EUWI Eastern Europe, Caucasus and Central Asia Working Group 18th Meeting

Joint Water Quality Monitoring and Assessment by EPIRB Project

Zurab Jincharadze, Deputy Team Leader
Environmental Protection of International River Basins

24 June 2014
Geneva, Switzerland
Project Location and Partners

Armenia
- Water Resources Management Agency, MNP

Azerbaijan
- Ministry of Ecology and Natural Resources
- State Agency of Water Resources, MES

Belarus
- Ministry of Natural Resources and Environmental Protection

Georgia
- Ministry of Environment and Natural Resources Protection

Moldova
- Ministry of Environment

Ukraine
- Ministry of Ecology and Natural Resources
- State Agency of Water Resources

Start Date: 30 Jan 2012
End Date: 29 Jan 2016
Duration: 48 months
Budget: € 7.5 million
Overall Project Objective

To improve water quality in the transboundary river basins of the wider Black Sea region and Belarus
Specific Project Objectives

- To improve availability and quality of data on the ecological, chemical, and hydro-morphological status of trans-boundary river basins including groundwater
- To develop River Basin Management Plans for selected river basins / sub-river basins according to the requirements of the WFD
Results to be Achieved

1. Increased capacities of the respective national authorities for hydro-biological, chemical, and hydro-morphological monitoring of water quality including groundwater; quality assurance procedures in key laboratories in place

2. Increased technical capacities by means of development and implementation of River Basin Management Plans for selected rivers.
EPIRB Pilot Basins
Implementation Phase: Activity-1

- Activity 1.3: Development of WFD-compliant monitoring programs including hydro-biological and hydro-morphological elements and groundwater

  ✓ The training programs and sampling manuals were prepared and presented for *ground*- and *surface water* monitoring programmes that will be customised for each sub-region of the project. Preparation of these training programs contributed to the implementation of Activity 2.4 - Joint Field Surveys in each pilot basin;

  ✓ The training program and survey manuals for monitoring of surface waters is designed in three parts and includes *(i)* hydrobiological, *(ii)* hydromorphological and *(iii)* physico-chemical surveys. Besides specific sampling methodologies the document contains overall Joint Field Surveys objectives, indicators, sampling locations, timelines, institutional arrangement, etc.
Implementation Phase: Activity-1

- **Activity 1.3:** Development of WFD-compliant monitoring programs including hydro-biological and hydro-morphological elements and groundwater
  - Regional workshop held in **November 2013** in Chisinau to discuss WFD compliant monitoring programmes for pilot river basins (Ecological, Chemical and GW). Detail of biological and ecological status classification systems presented
  - Revised training programme developed and agreed, with more emphasis on Hydromorphological training. The training programme will be rolled out between **June 2014** and **May 2015**.
  - Draft proposals for GW monitoring systems developed in all pilot basins
  - Workshop on SW and GW monitoring programme design held in Batumi **16th/17th June 2014**
Implementation Phase: Activity-1

- **Activity 1.4:** Assist in the development of WFD-compliant tools for assessing data obtained from monitoring activities (ecological, chemical, hydro-morphological classifications)

  - Work has begun using JFS data (from the previous year survey) and data from the Kura III surveys on the construction of an ecological status five level classification system using the USEPA Rapid Biological Assessment system.

  - Contract let for the development of GIS database for storage and reporting of WFD monitoring data based on the Danube GIS format and layers.
Implementation Phase: Activity-2

- **Activity 2.4: Joint field surveys to cover the gaps - GWBs (SC in April 2013; EE in May-July 2013)**

- The purpose of the GW Joint Field Survey in each basin was: **a) to fill the data gaps** and **b) to train local experts** to perform WFD compliant groundwater monitoring using modern equipment;

- The groundwater JFS included surveying, monitoring, sampling, equipment programming and calibration exercises;

- Collection of samples, preservation and transportation techniques were used to demonstrate QA/QC requirements and application of new field equipment;

- Three groundwater experts from each project country have been trained; about 20 groundwater samples have been collected in each pilot basin for analyses of main cations and anions and trace elements; In AM, MD and BY organochloric compounds (TCE and PCE) were additionally analysed;

