www.dniester-basin.org

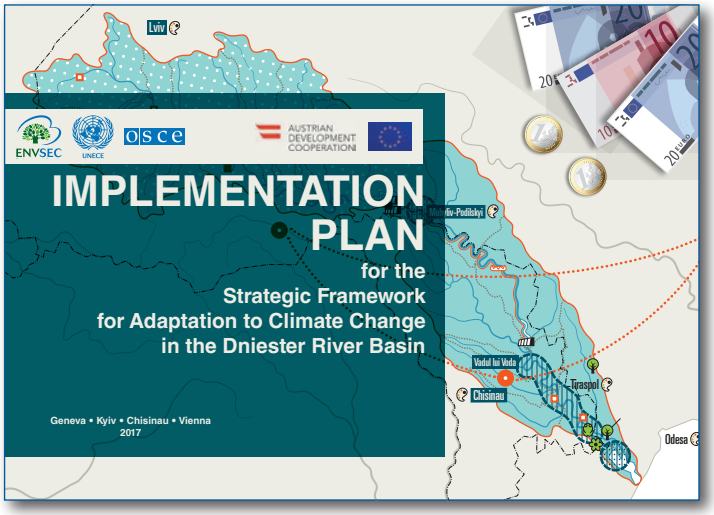
DNIESTER WITHOUT BORDERS

Greetings!

This newsletter presents final results, achieved within the Dniester component of the project «Climate Change and Security in Eastern Europe, Central Asia and the Southern Caucasus» 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 was completed in August 2017.

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»[1] (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 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 and potential funds for their implementation is presented in the Implementation Plan for the Strategic Framework[2].

The Strategic Framework for Adaptation and the Implementation Plan were 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 and the Implementation Plan. The Strategic Framework 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 whereas the Implementation Plan was mentioned as a tool for adaptation to climate change on transboundary, national and local levels by relevant stakeholders at several project related events.

Implementation of the priority climate change adaptation measures in the Dniester river basin

In the framework of the project, climate change adaptation measures were 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

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

Since July 2013, 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 cli-

1 The document is available at: http://www.osce.org/projects/climate-change-and-security

2 The document is available at: http://dniester-basin.org/materials/navodneniya-i-izmenenie-klimata/.

mate 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. It is planned that the pilot model will be further developed in the frame of the upcoming UNDP/OSCE/UNECE project *Enabling transboundary cooperation and integrated water resources management in the Dniester River Basin* funded by the Global Environment Facility (GEF).

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

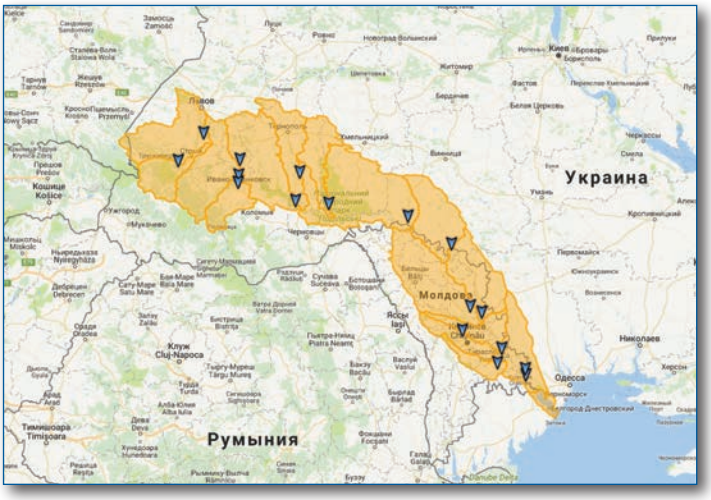
Improvement of real-time forecasting of the inflow into the Dniester reservoirs is important both for adaptation to climate change in the management of water resources and for integrated water resources management in general. In particular, increasing the predictive accuracy and the forecast interval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

Improvement of real-time forecasting of the water inflow into the Dniester reservoirs, formed by rain, was performed 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 finalized in 2017. Within the framework of the activities, a pilot implementation of the above system has started at the Ukrainian Hydrometeorological Center.

