



REDUCING VULNERABILITY TO EXTREME FLOODS AND CLIMATE CHANGE IN THE DNIESTER RIVER BASIN

Study of the institutional capacities and practices for the communication of flood risks in the Dniester river basin

Summary



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The recommendations made in this report are based on the feedback from key organizations in Moldova and Ukraine.

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INTRODUCTION

Globally a lot of attention is being paid to the issues of flooding related to climate change, and the corresponding work with local population. In 2010 *the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (the Water Convention)* initiated a Programme of pilot projects on adaptation to climate change in the transboundary basins of the rivers in Eastern Europe, the Caucasus, Central Asia as well as South-Eastern Europe. The pilot projects are being implemented in the basins of the Chu-Talas, the Danube, the Dniester, the Dauria, the Meuse, the Neman, the Rhine and the Sava rivers, i.a. within the “Environment and Security” initiative (www.envsec.com)

The goal of the project (“Reducing vulnerability to extreme floods and climate change in the Dniester river basin”) is to reduce the risks of possible consequences of climate change, identify the most vulnerable areas in the river basin and improve adaptation capacity in Ukraine and Moldova. Detailed information about the project is available on the link¹: Studying the institutional capacity and practices for the communication about flood risks within each country and between them is the integral and important part of the project.

The aim of this study is to analyze and discuss the available experience and potential in Moldova and Ukraine in the area of information exchange on flood risks and timely warnings to the population in the Dniester river basin.

Apart from a review of the situation in the region, the study also includes a discussion on the issues and priority areas for further cooperation with the organizations responsible for the communication of flood risks in the basin as well as the development and implementation of specific measures to improve the institutional and technical base of the information exchange along the Dniester.

European early flood warning system

In 2009 the *UN Water Convention* issued the publication called “Transboundary Flood Risk Management: Experiences from the UNECE Region”, which among other topics describes the operation of the early warning system in Europe.

After the catastrophic floods on the Alba and the Danube in 2002, the European Commission developed and tested a European early flood warning system. This involved improving the existing warning systems in the countries and the establishment of a Joint Research Centre of the EU. Twice a day the system collects about 70 different weather forecasts in the European countries and makes flood forecasts for 3-10 days using a modeling system (LISFLOOD) and an analysis of historic floods.

Best practices in public communication

In 2007 *the Joint Research Centre of the EU* issued the publication called “Good practice for delivering flood-related information to the general public”, which describes the practices of various countries on the presentation, dissemination and channels of information transfer as well as training, education and hand out materials, etc.

The World Meteorological Organization has initiated and successfully implements an Integrated Flood Management Programme (www.apfm.info) that combines the approaches of integrated land and water resources management to maximize the benefits and minimize losses caused by extreme hydrological conditions. In 2012, a CD with publications, training materials, reports, data bases for literature, organizations and legislation related to flood management was issued as part of this program.

¹ <http://www1.unece.org/ehlm/platform/pages/viewpage.action?pageId=22741054>

BRIEF OVERVIEW

Local authorities and the local agencies (departments) of national Ministries of emergencies are the key institutions responsible for the provision of information on flood risks and public outreach in the Dniester basin before, during and after floods. The provision of timely, complete and relevant information requires the interaction and close cooperation of various key organizations on different levels: from local through to the international, including transboundary cooperation.

Organizations that participate in the process of communicating flood risks to people, as well as in the prevention of the consequences of floods in the Dniester basin include:

in Moldova

- The Hydrometeorological Service of the Ministry of the Environment www.meteo.md;
- The Civil Protection and Emergency Situations Service of the Ministry of Internal Affairs www.dse.md;
- The State Agency “Apele Moldovei” under the Ministry of the Environment www.apemoldovei.gov.md;
- The Basin Authority of Water Resources Management under the Ministry of the Environment;

