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**Environmental Protection of  
International River Basins Project**  
Contract No. 2011/279-666



A project implemented by a Consortium  
led by Hulla & Co. Human Dynamics KG

**Water resource use studies in selected transboundary tributaries (Zayamchay and Goshgarchay) in the pilot basin combining IWRM and WFD objectives through establishment of environmental flows and EQOs**

# **INCEPTION REPORT**

## **(Draft)**



**Prepared by PERIOD Consulting**

**Baku 2015**

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## **List of Acronyms and Abbreviations:**

1. CIS –Common Implementation Strategy
2. DRR – Disaster Risk Reduction
3. EC – European Commission
4. EPIRBP – Environmental Protection of International River Basins Project
5. EO-Environmental Objectives
6. EU – European Union
7. GIS – Geographic Information Systems
8. IRBMP- Integrated River Basin Management Plan
9. IWRM- Integrated Water Resources Management Plan
10. MENR- Ministry of Ecology and Natural Resources
11. O&M- Operational and maintenance
12. OSCE- Organization on Security and Cooperation in Europe
13. PoM – Programme of Measures
14. RBAR- River Basin Analyses Report
15. RBMP – River Basin Management Planning
16. ToR- Terms of Reference
17. WBs – Water Bodies
18. WBRs – Water Bodies at Risk
19. WFD – Water Framework Directive

## Introduction

This inception report has been prepared according to the contract made on August 28, 2015 between: Hulla & Co. Human Dynamics KG (“Client”) and PERIOD Consulting (“Contractor”), to develop draft “Water resource use studies in selected transboundary tributaries (Zayamchay and Goshgarchay) in the pilot basin combining IWRM and WFD objectives through establishment of environmental flows and EQOs” as defined by Contract for the needs of the EU project “Environmental Protection of the International River Basins”(SC № 2011/279-666, *Europe Aid/131360/C/SER/Multi*). The services shall be carried out starting from 01 September 2015. Duration of the assignment is 6 months.

According to contract objectives of PERIOD LLC is to produce the following reports and documents:

- Deliverable 1 - Inception report – due date 17 September 2015
- Deliverable 2 - Report on state of water resources of the river, water users, impacts on the surface and groundwater bodies relating to anthropogenic pressures (hydromorphological alterations, point/diffuse source pollution, from agriculture/irrigation, mining, industry, wastewater, energy generation, pollution by hazardous substance etc.) at the water body level, on results of assessment of water demand, water supply and ecological flow and on established environmental objectivities and economic analyses - 31 October 2015
- Deliverable 3 - Develop programmer of measures , including preparation of proposal on construction of water reservoir near river to regulate water resources -31 December 2015
- Deliverable 4 - Development of IWRMP for Zayamchay and Goshgarchay rivers and a Final report– 29 February 2016

This Inception Report serves a Delivery 1 report and is prepared within the inception phase to outline methodology and action plan to be used to implement the project. This phase is summarized in the report and lays a new basis for the implementation of the project, reflecting changes in circumstances and/or practical implementation issues.

The implementation strategy of the draft “Water resource use studies in selected transboundary tributaries (Zayamchay and Goshgarchay) pilot basin is directed on combining IWRM and WFD objectives through establishment of environmental flows and EQOs” and also ensuring that all relevant parties have the same baseline information, the same understanding and are committed to the implementation of the project.

## **1. Implementation Methodology**

Water Code of Azerbaijan Republic considers integrated ecosystem approach as part of water management policy of the Country and is planning to harmonise the national water legislation with the EU directives. As the specific objective of the EU “Environmental Protection of International River Basins” (EPIRB) project includes development of a RBMP for selected river basin according to the requirements of the EU WFD therefore we will take the EU WFD planning cycle as the basis for conducting of “Water resource use studies in selected transboundary tributaries (Zayamchay and Goshgarchay) in the pilot basin combining IWRM and WFD objectives through establishment of environmental flows and EQOs” keeping in mind that the water legislation of Azerbaijan does not contradict to the logics of the EU WFD planning cycle.

