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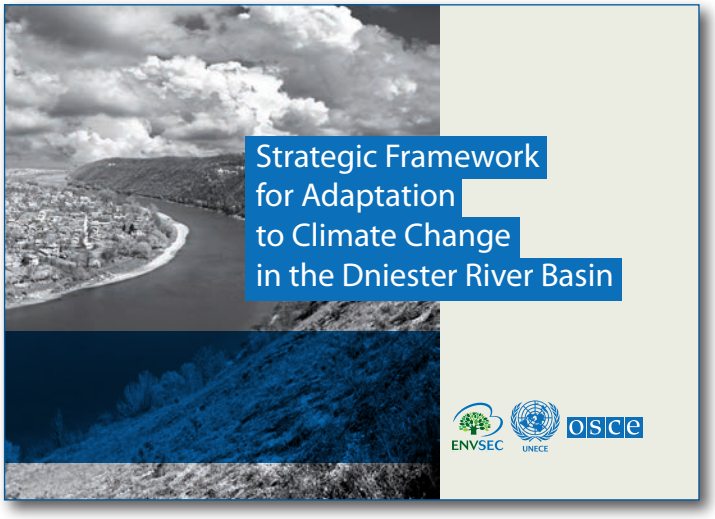
DNIESTER WITHOUT BORDERS

Greetings!

This newsletter presents results, achieved under the project component «Climate Change and Security in the Dniester River Basin»[1] from June 2013 to May 2016.

STRATEGIC FRAMEWORK FOR ADAPTATION TO CLIMATE CHANGE IN THE DNIESTER RIVER BASIN AND ITS IMPLEMENTATION PLAN



The document «Strategic Framework for Adaptation to Climate Change in the Dniester River Basin»[2] (from now on referred to as the Strategic Framework for Adaptation) primarily considers the climate change impacts on water resources in the Dniester River Basin, and that adaptation to these impacts requires transboundary cooperation. The document is based both on numerous publications in the countries themselves and abroad, as well as on research conducted in the framework of several projects under the Environment and Security Initiative specifically to identify potential adverse impacts of climate change on human security, the natural environment and economy in the Dniester river basin.

The Strategic Framework for Adaptation was developed in cooperation with relevant environmental, water management, hydrometeorological and other sectoral authorities of the Republic of Moldova and Ukraine.

Since summer 2013, several sectoral consultations and bilateral meetings of the Working Group on Flood Management and Climate Change Adaptation have been conducted in Moldova and Ukraine with a focus on adaptation to climate change in the Dniester river basin and the development of the Strategic Framework. The document was endorsed by both states at the High-level Event on Climate Change and Transboundary Cooperation in the Dniester River Basin in Kiev in April 2015.

The Strategic Framework for Adaptation offers a set of measures, the joint and coordinated implementation of which will make it possible to respond to the forthcoming changes in a timely and proactive manner. A more detailed description of the relevant measures, as well as of the mechanism for their implementation will be presented in the Implementation Plan, which is currently at the final stage of development.

IMPLEMENTATION OF THE PRIORITY CLIMATE CHANGE ADAPTATION MEASURES IN THE DNIESTER RIVER BASIN

In the framework of the project, climate change adaptation measures are supported in the following three areas:

- improving the information base for adaptation to climate change;
- providing ecosystem-based adaptation, ecosystem restoration and conservation; and
- raising public awareness.

Priority measures were suggested by the organizations participating in the project and adopted at the ninth meeting of the Working Group on Flood Management and Climate Change Adaptation (Chisinau, 2–3 July 2014).

Improving the information base for adaptation to climate change

Calculation of current and long-term water balance

The following activities, aimed at calculating the water balance for the management of water resources in the Dniester river basin were implemented from September 2014 to May 2016 and take into account sectoral water needs:

- methodology for water management zoning in the Dniester river basin was adopted;
- necessary input data for the calculation of the water balance was collected;
- system for automated calculation of the water balance was elaborated, tested and improved on the basis of comments

1 Project component «Climate Change and Security in the Dniester River Basin» is an integral part of the project «Climate Change and Security in Eastern Europe, Central Asia and the Southern Caucasus» and is carried out by the United Nations Economic Commission for Europe and the Organization for Security and Cooperation in Europe under the «Environment and Security Initiative» (ENVSEC) with the financial support from the Austrian Development Cooperation and the European Union's Instrument for Stability. The project started in 2013 and will be completed at the end of 2016.

