Chorokhi-Adjaristskali River Basin

KEY WATER ISSUES
The Environmental Protection of International River Basins (EPIRB) project aims to improve the quality of water in transboundary river basins in the wider Black Sea region and Belarus, including Georgia. One of the specific objectives is to improve technical capacities by developing river basin management plans (RBMPs) in selected pilot river basins, according to the requirements of the EU Water Framework Directive (WFD). One of the selected pilot basins is the Chorokhi-Adjaristskali basin, located in the Adjara Autonomous Republic and covering a significant part of its territory.
The Water Framework Directive and river basin management plans

One of the requirements of the WFD is the achievement and preservation of good water status by managing waters in natural units — that is, in river basins.

River basin planning follows a structured approach: finding out facts, deciding on necessary actions, making a management plan, and putting the plan into practice. An important first step is to identify significant water management issues so that appropriate solutions and measures can be developed.

The impacts of human activities

Human activities can lead to serious problems in terms of both water quality and quantity. The most common water-related problems are pollution and the effects of physical modifications to rivers and lakes.

Water pollution can arise from two types of sources: point sources, such as discharges from industrial facilities and wastewater treatment plants; and diffuse sources, such as land-use activities, including agriculture.

Hydromorphological alterations include the physical modification of waterways, such as engineered modifications to the natural structure or flow of rivers in order to make particular use of them. Such modifications might include land drainage, the construction of flood defences, or the damming of rivers to provide storage for power generation.

Another potential problem is excessive water abstraction, which can reduce river flow and even cause rivers and lakes to dry up.

Good water status

is achieved when pollution is controlled and there is sufficient flow for ecosystems to function and survive.

A river basin

is the land that water flows across or under on its way to a river. The basin sends all the water that falls within it to a central river or estuary.
CHOROKHI-ADJARISTSKALI RIVER BASIN – Profile

TOTAL AREA
2,478.84 km²

LOCATION
South-western Georgia on the Black Sea coast

CHARACTERISTICS
Two national parks and several reserves; diverse flora and fauna, including rare varieties of relict and endemic species.

WATER USE
Water is currently used in the pilot basin mainly by the hydropower sector, followed by the drinking water supply, fisheries and industrial sectors.

DID YOU KNOW?
The 2013 inventory recorded six families and 16 species of fish, two of which are endemic to the Black Sea basin and two endemic to the Caucasus. Three species are included in the Georgian Red List of Endangered Species, while six are included in the Red List of the International Union for Conservation of Nature (IUCN).
Chorokhi-Adjaristskali River basin – Water challenges

POLLUTION FROM POINT SOURCES – UNTREATED WASTEWATER

What’s causing the problem?
Untreated or inadequately treated wastewater is discharged from sewerage systems in small towns in the Adjaristskali basin and from industrial facilities in the Bartskana and Chorokhi basins. Untreated wastewater from industrial facilities poses a threat to water quality. In the pilot basin, the processing industry and food, beverage and tobacco production make up the largest share of total industrial output, followed by the processing and production of non-metallic mineral products. One of the largest industrial facilities is Batumi oil terminal, which operates 185 tanks.

How does it affect water status?
Discharges of untreated wastewater increase the content of phosphorus, nitrogen and organic compounds in the water body. This increase in nutrients leads to the explosive growth of algae and plants, changing the composition and condition of fresh water in a process known as eutrophication. Oxygen is used up as the dead algae decompose, reducing the amount of dissolved oxygen in the water and altering the survival, reproductive and competitive capacities of water organisms.
POLLUTION FROM AGRICULTURAL ACTIVITIES

What’s causing the problem?
In the agricultural sector, between 2008 and 2012 the average annual input of fertilisers was approximately 3,800 tonnes. Data on the use of pesticides are not available for the last five to six years, although the area treated annually with pesticides comprises on average 1,302 hectares of permanent croplands, or 20 percent of the total permanent area of croplands.

How does it affect water status?
Chemicals such as nitrogen and phosphorus that are used during agricultural activities are washed into streams and rivers, resulting in an increase in nutrients. This causes algae to grow faster than ecosystems can handle and affects water quality and biological oxygen demand.

POLLUTION FROM SOLID WASTE DISPOSAL

What’s causing the problem?
In Adjara, an average of 0.7 kg of waste is generated daily per capita. The main components of waste are food products (63 percent), textiles (11 percent), paper (8 percent) and polyethylene (7 percent). One of the main operational landfills is in Batumi. It covers an area of 19 hectares and is located on the right bank of the Chorokhi River.

How does it affect water status?
Leachate and run-off from landfills leads to higher concentrations of heavy metals and persistent organic pollutants (PoPs).
HYDROMORPHOLOGICAL ALTERATIONS AND WATER ABSTRACTION

What’s causing the problem?
Adjara has enormous but untapped hydropower potential. The most powerful rivers are the Chorokhi, Adjaristskali, Chirukhistskali and Kintrishi. All the hydropower potential in Adjara is currently used by one medium-capacity and four small hydropower plants.

In 2013, out of the total amount of water abstracted, more than 90 percent was used by hydropower plants. A three-step hydropower cascade is currently being constructed on the Adjaristskali River, and another is under development on the final 21 km section of the Chorokhi River. There are numerous construction companies in the basin that extract sand and gravel from the bed and banks of the Adjaristskali River.

How does it affect water status?
Water abstraction by centralised water supply systems and hydropower plants causes reductions in water flow, alterations in sediment flow and reduced river dilution capacity. Engineering infrastructure, such as dams and reservoirs, disrupts aquatic ecosystems, river flow and the migration of aquatic organisms.

The extraction of sand and gravel involves the mechanical removal of materials from the riverbed, which directly affects channel geometry and riverbed level. This results in modifications in aquatic ecosystems and changes in the composition and amount of aquatic biota.

Hydromorphology combines study of the hydrological regime and of morphological conditions. It deals with the quantity and dynamics of water flow, as well as the shape and boundaries of a particular water body.
The European Union is made up of 28 Member States who have decided to gradually link together their know-how, resources and destinies. Together, during a period of enlargement of 50 years, they have built a zone of stability, democracy and sustainable development whilst maintaining cultural diversity, tolerance and individual freedoms. The European Union is committed to sharing its achievements and its values with countries and peoples beyond its borders.

Legal notice: This publication has been produced with the assistance of the European Union. The views expressed in this publication are the sole responsibility of the Human Dynamics Consortium implementing the project and can in no way be taken to reflect the views of the European Union.

© 2015 – Regional Environmental Center for Central and Eastern Europe