- The second round of GW JFS were conducted in Belarus and Armenia in May/June 2014, the remainder in autumn 2014
Implementation Phase: Activity-2

- **Activity 2.4: Joint field surveys to cover the gaps - SWBs**
  (SC in June 2013; EE in July-August 2013)

  - The purpose of the Joint Field Surveys in each basin was three-fold: a) to fill the data gaps and b) to train local experts to perform WFD compliant monitoring and C) to support the development of the ecological status classification system
  - The following ‘selected’ elements of the EU/WFD compliant monitoring were observed specifically for identifying ecological status in the pilot basins:
    i. Hydro-biological quality elements: *macro-invertebrates (zoo benthos)*;
    ii. Hydro-morphological quality elements: *water flows, physical characteristics - channel characteristics, river bank and floodplain characteristics*;
    iii. Physical-chemical quality elements: *general water quality parameters and specific relevant pollutants - heavy metals*

  - The second round of SW EPIRB JFS has been designed and will be conducted in **July and September 2014**
Implementation Phase: Activity-2

- **Act 2.4: Joint field surveys to cover the gaps: Kura JFS**
  - Four rounds of the Kura Joint Field Survey monitoring missions were conducted in the Khrami-Debed and the Alazani-Ganikh transboundary basins of Georgia-Armenia and Georgia-Azerbaijan (May, August, November 2013; May 2014);
  - Hydro-biology and chemical monitoring experts from the Pollution Monitoring Department and hydrologist from the Hydrometeorology Department of NEA were participated in the JFS;
  - Physical-chemical and hydro-biological samples were taken from 16 sampling sites in each country; hydro-morphological assessments is also conducted to identify potentially „high“ (reference points) and „good“ ecological status points in the basins;
  - 2nd assessment report on the results and findings of the Kura JFS is drafted based on results of year one JFS; The final assessment report will be submitted after fourth round of the Kura JFS in Oct-Nov 2014
This project is funded by the European Union.

This project is implemented by a Consortium led by Hulla and Co. Human Dynamics KG.

1. Ayrichay Bashdashagil
2. Ayrichay Mouth
3. Kishchay Damarchig
4. Gurmukchay Ilisu
5. Talachay upstream
6. Talachay downstream
7. Balakanchay upstream
8. Ayrichay below reservoir
9. Alazan when enters to Azeri territory
10. Alazan before it enter Mingechevir reservoir
11. Alazan before confluence with Ayrichay river
12. Alazani Shakhriani
13. Batsara Duiisi
14. Alazan Omalo
15. Alazan Kabal
Implementation Phase: Activity-2

- **Activity 2.3: Analysis of baseline situation**
  - Task 2.3.1: Preliminary classification of water bodies based on available data
    - Preliminary classification of the identified surface WBs has been done and is described in the ‘Delineation’ reports. As the data on chemical and hydro-biological monitoring in the pilot basins is scarce (particularly in the Caucasus countries), preliminary classification of water bodies was based on the experts’ opinion and historic data;
    - Those segments that did not qualify for achieving “good” status and were lacking data for deeper hydrological and socioeconomic analysis, were temporarily categorised as Water Body “at risk” (WBR). This category is an additional criterion, thus delineation of water bodies “at risk“ are only result of a preliminary assessments and should be verified;
    - Groundwater classification was based on the analysis of available data for wells and boreholes and also information on the anthropogenic influences. Groundwater status included both quantitative and qualitative components.
JFS-I Results: Chrorokhi-Adjaristskali Basin (GE)
JFS-I Results: Chrorokhi-Adjaristskali Basin (GE)
Draft Classification system – macroinvertebrates (river WB types)

- 5 indicator groups (A, B, C, D, E, F) sensitive – tolerant taxa
- 5 abundance groups (approx. 1 sq. m sampling area): Few (1-5), Present (6-20), Common (21-50), Plentiful (51-100), Dominant (100+)

**CAUCASIAN RIVER TYPES**

<table>
<thead>
<tr>
<th>EQR</th>
<th>Rapid Biological Assessment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.85 ÷ 1.0</td>
<td>85 ÷ 100</td>
</tr>
<tr>
<td>0.70 ÷ 0.80</td>
<td>70 ÷ 80</td>
</tr>
<tr>
<td>0.50 ÷ 0.65</td>
<td>50 ÷ 65</td>
</tr>
<tr>
<td>0.30 ÷ 0.45</td>
<td>30 ÷ 45</td>
</tr>
<tr>
<td>0.00 ÷ 0.25</td>
<td>0 ÷ 25</td>
</tr>
</tbody>
</table>