2 The document is available at: https://www2.unece.org/ehlm/platform/download/attachments/31522982/framework_final_Oct15.pdf?version=1&modificationDate=1444323309067&api=v2.

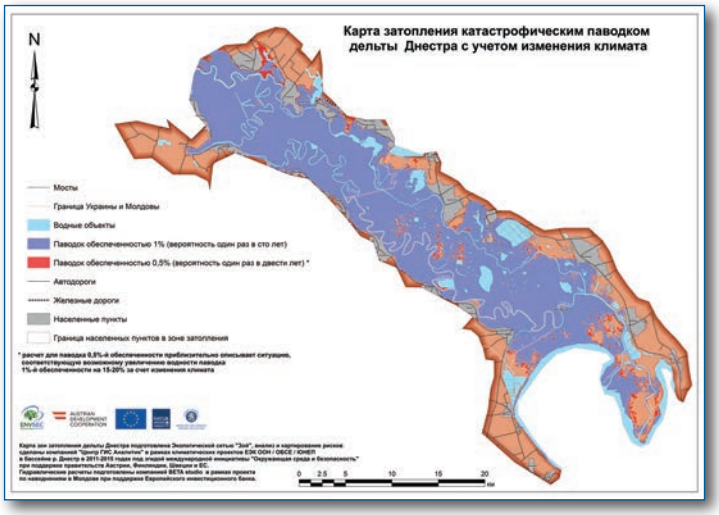
received from the water management and hydrometeorological authorities of both countries;

- climate change issues were considered in the development of the above-mentioned system;
- a training workshop related to the use of the automated system was held (Chisinau, 20–21 October 2015);
- methodology for calculating the water balance of the Dniester basin was finalized and submitted to the respective water management authorities for comments.

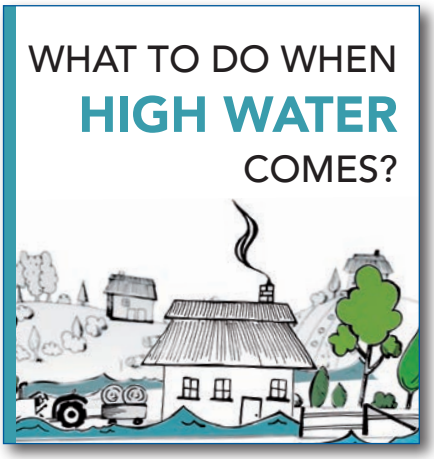
It is planned to develop a network version for the calculation of the water balance by the end of 2016, to enable its use by water management authorities of Moldova and Ukraine.

Improvement of flood risk communication[3]

A flood risk map for a 100-year flood (probability of occurring in any given year is 1%) in Mogilev-Podilskii had been completed in 2015. It was posted on the Internet under http://www.arcgis.com/home/webmap/viewer.html?webmap=363f0e3026134ca8bf2b1287b7c1e8d4, and hard copies were distributed to the relevant organizations.



Flood risk modelling and mapping under 100-year and 200-year floods (probability of flood occurring in any given year is 1% and 0,5% accordingly) in the Dniester delta were completed in August 2015. These works were performed in cooperation with the European Investment Bank's project "Moldova Flood Management Technical Assistance and Investment project", implemented by the Italian company "BETA studio".



The leaflet «What to Do When High Water Comes?» was developed and published in three languages (English, Romanian and Ukrainian) at the beginning of 2015. It was widely disseminated among the local population and the organizations concerned in Moldova and Ukraine.

Creation of the joint information platform for hydrometeorological data exchange

The concept and the terms of reference for creating the information platform for hydrometeorological data exchange in the Dniester river basin were elaborated by the hydrometeorological agencies of Moldova and Ukraine in 2015. The joint platform aims at increasing awareness of the population in the basin (especially in the time of flooding) and serves as an information source for authorities, scientific institutions and universities as well as the public. The platform is valuable thanks to the following:

- the platform will contain information on the whole river basin;
- part of the information will be available in real time, other information will be regularly updated;
- information will be available in the state languages of the riparian countries (Romanian and Ukrainian) with translation of the most important information into English;
- the platform will be hosted on the popular and well attended websites of the hydrometeorological agencies.

