Some lessons of the transboundary assessment of river basins climate change vulnerability and the development of a joint adaptation strategy: the Dniester River case study

Некоторые уроки трансграничной оценки уязвимости к изменению климата речного бассейна и выработка единой стратегии адаптации на примере Днестра

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Moldova

Moscow, 18-19 May, 2017
The Dniester River: Geographical location

The river length – about 1350 km, transboundary part – 200 km; basin area – 72,100 km²
To the history of the research

The reported results were received in 2010-2013 in the framework of the joint Moldova-Ukraine project:

“Reducing vulnerability to extreme floods and climate change in the Dniester River Basin“

This project was one of pilot projects in the well-known program on adaptation to climate change in transboundary basins, realized under the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention).
Main goals of the project:

1. To mitigate climate change risks in the Dniester basin, especially from floods, by reducing the vulnerability to them in both countries

2. To expand and strengthen joint management of the Dniester’s water resources in confronting the current and expected climatic impacts on its watershed
The main challenges in project tasks resolving

- Uncertainties in estimations of likely changes in future climate of the basin and in the river hydrology, primarily in the transboundary aspect, caused by differences in national approaches to the assessments
- Lack of a clear understanding of the concept of vulnerability to climate change in the river basin
- Management of the Dniester reservoirs in the interests of individual water users, primary to hydropower ones, that leads to serious damages in the downstream natural and social systems
**Example 1. Differences in the sources and scenarios used for regional climate projections before the project**

<table>
<thead>
<tr>
<th>Ukraine GCM</th>
<th>Emissions</th>
<th>Moldova GCM</th>
<th>Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCCR-BCM2.0</td>
<td></td>
<td>CGCM2</td>
<td></td>
</tr>
<tr>
<td>NCAR-CCSM3</td>
<td></td>
<td>CSIRO Mk2</td>
<td></td>
</tr>
<tr>
<td>CGCM3.1 (T47)</td>
<td></td>
<td>HadCM3</td>
<td></td>
</tr>
<tr>
<td>CGCM3.1 (T63)</td>
<td></td>
<td>ECHAM4</td>
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<tr>
<td>ECHAM5/MPI-OM</td>
<td></td>
<td>GFDL R-30</td>
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</tr>
<tr>
<td>GFDL-CM2.1</td>
<td>SRES A1B</td>
<td>CCSR-NIES</td>
<td>SRES A2</td>
</tr>
<tr>
<td>MIROC3.2 (hires)</td>
<td></td>
<td>CGCM2</td>
<td></td>
</tr>
<tr>
<td>MIROC3.2 (medres)</td>
<td></td>
<td></td>
<td>B2</td>
</tr>
<tr>
<td>MRI-CGCM2.3.2</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>UKMO-HadGEM1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCCR-BCM2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Example 2: Ensemble mean projections of change in key climatic variables**

<table>
<thead>
<tr>
<th>Years</th>
<th>Moldova</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Temperature, °C</td>
<td>Temperature, °C</td>
</tr>
<tr>
<td>2020</td>
<td>1.7</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>2020</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2030</td>
<td>0.7</td>
</tr>
<tr>
<td>2050</td>
<td>3.4</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td>2050</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>2060</td>
<td>2.2</td>
</tr>
</tbody>
</table>
**Example 3: Projections of relative change of the Dniester streamflow**

<table>
<thead>
<tr>
<th>Scenarios of emission</th>
<th>Time horizon</th>
<th>Change, %</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SRES A2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2020s</td>
<td>-10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2050s</td>
<td>-22.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2080s</td>
<td>-36.5</td>
<td></td>
</tr>
<tr>
<td><strong>SRES B2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2020s</td>
<td>-12.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2050s</td>
<td>-18.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2080s</td>
<td>-24.5</td>
<td></td>
</tr>
</tbody>
</table>

*General streamflow will change: by 5-7% in the North; by 15-30% in the South of the basin*
The first step in the project activities was:

To transit to the transboundary approach in the development of scenarios of likely climate change and the Dniester streamflow
The breakdown of the Dniester Basin into individual reaches of climate change modeling
Projections of air temperature *(above)* and precipitation *(below)* change in the Dniester basin in 2021-2050 compared to 1971-2000 *(REMO RCM)*