**PRUT RIVER TYPES**

<table>
<thead>
<tr>
<th>EQR</th>
<th>БИ</th>
</tr>
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<tbody>
<tr>
<td>0.80 ÷ 1.0</td>
<td>80 ÷ 100</td>
</tr>
<tr>
<td>0.60 ÷ 0.75</td>
<td>60 ÷ 75</td>
</tr>
<tr>
<td>0.40 ÷ 0.55</td>
<td>40 ÷ 55</td>
</tr>
<tr>
<td>0.25 ÷ 0.35</td>
<td>25 ÷ 35</td>
</tr>
<tr>
<td>0.00 ÷ 0.20</td>
<td>0 ÷ 20</td>
</tr>
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</table>

**UPPER DNIERER RIVER TYPES**

<table>
<thead>
<tr>
<th>EQR</th>
<th>БИ</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.80 ÷ 1.0</td>
<td>80 ÷ 100</td>
</tr>
<tr>
<td>0.60 ÷ 0.75</td>
<td>60 ÷ 75</td>
</tr>
<tr>
<td>0.45 ÷ 0.55</td>
<td>45 ÷ 55</td>
</tr>
<tr>
<td>0.25 ÷ 0.40</td>
<td>25 ÷ 40</td>
</tr>
<tr>
<td>0.00 ÷ 0.20</td>
<td>0 ÷ 20</td>
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</tbody>
</table>

Draft Classification system – macroinvertebrates

<table>
<thead>
<tr>
<th>No</th>
<th>RETI</th>
<th>Ecological Status (only for Caucasus region and Upper Prut RB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00 ÷ 0.80</td>
<td>High (Reference conditions)</td>
</tr>
<tr>
<td>2</td>
<td>0.79 ÷ 0.51</td>
<td>Good</td>
</tr>
<tr>
<td>3</td>
<td>0.50 ÷ 0.35</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>0.34 ÷ 0.25</td>
<td>Poor</td>
</tr>
<tr>
<td>5</td>
<td>&lt; 0.25</td>
<td>Bad</td>
</tr>
</tbody>
</table>

Total taxa number (family & genus level of identification)

<table>
<thead>
<tr>
<th>Ecological Status</th>
<th>River basins / Total taxa number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prut river sub-basin (UA, MD), Akhurian and Metsamor river sub-basin (AM), right tributaries of the Central Kura (AZ)</td>
</tr>
<tr>
<td>High</td>
<td>16+</td>
</tr>
<tr>
<td>Good</td>
<td>11 - 15</td>
</tr>
<tr>
<td>Moderate</td>
<td>6 - 10</td>
</tr>
<tr>
<td>Poor</td>
<td>2 - 5</td>
</tr>
<tr>
<td>Bad</td>
<td>0 - 1</td>
</tr>
</tbody>
</table>

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Proposed Sampling Locations for JFS-II: Georgia
Proposed Sampling Locations for JFS-II: Azerbaijan
Proposed Sampling Locations for JFS-II: Armenia
Proposed Sampling Locations for JFS-II: Upper Dnieper, Belarus
Proposed Sampling Locations for JFS-II: Upper Dnieper, Ukraine
Proposed Sampling Locations for JFS-II: Prut, Ukraine
Proposed Sampling Locations for JFS-II: Moldova
Home

Welcome to the ENPI–EPIRB project Home-page

The ENPI–EPIRB started in January 2012 and is scheduled to run for two years.
The project targets the improvement of water quality in the trans-boundary river basins of the wider Black Sea region and Belarus. It is going to support the move towards modern management tools of achievement of desired water quality status by building capacities and learning–by–doing, by means of development and implementation of River Basin Management Plans for selected pilot river basins.

About the Project  Helpdesk  News
This project is funded by the European Union. The project is implemented by a Consortium led by Hulla and Co. Human Dynamics KG.

Thanks for your attention!