In response to increasing water demands, water scarcity and reduction of water resources by impact of climate changes and other challenges, the water allocation planning will focus more on optimizing the use of existing supplies through significant economic, social and environmental analyses and the assessment of tradeoffs between competing users. This is coupled with a shift away from the traditional emphasis on the construction of new infrastructure to meet rising demand if it isn't economically feasible and has negative environmental impacts, and main focus will be the adoption of demand management measures to deal with variability, and for balancing the environmental, social, political and economic implications of different water allocation scenarios.

Allocation plan will be based on scenarios projecting how water use may respond to climate change, shifting economies, water pricing incentives, and options to share the benefits of water use rather than on sharing the water itself.

## **2. Reporting**

Deliverable 2 - Report on state of water resources of the river, water users, impacts on the surface and groundwater bodies relating to anthropogenic pressures (hydromorphological alterations, point/diffuse source pollution, from agriculture/irrigation, mining, industry, wastewater, energy generation, pollution by hazardous substance etc.) at the water body level, on results of assessment of water demand, water supply and ecological flow and on established environmental objectives and economic analyses .

As identified in the ToR for “Water resource use studies in selected transboundary tributaries (Zayamchay and Goshgarchay) in the pilot basin combining IWRM and WFD objectives through establishment of environmental flows and EQOs” the below tasks will be implemented in more details:

1. Collection and collation of information and data on state of water resources of the river, water users, impacts on the surface and groundwater bodies relating to anthropogenic pressures (hydromorphological alterations, point/diffuse source pollution, from agriculture/irrigation, mining, industry, wastewater, energy generation, pollution by hazardous substance etc.) at the water body level.
2. Assessment of water demand and supply
3. Assessment of ecological flow and establishment of environmental objectives
4. Economic analyses

By use of available monitoring data on flow regime we will apply different models to identify antropogenic changes of the flow. We will compare flow information with water abstraction data from Amelioration JSC and also other economic activity data in the basin (agriculture/irrigation, mining, industry, energy generation, hydromorphological alterations etc.) to assess flow regime changes by human impact.

We will conduct water economy balances for each of rivers. The water balance equations will compose such components as surface water flow ground water inflow , water use data and etc. We will also include here ecological flow amounts for each of rivers for different locations.

Water is mainly abstracted from river during the vegetation period which starts in spring and last till autumn. Water abstraction often leads to drying of river. Therefore there is need to assess and apply ecological flow requirement for each of rivers and their tributaries. Currently used ecological flow assessment is old approach and we will update them with new methods used worldwide. We will give review of different environmental flow calculation methods and choose the proper one for Zayamchay and Goshgarchay rivers.

For assessed environmental flow values will be established environmental flow objective which will then be incorporated into water allocation plan for compliance .

Deliverable 3 - Develop programme of measures , including preparation of proposal on construction of water reservoir near river to regulate water resources -31 December 2015

Program of measures will consider possibility of development of measures directed on demand management and where possible to avoid development of infrastructure which isn't feasible.

Program of measures will cover measures on provision of environmental flow, adaptation to climate changes, improvement of water licensing and permit systems, basin trade offs and etc.

Cost and benefit analysis for developed PoM is important stage of water allocation planning and helps much to decide on feasibility of developed water allocation scenarios from technical and economical point of view. Cost benefit analysis will allow to prioritize scenarios.

Principle of cost recovery of water services, including environmental and resource costs, and in accordance in particular with the polluter pays principle this work will include in the allocation Plan the analysis of recovery of the cost of:

- Services for collecting and transport of surface waters for towns supply (upstream infrastructure)
- Services of groundwater abstraction
- Services of water distribution, and collection and treatment of wastewater
- Distribution services of water for irrigation
- Drilling cost of water supply wells
- Benefits from measures directed at conservation of environment
- Others

To carry out this task we will try to collect and analyse information about cost of :

- Dams (for water storage)
- Water collection systems
- Water transport networks (supply to towns – main pipes from collection point till town reservoir)
- Water transport networks (channels and main pipes for irrigation)
- Waste water and water treatment systems
- Other costs that shall be taking into account are those related to operational expenses (personnel, service management, etc.) of the different agents who provide water services.