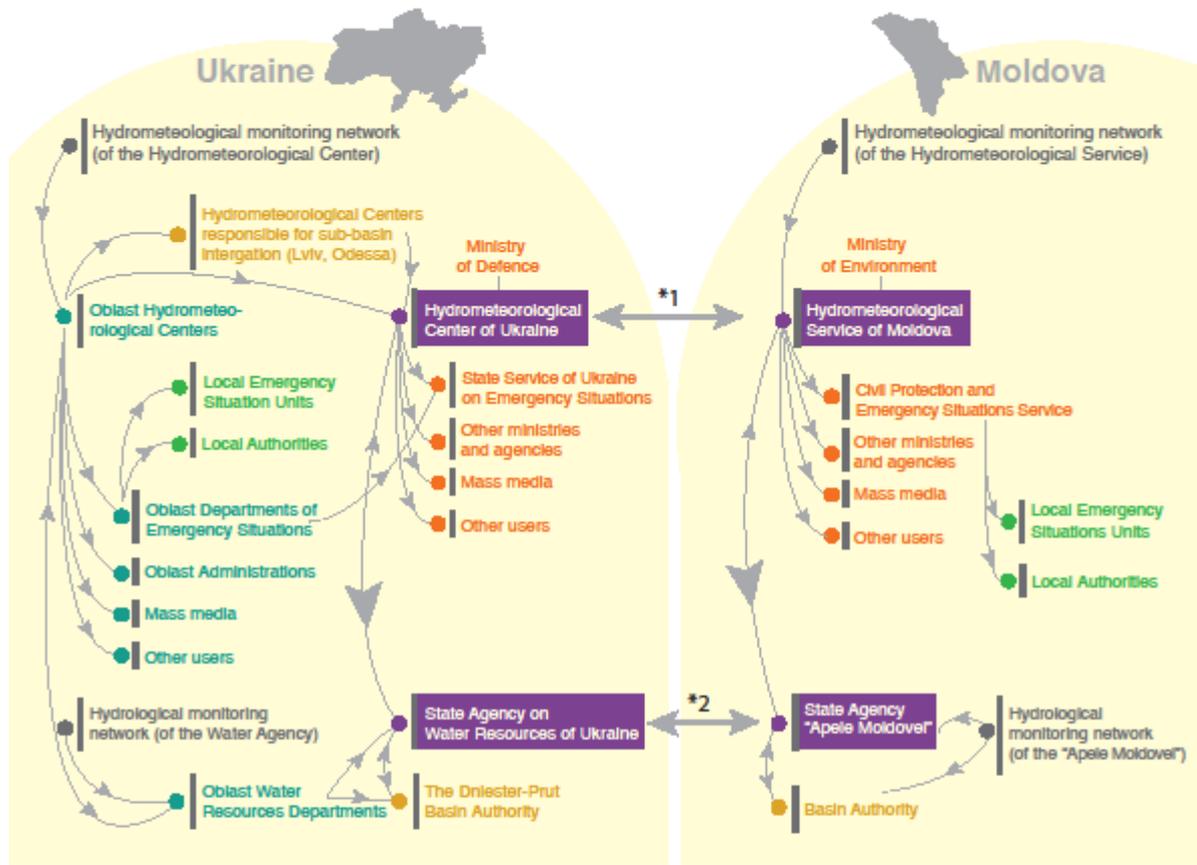
in Ukraine

- Ukrainian Hydrometeorological Centre under the State Service of Ukraine for Emergency Situations www.meteo.gov.ua;
- The State Service of Ukraine for Emergency Situations www.mns.gov.ua;
- The Department of Emergency Situations and Chernobyl Disaster at the State Oblast Administrations;
- The State Agency for Water Resources www.scwm.gov.ua;
- The Dniester-Prut Basin Water Management Authority www.dpbuvr.org.ua;

Institutional cooperation and information exchange

At the country level, the organizations listed above collect, analyze, process hydrometeorological information and provide it to other users and organizations. Many of the organizations have signed bilateral agreements that define the order of information exchange, some exchanging data according to schemes that have existed since the Soviet time. At the international level, corresponding documents on cooperation and data exchange have been signed between several relevant organizations of the two countries. Those preliminary responsible for data exchange are the Water Basin Authorities in Chernivtsi and Chisinau.

Hydrometeorological data flows at different levels in the Dniester river basin



Levels of the information flow:

- transboundary
- basin
- country
- oblast
- local

*1 - Agreement between the Main Department on hydrometeorology of the State Department of Republic of Moldova on environmental protection and natural resources and the State Committee of Ukraine on hydrometeorology on scientific-technical cooperation (1996).

*2 - Agreement between the Government of the Republic of Moldova and the Government of Ukraine on the joint management and protection of the cross-border water (1994).

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Legal Base

Neither of the countries have a regulatory document specifying the order of the exchange hydrometeorological information, including communicating on floods, and the interaction of all organizations involved. The organizations act on the base of statutory and legal documents relating to their spheres of activity according to the national legislation. Major part of international cooperation until now was based on the "Agreement between the Government of the Republic of Moldova and the Government of Ukraine on the Joint Management and Protection of Transboundary Waters". This document signed in 1994 regulates joint management of near-border structures of the Dniester River. The bilateral "Treaty on Cooperation on the Conservation and Sustainable Development of the Dniester River basin" was signed in

Rome in November 2012 after more than eight years of development. The new agreement determines the principles and provides the basis for cooperation on water pollution prevention and control, water flow regulation, biodiversity conservation and protection of the Black Sea environment. It also regulates the issues of data exchange, public participation and cooperation in the sphere of emergency situations.

