-effective program of measures that can reach environmental objectives;
5. Calculate range for the total discounted costs of this program;
6. Undertake a sensitivity analysis to assess robustness of results.

Parallel to economic assessment, we will also conduct analysis of institutional and organization arrangements for implementation of RBMP. Such assessment is extremely important, given that implementation of RBMPs very often lags due to limited capacities of Basin Management Organizations (BMOs). Within the last decade several assessments were conducted on the capacities of BMOs in Armenia, and particularly Akhuryan BMO. Such comprehensive assessments were conducted by the USAID Program for Regulatory and Institutional Strengthening of Water Management in Armenia (2009) and the World Bank “Towards IWRM in Armenia” study (2015). Our work will built on those assessments, and then further focus on further assessment of capacities of the Akhuryan BMO, other basin organizations, as well as national level organizations.

The assignment will be completed within 3.5 months. The implementation timeline including the main milestones is presented below.

Item	June	July	Aug	Sep
Inception report				
Draft economic analysis report				
Analysis of institutional/organizational arrangements				
Final economic analysis report				