<table>
<thead>
<tr>
<th>Year as a whole</th>
<th>Upper</th>
<th>Middle</th>
<th>Lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>+1,1°C</td>
<td>+1,0°C</td>
<td>+1,1°C</td>
<td>+1,2°C</td>
</tr>
<tr>
<td>+0,2%</td>
<td>+1,0...1,8%</td>
<td>-0,9%</td>
<td>-2,8...-1,7%</td>
</tr>
<tr>
<td>Winter</td>
<td>+1,2°C</td>
<td>+1,1°C</td>
<td>+1,2°C</td>
</tr>
<tr>
<td>+9%</td>
<td>+10%</td>
<td>+6...+7%</td>
<td>+8...+11%</td>
</tr>
<tr>
<td>Spring</td>
<td>+0,7°C</td>
<td>+0,7°C</td>
<td>+0,7°C</td>
</tr>
<tr>
<td>-0,6%</td>
<td>+0...1,5%</td>
<td>-1%</td>
<td>-3%</td>
</tr>
<tr>
<td>Summer</td>
<td>+1,0°C</td>
<td>+1,0°C</td>
<td>+1,0°C</td>
</tr>
<tr>
<td>-1,0%</td>
<td>-1%</td>
<td>-1...-0,2%</td>
<td>-7...-4%</td>
</tr>
<tr>
<td>Autumn</td>
<td>+1,3°C</td>
<td>+1,3°C</td>
<td>+1,3°C</td>
</tr>
<tr>
<td>-5,0%</td>
<td>-2,8...-1,5%</td>
<td>-10...-7%</td>
<td>-11...-6%</td>
</tr>
</tbody>
</table>
Spatial distribution of likely change in air temperature and precipitation in 2021-2050 vs. 1981-2010.
Dniester mean annual streamflow in 1971-2000 (A) and expected changes of its mean (B), maximal (C) and minimum (D) values by the middle of the century.
Projected changes in mean flood intensity in the Dniester basin

2021-2050 vs. 1971-2000
Transboundary approach to the floods risk assessment

- *Engineering modelling*
- *Field works on the assessment of the state of flood protection*
Engineering studies on the Dniester’s reach Mogilev-Podolsky – Attacy (16 km)

GIS-based cross-sections of the river channel

Hydro acoustics of the river channel
GIS mapping of the zones of 1% flooding for current and expected streamflow

Spatial analysis of flooding zones

<table>
<thead>
<tr>
<th>Flooded objects</th>
<th></th>
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<tbody>
<tr>
<td>Living sector</td>
<td>19%</td>
</tr>
<tr>
<td>Industry sector</td>
<td>28%</td>
</tr>
<tr>
<td>Subborns</td>
<td>14%</td>
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</table>
Results of modeling

### 1-D modeling of extreme floods on the Lower Dniester

#### Areas of the maximum risk of flooding

<table>
<thead>
<tr>
<th>Створ</th>
<th>Удаление от Дубоссарской ГЭС, км</th>
<th>Берег Днестра</th>
<th>Ширина зоны 1 м затопления позади дамбы за весь период наводнения, км</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Девий берег</td>
<td>Сценарий наводнения</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2008 г</td>
</tr>
<tr>
<td>Бычок-Парканы</td>
<td>128</td>
<td></td>
<td>7.14</td>
</tr>
<tr>
<td></td>
<td>129</td>
<td></td>
<td>11.39</td>
</tr>
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<td>130</td>
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<td>6.55</td>
</tr>
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<td>131</td>
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<td>1.19</td>
</tr>
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<td>132</td>
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<td>0.22</td>
</tr>
<tr>
<td>Варница-порт</td>
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<td></td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>134</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>136</td>
<td></td>
<td>1.71</td>
</tr>
<tr>
<td></td>
<td>137</td>
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<td>6.08</td>
</tr>
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<td></td>
<td>138</td>
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<td>3.52</td>
</tr>
<tr>
<td></td>
<td>139</td>
<td></td>
<td>0.62</td>
</tr>
</tbody>
</table>

#### Вадул-луй-Водэ, Дубэсари, Пухачень, Кичкань, Паланка

Условные обозначения:
- противопаводковые дамбы
- зона затопления в текущем климатье
- Увеличение зоны затопления в ожидаемом климате
Examples of flood areas description

**Участок 5 Вадул-луй-Водэ**
Участок расположен в 23 км ниже Дубоссарского водохранилища. Ожидаемая зона затопления расположена на правом берегу Днестра, охватывая 5 населенных пунктов – Кошерица, Вадул-луй-Вода, Блэйбунешто, Мизешто, Коряково. Общая длина затопляемой зоны при Сценарии 1 составляет 18 км, максимальная ширина – 3 км. По Сценарию 2 размеры увеличиваются на 20%.