Example of flood communication at the local level

The department of emergency situations of the Oknitskiy Rayon (District) of the Ministry of Internal Affairs of the Republic of Moldova

Out of the thirty-three settlements of the rayon (district), the town of Ataki and villages Ungur, Kalaroshovka, Voltchinetz and Naslavcha are most vulnerable to floods. The department of emergencies has a forecast map of flood zones based on the data of "Apele Moldovei" with manually contoured flood zones. The flood of 2008 proved the forecasts. In general, the rayon is more vulnerable to seismic processes (possibility of earthquakes with a magnitude of 5-6 points on a Richter's scale), whereas flooding is a second-level hazard.

As stated by the local specialists, the rayon organizations managed the flood in 2008 well. The main reason for the flooding in the rayon being an excessive flush from the Dniester Pumped Storage Power Station.

One of the problematic issues for flood control is the organization of information flow in case of a flood, which is not directly disseminated by the Dniester Pumped Storage Power Station to the nearest settlements, but according to international agreements is organized via Kiev and Chisinau. In other words, initially the Dniester Pumped Storage Power Station sends the information to the Dniester-Prut Basin Authority in Chernivtsi, it is then forwarded to the State Agency for Water Resources of Ukraine in Kiev. The information then comes to the Agency "Apele Moldovei" and the Civil Protection and Emergency Situations Service in Chisinau and only after that – to the rayon departments of Moldova.

In the settlements of the rayon, civil protection groups have been established at local enterprises and organizations or volunteer formations have been created headed by the chairman of the village council. Enterprises are financially responsible for the supplies and training for the members of such groups, otherwise finances are provided by the local budget. However, the practice proves that neither enterprises, nor the local budgets have funds to support these groups to the required level. Quite often, they only dispose of such basic means of protection as sand and sacks. In the majority of cases there is no special protective clothing, rescue equipment. In case of emergencies, the vehicles available in emergency departments, police cars and privately owned cars are used.

The organization of additional training, thematic lectures in schools, dissemination of visual material as well as provision of financial and technical assistance (special equipment, motor boats, diver's suits, etc) may increase the level of preparedness of the population and rayon authorities for floods.

In case of an emergency situation (including floods) special commissions are established at the rayon and the local levels. A specially designated officer of the Moldtelekom calls the members of the commissions (lists of the members of the commission and their contact information are available in the data base). In case of power cut in the Moldtelecom there is a back-up generator for the warning calls.

The centralized warning system consists of the telephone communication (fax) and transfer of information between the dispatchers. The local warning system includes information communication by phone, warning horns and loud speakers. The local warning system was constructed 30-40 years ago. It has not been updated since then and has fallen into disrepair in all settlements.

Training for the local civil protection groups is conducted once a year and participation is free for all village residents. The head of the rayon department of emergencies and his colleagues from other rayons undergo training in the Republican Training Centre in Chisinau. However, the frequency and volume of the training is not sufficient. In addition, representatives of the local civil protection groups rarely have funds to participate in the workshops conducted in other places.

***Example of flood communication at the local level
Tlumatzkiy Rayon (District) Ivano-Frankivska Oblast, Ukraine***

Every 4-5 years, the Tlumatzkiy rayon suffers from flooding. The territory of Petryliv and Nyzhniv village councils was completely flooded in 2008 and 2010. The territories of other ten village councils of the rayon are affected to a smaller extent. A protective dam built upstream from Petryliv village only partially protects the lands from flooding. The construction of new protective dams is highly relevant and important for the rayon.

In these two villages a warning system, consisting of loud speakers on utility poles and buildings, was installed after the flood in 2008. Information about floods comes from the oblast department of the State Service of Ukraine for Emergency Situations in Ivano-Frankivska Oblast. The responsible officers in the rayon (district) administration forward the warning to the village councils, and a chairman of the village council switches on the alarm to inform village residents. In parallel there is a hydrological post at the bridge of the Nyzhniv village: when the water level for this post exceeds the established threshold (5,5 meters – level of overflow; 6,5 meters – flooding of residential houses) the person at the post provides information directly to the local authorities.

It is not easy to conduct information work in the rayon. On the one hand, traditionally as a result of experience in the past, people know quite a lot about floods and have lived through many of them. On the other hand, over time people get used to living in the flood risk zone and often stop taking this (potential) risk seriously. The year of 2008 is a good example, when local people ignored the evacuation instructions.

However, representatives of administrative bodies have regular meetings with local people to discuss the issues of flooding and solutions of the related problems.