Deliverable 4 - Development of IWRMP for Zayamchay and Goshgarchay rivers and a Final report

In this section we will develop Water allocation plans which will include Surface Waters(SW) and Ground Waters(GW) yield assessments based on environmental flow limits and GW recharge values, sectoral demand and supply (existing and forecast (25 years) figures) based on measured abstractions (figures will come from the license details and the cadastre). There will be developed large scale map showing where are the physical abstractions located in the basin. The yield surpluses and demand deficits forecast for 25 years will be mapped out. Options for meeting the deficits. Medium and short term plan which then feeds into the WFD RBMP.

### **3. Inputs and outputs**

Consultant carefully reviewed all 4 reports provided by EPIRB project (River Basin Analysis, The typology, and water body delineation in the pilot basin reports and Identification, characterization and delineation of groundwater bodies in the Caucasus countries report).

In addition as a basis will be used materials prepared by EU Kura TACIS project (Ganjachay RBMP) and OSCE supported project (implemented by IHPA NGO ) guidelines on public participation in water management in Ganjachay river basin.

Drafting, reporting and implementation of above deliverables will be coordinated, advised and monitored by the project team, consisting of the Deputy Team Leader, respective CWM Expert and the project Key and Non-key experts.

### **4. Management arrangements and staff**

Implementation of the above deliverables will be completed by RBMP Development Team established by Contractor.

We have below key experts to do the work:

- Amin Mammadov. IWRM expert
- Farda Imanov, Hydrology and Water resources expert
- Aynur Osmanova, Environmental flow expert

- Teymur Osmanov, Specialist on Amelioration
- Arzuman Bayramov, Specialist on water supply and sanitation
- Gulnar Aliyeva, Public awareness specialist
- Vafadar Ismayilov, GIS Specialist

We have GIS technologies and data-base oriented to development of RBMP and gained long year experience during the work carried in cooperation with previous donor supported projects in Azerbaijan .

## 5. Timetable of activities

Duration of the assignment is 6months. The expected commencement date for implementation of the assignment is 1 September , 2015, and the completion date –February 29, 2016. The assignment is divided into four phases with the following general schedule:

Table. 1: Project development phases and schedule

<b>Drafting Phases</b>	<b>2015</b>				<b>2016</b>	
	Sep	Oct	Nov	Dec	Jan	Feb
<b><u>Inception Phase</u></b>						
<b><u>Phase-1:</u></b> Assessment state of water resources of the river, water users, impacts on the surface and groundwater bodies relating to anthropogenic pressures						
<b><u>Phase-2:</u></b> Develop programme of measures , including preparation of proposal on construction of water reservoir near river to regulate water resources						
<b><u>Phase-3:</u></b> Development of IWRMP for Zayamchay and Goshgarchay rivers						



The approximate schedule and description of the deliverables for each Phase is given in the table below:

**Table 2:** Summary of the work schedule and deliverables for the “Water resource use studies in selected transboundary tributaries (Zayamchay and Goshgarchay) in the pilot basin combining IWRM and WFD objectives through establishment of environmental flows and EQOs”

<b>Deliverable</b>	<b>Max. No. of pages excl. Appendices</b>	<b>Language of deliverable</b>	<b>Start date</b>	<b>Due date for draft report</b>	<b>Finalization</b>
Deliverable- 1: Inception report	15	English	<u>1.09.2015</u>	17.09.2015	30.09.2015
Deliverable 2 - Report on state of water resources of the river, water users, impacts on the surface and groundwater bodies relating to anthropogenic pressures (hydromorphological alterations, point/diffuse source pollution, from agriculture/irrigation, mining, industry, wastewater, energy generation, pollution by hazardous substance etc.) at the water body level, on results of assessment of water demand, water supply and ecological flow and on established environmental objectivities and economic analyses	25	Azeri/ English	01.10.2015	31.10.2015	15.11.2015
Deliverable 3 - Develop programmer of measures , including preparation of proposal on construction of water reservoir near river to regulate water resources -31 December 2015	10	Azeri/ English	16.11.2015	31.12.2015	14.01.2016
Deliverable 4 - Development of IWRMP for Zayamchay and Goshgarchay rivers and a Final report– 29 February 2016	15	Azeri/ English	15.01.2016	29.02.2016	15.10.2015