Development of the model for real-time operations and strategic management of the Dniester reservoirs

Since July 2015, the U.S. Army Corps of Engineers (USACE) Institute for Water Resources on behalf of the Alliance for Global Water Adaptation has been developing an integrated model of the Dniester reservoirs' operation which takes into account water demand of different areas including agriculture, hydroenergy, as well as flood risk reduction and ecosystems protection. In the future it will also include climate change considerations in order to ensure sustainable management of water resources in the river basin and adaptation to climate change. In particular, the U.S. Army Corps of Engineers is developing two key products: (1) simulation Model HEC-ResSim, which considers the parameters of water flow and the Dniester reservoirs' operations in an integrated manner for Moldova and Ukraine, and (2) real-time reservoir management system to support a risk-based decision-making process. To demonstrate and improve the above model, two workshops on the Dniester River Reservoir Simulation Modelling were organized in Moldova and Ukraine in October 2014. Integration of climate change analysis into the Dniester reservoirs' model is planned to be completed in 2016.

Improvement of real-time forecasting of inflow into the Dniester reservoirs

Improvement of real-time forecasting of the inflow into the Dniester reservoirs is important both for adaptation to climate change in the management of water resources and for integrated water resources management in general. In particular, increasing the predictive accuracy and the forecast interval are crucial for selecting an optimal regime of water release downstream of the reservoirs during floods.

The terms of reference for improvement of real-time forecasting of the water inflow into the Dniester reservoirs, formed by rain, was developed in April – July of 2015 on the basis of numerical weather prediction models, distributed «rainfall-runoff» models and a one-dimensional hydraulic model for water flow into river channels and water reservoirs.

The works were initiated in August 2015 and will be completed in autumn 2016. Within the framework of the activities, a pilot implementation of the above system is planned at the Ukrainian Hydrometeorological Center and its subordinate organizations; moreover, the organizations concerned, including relevant authorities in Moldova will be granted access to the modelling results.

3 A part of the activities was performed under the UNECE/OSCE/UNEP project «Reducing Vulnerability to Extreme Floods and Climate Change in the Dniester River Basin» under the Environment and Security Initiative with the support of the governments of Finland and Sweden.

Ecosystem-based adaptation, restoration and conservation of ecosystems

Restoration of water exchange between the river and floodplain meadows

The study was performed in autumn 2014 to identify the possibility of restoring water exchange between the main course and floodplain meadows, located at 45-52 km of the Odessa-Reni highway in the area of the Ramsar wetland «Northern Part of the Dniester Liman» and at the Lower Dniester National Nature Park. During the research process:

- technical conditions of culverts and inlet and outlet channels were analyzed (hydrographic surveys and corresponding drawings were made);
- a brief summary on biological diversity of flooded areas near the liman was prepared;
- the environmental (reproduction) flow regime of the Dniester hydroelectric complex for the period from 1991 to 2014 was analyzed and recommendations on its optimization were suggested;
- several options for rehabilitation of the existing culverts and construction of new ones were suggested (including their economic assessment) to reduce flood risks during extreme floods and to improve water supply to floodplain meadows during environmental flows.

Alongside the project on «Restoring Ecosystems to Mitigate Floods and Improve Cooperation between Countries in Transboundary River Basins in Eastern Europe»[4], the pilot works on restoration of water exchange between the Dniester and floodplain meadows were completed in the middle of April 2016 with a view to conserving biological diversity and reducing flood damage. They included the following activities:

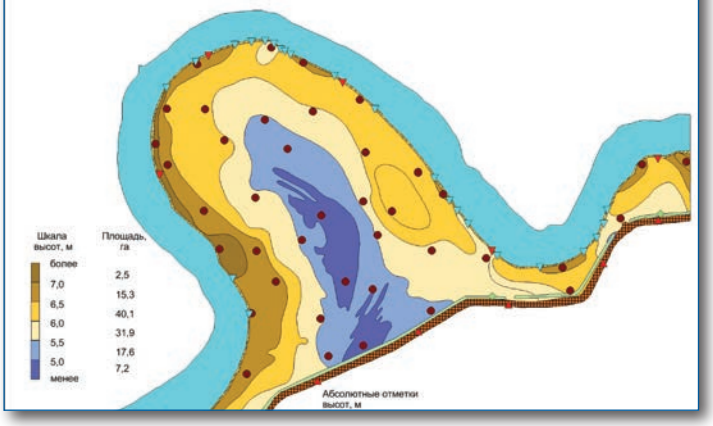
- cleaning of the shallow channel «Zastoiniy» (it crosses the highway Odessa-Reni at the 51 km);
- dismantling of current dikes with further creation of closures and islets;
- creation of a shallow reservoir in the last part of the channel for fish and other hydrobionts as well as water birds; and
- embedding of three communication cables crossing the shallow channel, for the purpose of eliminating additional obstruction for water flow.