**Участок 11 Расець – Гудора**
Участок расположен в 210 км ниже Дубоссарского водохранилища. Ожидаемая зона затопления расположена на правом берегу Днестра, охватывающая 6 населенных пунктов – Расець, Лукрьор, Опьенец, Крикай, Тудор, Половка. Общая длина затапливаемой зоны при Сценарии 1 составляет 87 км, максимальная ширина – 4 км. Прорыв левобережной дамбы в 2008 г привел к затоплению 15 тыс. га с.-х. угодий Украины. По Сценарию 2 размеры увеличиваются на 10 % в зона затопления соединится с Кицанской.
Assessment of the Dniester basin general vulnerability to climate change
IPCC’s new conception of vulnerability

Vulnerability to climate change is “The propensity or predisposition of a system to be adversely affected”. Here, predisposition is an internal characteristic of a person or system as well as the situation, in which they are located, to be affected.

Principal difference:

- **the former definition**: the main causes of vulnerability are physical factors and their effects expressed as an exposure; the social context is expressed by sensitivity and adaptive potential.
- **new definition**: strengthening of a social component, independent from physical events. Different levels of vulnerability lead to different levels of damage in similar conditions of exposure to impacts.
Dniester basin vulnerability to climate change as a function of likely impacts
Vulnerability to climate change of Moldova and Ukraine on the pan-European background
Practical conclusions:

- Avoiding a purely physical explanation of the climate risks formation and the attribution of their development and consequences.
- Identification of social factors as an independent object of research.

Based on this conception a set of indicators for vulnerability assessment has been developed and realized for the Moldavian part of the Dniester basin.
Realization of the new approach for the Moldavian part of the Dniester Basin

Climatic division of the study area for downscaling of Regional Climatic Models
**Evaluation scheme of the assessment of vulnerability to climate change**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Indicator</th>
<th>Functional relationships</th>
<th>Individual and average weights</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exposure</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Climate</td>
<td>Temperature change in a warm season</td>
<td>Temperature</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>Humidity index in a warm season</td>
<td>Humidity</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>Temperature change in a cold season</td>
<td>Temperature</td>
<td>0.25</td>
</tr>
<tr>
<td><strong>Sensitivity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiographical sensitivity</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Land use (%)</td>
<td>Arable land</td>
<td>Area</td>
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<tr>
<td></td>
<td>Perennial plants</td>
<td>Area</td>
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<tr>
<td></td>
<td>Grasslands</td>
<td>Area</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Forests</td>
<td>Area</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Surface water</td>
<td>Area</td>
<td>2.0</td>
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<tr>
<td>Soils</td>
<td>Geomorphologic processes</td>
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</tr>
<tr>
<td></td>
<td>Surface erosion</td>
<td>Area</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Ravines</td>
<td>Area</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Landslides</td>
<td>Area</td>
<td>2.0</td>
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<tr>
<td>Construction</td>
<td>Built-up areas</td>
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<td>0.33</td>
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<tr>
<td><strong>Social-economic sensitivity</strong></td>
<td></td>
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<tr>
<td>Population</td>
<td>Population density (no. of inhabitants per sq. km)</td>
<td>Density</td>
<td>0.20</td>
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<tr>
<td></td>
<td>Urban population (%)</td>
<td>Share</td>
<td>0.20</td>
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<tr>
<td></td>
<td>Women (%)</td>
<td>Share</td>
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<td>Natural growth</td>
<td>Growth</td>
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<td>Demographic load</td>
<td>Load</td>
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<tr>
<td>Agriculture</td>
<td>Ratio of unprofitable vs. profitable enterprises</td>
<td>Ratio</td>
<td>0.17</td>
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<tr>
<td></td>
<td>Annual average yield of milk</td>
<td>Yield</td>
<td>0.17</td>
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<tr>
<td></td>
<td>Yields</td>
<td>Yield</td>
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<td></td>
<td>Cereals</td>
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<td>Labor force</td>
<td>Unemployment rate</td>
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<tr>
<td>Crime rate</td>
<td>Total crime rate</td>
<td>Rate</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Grave crimes</td>
<td>Rate</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Adaptive capacity</strong></td>
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<tr>
<td>Economics</td>
<td>Road density</td>
<td>Density</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td>Share of industrial workers</td>
<td>Share</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td>Mobility of employees</td>
<td>Share</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td>Investments in capital asset</td>
<td>Investments</td>
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</tr>
<tr>
<td></td>
<td>Average monthly wage</td>
<td>Wage</td>
<td>0.20</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Milk production</td>
<td>Production</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Slaughter of cattle and poultry</td>
<td>Production</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Use of mineral fertilizers (per 1 ha)</td>
<td>Optimal use</td>
<td>0.33</td>
</tr>
<tr>
<td>Medical provision</td>
<td>No. of physicians per 10 thou. inhabitants</td>
<td>Number</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>No. of middle medical staff per. 10 thou.</td>
<td>Number</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>inhabitants</td>
<td>Number</td>
<td>0.33</td>
</tr>
<tr>
<td>Housing</td>
<td>No. of beds in hospitals per 10 thou.</td>
<td>Number</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Housing provision rate</td>
<td>Housing</td>
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</table>
### Ranks of Moldova’s administrative-territorial units in the decreasing order of their sensitivity to climate change