Calculation of current and long-term water balance

The activities, aimed to calculate the water balance for the management of water resources in the Dniester river basin taking into account sectoral water needs, started in September 2014 and were finalized in May 2017. In particular, the relevant methodology was reviewed and endorsed by the water management authorities of Moldova and Ukraine; and a network version (located at http://vb.dniester-basin.org/) for the calculation of the water balance (incl. climate change impact) was elaborated, tested, improved on the basis of comments received from and transferred to water management and hydrometeorological authorities of both countries for further implementation.



Further automation of hydrological monitoring in the basin, and strengthening the exchange of monitoring data

Automation of additional monitoring posts helps improve the timely collection and exchange of information to mitigate damage from floods and other disasters which will become more frequent and intense under climate change. Three automated hydrological monitoring stations measuring water level were installed in Matkiv, Zhuravno and Sambir in May 2017 and were donated to water management and hydrometeorological authorities in Ukraine. Data from the stations is available at http://hydro.meteo.gov.ua/. In addition, the Acoustic Doppler Current Profiler (RiverPro 1200) was purchased on the request of the State Hydrometeorological Service of Moldova in May 2017.

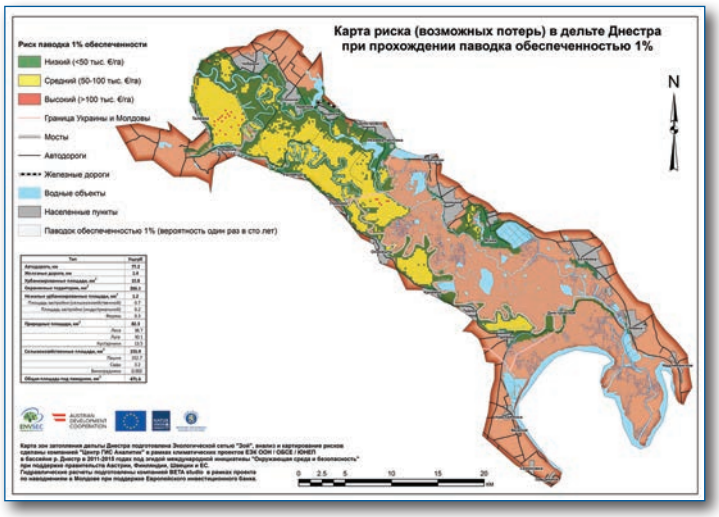
Improvement of flood risk communication[3]

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://arcg.is/1PmeKVd, 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.

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.