Separate work is conducted by the Sanitary and Epidemiological Station (SES) of the rayon that controls drinking water quality, including inspection of the state of wells after flooding. As a result of active cooperation of the rayon SES with the local population, people are well informed about the actions needed to ensure the quality of drinking water, and know when it is possible to use water after flooding; how to purify and pump out water; and where water samples can be taken for testing.

Representatives of the rayon administration stress the importance of expanding to other villages the warning system that was established in two villages after the flooding in 2008. Another suggestion is to provide each resident of the most vulnerable villages, Petryliv and Nyzhniv, with life vests: this would save efforts and time during rescue works and calm down the population.

CONCLUSIONS

Having studied the information flow and the awareness of the population in the Ukrainian and Moldavian parts of the Dniester river basin with respect to floods the following conclusions could be made:

- The sharing of hydrometeorological information among the organizations within each country as well as between the countries has been organized on a high level over many years; cooperation and information exchange is based on bilateral agreements on interaction;
- Information exchange within and between the countries is organized in a centralized way (between the countries – via Kyiv and Chisinau, within an Oblast and between the Oblasts – via Oblast centers) that sometimes delays the delivery of information to settlements located downstream, for which this information is highly important;
- None of the countries have got an automated warning system (activated within 4 hours of travel time of the peak flood); at the state and the basin levels information share via dispatchers, and in a centralized manner via Kyiv and Chisinau. In case of a dam failure the settlements located downstream are automatically warned. The local warning system is based on notification via loud speakers and horns, which in the majority of cases are either absent or broke down after 30-40 years of operation;

- Early warning systems in case of a dam failure are not installed at the Dniester nor Dubossarskiy Pumped Storage Power Stations, both of which however have calculations of the travel time of the peak flood to the downstream settlements;
- The countries do not have up-to-date maps of possible flood zones and settlements at risk; old (or outdated) maps developed during the Soviet time are predominantly used. There are no electronic maps. Modeling and forecasts of floods are done only rarely;
- The issue of training civil protection specialists has not been fully resolved (in particular, in Moldova there is no higher-education facility for such training. Only specialized courses are available). Opportunities for training local civil protection groups are often limited, in particular due to the lack of practical and financial possibilities to take part in the training programs.
- Technical facilities of local civil protection formations is extremely poor;
- In general, the level of public awareness on actions before, during and after flooding is not sufficient.

RECOMMENDATIONS for the improvement of the dissemination and use of information on floods in the Dniester river basin

Taking into consideration the conclusions made above, as well as the experience of other countries and international organizations acting in the area of flood management and community outreach, the following could be suggested:

- Improve and expand the system of automatic flow monitoring in the Dniester river basin (including its tributaries) and integrate the existing automatic flow monitoring stations into a single system (at the national and basin levels) to ensure the free use and transfer of hydrological information;
- Provide the assistance in the restoration of the early warning systems on flood risk, with special focus on settlements located in the proximity to hydro energy complexes;
- Organize modeling and mapping of flood zones in settlements with the use of modern geo-information technologies;
- Provide (through one of events or regular courses) training for the leaders of local administrations, heads of civil protection formations, school directors and teachers in order to raise the level of their knowledge in the domain of civil protection;
- Organize the education of the population (workshops, lectures, materials) in order to raise the level of public awareness about actions the necessary before, during and after flooding.

The suggested measures will be developed in more detail and prioritized through consultations with the representatives of key organization of the two countries. The consultation is planned in the first half of 2013.

CONTENT OF THE FULL STUDY of institutional capacities and practices for the communication of flood risks in the Dniester river basin

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Ukraine

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Legal base

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The Republic of Moldova

National level

Hydrometeorological Service
Civil Protection and Emergency Situations Service
State Agency "Apele Moldovei"

Basin level

Basin board of water resources management of the State Agency "Apele Moldovei"

Local level example

Department of emergencies of Oknitskiy Rayon of the Ministry of Internal Affairs of the Republic of Moldova

Ukraine

National level

Ukrainian Hydrometeorological Centre
State Service of Ukraine on Emergency Situations
State Agency of Water Resources

Basin level

Dniester-Prut Basin Board on Water Management,
State Agency of Water Resources

Oblast level

Hydrometeorological Centre of Ivano-Frankivska Oblast
Agency of the State Service of Ukraine for Emergency Situations in Ivano-Frankivska Oblast
Agency of Emergency Situations and on the Issues of Chernobyl Disaster, Ivano-Frankivska Oblast Administrations
Agency of Water Resources in Ivano-Frankivska Oblast, State Agency of Water Resources

Local level example

Tlymatzkiy Rayon of Ivano-Frankivska Oblast

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