Analysis of the establishment of regulated meadow spawning ground at Talmaza wetlands

In April – June 2015, the possibility of establishing a regulated meadow spawning ground on the territory of the Ramsar «Talmaza Wetland», located between Talmaza and Cioburciu villages in Moldova, was analyzed. In the frameworks of this activity:

- surge capacity and conditions for sluice construction were assessed;
- scientific justification including analysis of practical importance for establishing the spawning ground was elaborated. It involved hydrologic and ichthyologic assessments, as well as typical recommendations for the spawning ground management;
- consultations with local authorities (local council of the Talmaza village, to which the territory of the projected spawning ground belongs) were organized and approval of the spawning ground construction was obtained.

Surface pattern in the place of the projected spawning ground



Key results of the research state that:

- artificially constructed meadow spawning ground will be in no way different from naturally flooded floodplains; moreover, it is more cost-efficient than fish-rearing in incubator farms;
- possibility of filling the spawning ground is high enough in the years when the probability of floods or environmental flows is 50 % (years of average and high water content); in the years with flood probability less than 50%, filling the spawning ground with water could happen from time to time;
- formation of the spawning ground can be considered an important instrument for ecosystem-based adaptation. While conditions of habitats tend to deteriorate due to the impacts of climate change, it both creates additional habitats and reduces floods risks for near-by human settlements.

Creation of forest-protective sites and belts[5]

In November 2014, main activities were finalized to create forest-protective belts near the Turunchuk river, close to the village Hlinaia (Moldova/Transdniestria) on the territory of the Ramsar wetland «Lower Dniester» (about 6 ha).

Before conducting the works, detailed terms of reference were elaborated. The planting of additional trees was performed in the autumn of 2015.

4 The project is being implemented by the OSCE and UNEP with the support of the government of Switzerland under the Environment and Security Initiative.

5 The activities were conducted in cooperation with BIOTICA Ecological Society and NGO «MAMA-86-Odessa».

On the banks of the Turunchuk, the Deep Turunchuk, the Kuchurhan and the Dniester 6900 seedlings were planted out in November 2014 and in March 2015 in Odessa oblast. These activities were supplemented by the educational workshops «Change Yourself, not the Climate», during which children and grown-ups discussed climate change impacts on the Dniester's water resources. The participants became also involved in the adaptation to climate change on the ground through planting the seedlings. In addition, the project also supported publishing recommendations on the afforestation of the Dniester river basin, taking into account climate changes.

Public awareness[6]

In 2013, 2014 and 2015 the project traditionally supported the annual art-contest "Colours of the Dniester". Approximately 400 children and students from Moldova (including Transdniestria) and Ukraine participated in the contest. 70 winners were selected in the following categories: painting, photography, slide-show, environment protection measures, poems, prose and scientific article. The works were published in the form of the brochure «Colours of the Dniester».

Two canoe expeditions entitled «Dniester – 2015» were organized for students, scientists, teachers, representatives of NGOs and mass media from Moldova and Ukraine in July and August 2015. During the expeditions, participants became familiarized with the impacts of climate change on the hydrological regime of the river, natural disasters, as well as biological diversity and ecosystems of the basin. In addition, the participants discussed climate change adaptation measures and transboundary cooperation in the Dniester river basin. The expeditions took place in the Middle and Lower Dniester.

6 Public awareness activities were conducted in cooperation with the NGO «MAMA-86-Odessa» and International Environmental Association of River Keepers «Eco-TIRAS».

Others

The project pays considerable attention to the legal framework for developing transboundary cooperation in the Dniester river basin, especially within the context of the EU association agreements with Moldova and Ukraine. In this regard, the project creates a standing platform for negotiations and further practical implementation of such transboundary cooperation instruments as the *Treaty between the Government of the Republic of Moldova and the Cabinet of Ministers of Ukraine on Cooperation on Conservation and Sustainable Development of the Dniester River Basin* and a river basin management plan for the Dniester. To give an example, these are issues that were also discussed at the High-Level Event on Climate Change and Transboundary Cooperation in the Dniester River Basin in April 2015, and at the 12th Meeting of the Working Group on Flood Management and Climate Change Adaptation in April 2016 respectively.

The project's influence on the adaptation to climate change in the Dniester river basin would have been impossible without the contribution of every participant of the project. Thank you very much for it!

The team of the project (OSCE, UNECE)

The photos by L. Grichulevich, A. Plotnykova, N. Stepanok, S. Shelest and A. Yushchuk were used in the brochure.
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