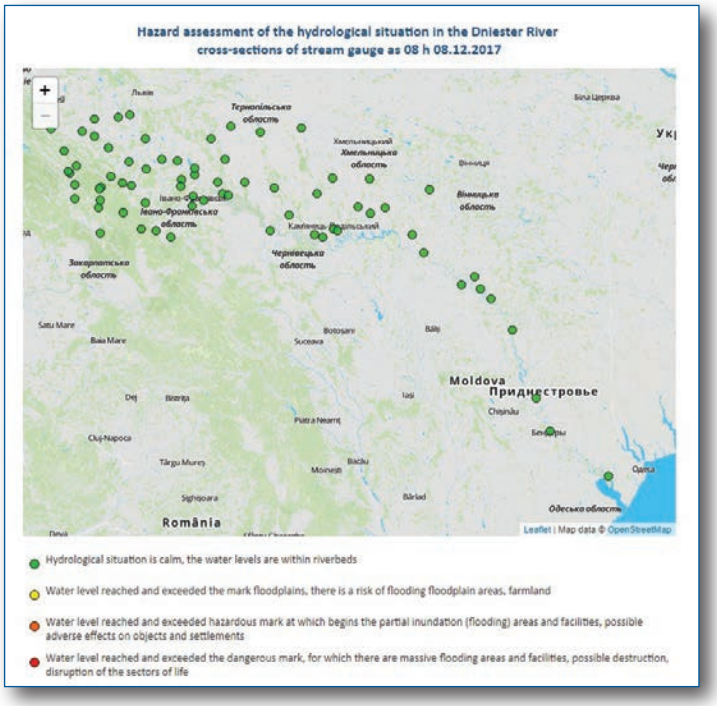


Creation of the joint information platform for hydrometeorological data exchange

The joint platform was developed by hydrometeorological agencies of Moldova and Ukraine aiming to increase awareness of the population in the basin (especially in the time of flooding) and serving 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 contains information on the whole river basin;
- part of the information is available in real time, other information is regularly updated;
- information is available in the state languages of the riparian countries (Romanian and Ukrainian) with translation of the most important information into English;
- the platform is hosted on the popular and well attended websites of the hydrometeorological agencies of Moldova (http://nistru.meteo.gov.ua/) and Ukraine (http://dnister.meteo.gov.ua/).



Ecosystem-based adaptation, restoration and conservation of ecosystems

Restoration of water exchange between the river and floodplain meadows

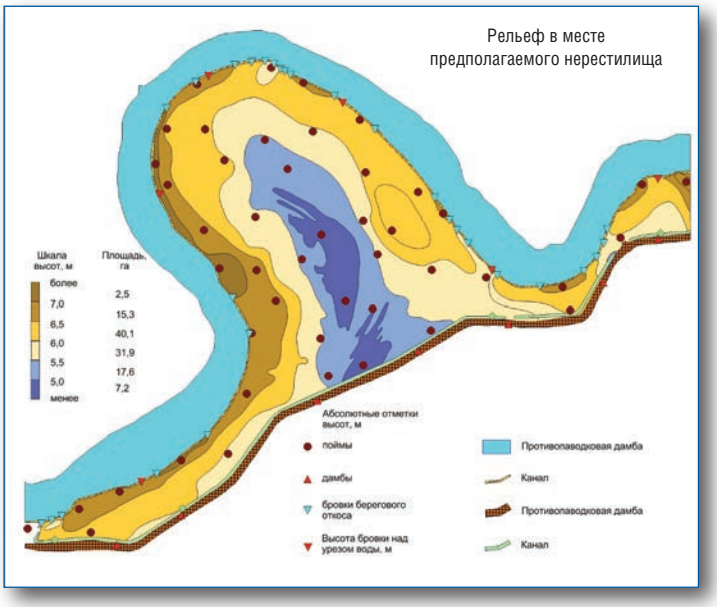
The study was performed in autumn 2014 to identify the possibility of restoring water exchange between the main course and floodplain meadows, located at 45-52 km of the Odessa-Reni highway in the area of the Ramsar wetland «Northern Part of the Dniester Liman» and at the Lower Dniester National Nature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

Later 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 reduce flood damage and conserve biological diversity at the shallow channel «Zastoiniy». More information is available at http://www.osce.org/secretariat/246376.

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. It was concluded 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; and



- 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.

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

Creation of forest-protective sites and belts[5]

In November 2014, the 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).

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.

Others

The project paid 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 created a standing platform for negotiations and further practical implementation of such transboundary cooperation instruments as a river basin management plan for the Dniester as well 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 which was ratified by the Supreme Council of Ukraine in June 2017. It is also important to mention that the new UNDP/OSCE/UNECE project *Enabling transboundary cooperation and integrated water resources management in the Dniester River Basin* funded by the Global Environment Facility (GEF) and starting in autumn 2017 will support implementation of the Treaty and other opportunities for transboundary cooperation in the basin building upon the results of and incorporating recommendations and suggestions of the current project.

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 (UNECE, OSCE)

The photos by L. Grichulevich, A. Plotnykova, N. Stepanok, S. Shelest, A. Yushchuk and A. Zhovtenko were used in the newsletter.
Design by: A. Volkov (aleksandr.volkoff@gmail.com) and D. Piorko (piorko@kis.kiev.ua).

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

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

ENVSEC Environment & Security
UNECE
OSCE
AUSTRIAN DEVELOPMENT COOPERATION