<table>
<thead>
<tr>
<th>No.</th>
<th>ATU</th>
<th>Physiographical</th>
<th>Sensitivity</th>
<th>Social-economic</th>
<th>Total rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indicator’s rank^a</td>
<td>Intermediate rank</td>
<td>Indicator’s rank^b</td>
<td>Intermediate rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a1</td>
<td>a2</td>
<td>a3</td>
<td>b1</td>
</tr>
<tr>
<td>1</td>
<td>Anenii Noi</td>
<td>15</td>
<td>9</td>
<td>11</td>
<td>10</td>
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<tr>
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<td>Bălți</td>
<td>14</td>
<td>21</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>Călărași</td>
<td>20</td>
<td>1</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Căușeni</td>
<td>8</td>
<td>12</td>
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<tr>
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<td>Chișinău</td>
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<td>Criuleni</td>
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<td>6</td>
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<td>Dondușeni</td>
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<td>19</td>
<td>19</td>
<td>17</td>
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<td>14</td>
<td>10</td>
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<td>9</td>
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<td>Fălești</td>
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<td>20</td>
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a1: land use; a2: soil quality; a3: built-up area; b1: population; b2: agriculture; b3: unemployment; b4: crime rate.
Ranks of Moldova’s administrative-territorial units by their adaptive capacity and general vulnerability to climate change

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</table>

S: rank of decreasing sensitivity; AC: rank of increasing adaptive capacity.
Mapping vulnerability to climate change of the Moldavian part of the Dniester Basin

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Adaptation capacity</th>
<th>Vulnerability</th>
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</table>

[Detailed map and data]
Adaptation of the Dniester basin to climate change

This activity has been realized within the context of the project ‘Climate Change and Security in Eastern Europe, Central Asia and the Southern Caucasus’ as its component ‘Climate Change and Security in the Dniester River Basin’. It was also a part of the UNECE programme of pilot projects on adaptation to climate change in transboundary basins.

The project was carried out under the Environment and Security Initiative (ENVSEC), with financial support from the Austrian Development Cooperation and the European Union’s Instrument for Stability (IfS).
Strategic Framework for Adaptation to Climate Change in the Dniester River Basin
The goal of developing the Strategic Framework

To propose adaptation actions targeted at:

- to reduce the climate change vulnerability of the Dniester Basin’s natural environment, economy and population;
- to promote adaptation to climate change at the basin level, with wide participation of its all institutions;
- to involve in the implementation of adaptation measures the basin-wide coordination and cooperation mechanisms.
Contents of “Strategic framework for adaptation to climate change in the Dniester River Basin”

10 → EXECUTIVE SUMMARY

12 → 01. INTRODUCTION

14 → 02. ENVIRONMENT OF THE DNIESTER BASIN: STATUS, PROBLEMS, OUTLOOK

15 → Geography and natural environment
17 → Population, economy and politics
18 → Ecological status and problems

20 → 03. CLIMATE CHANGE IN THE REGION AND BASIN: TRENDS AND UNCERTAINTY

20 → Global and regional context
23 → Future climate in the Dniester basin
27 → Causes and consequences of uncertainty

28 → 04. IMPACT OF CLIMATE CHANGE ON THE WATER FLOW, NATURAL ENVIRONMENT, ECONOMY AND POPULATION IN THE DNIESTER BASIN

28 → Vulnerable resources and sectors of the economy
31 → Problems related to the aquatic environment
40 → Climate change “hotspots” in the Dniester basin

42 → 05. POTENTIAL FOR ADAPTATION TO CLIMATE CHANGE IN THE DNIESTER BASIN

42 → Socioeconomic and institutional conditions
47 → Regulating mechanisms at the basin level
48 → International and basin-wide cooperation institutions

52 → 06. PRIORITIES AND ACTIONS FOR CLIMATE CHANGE ADAPTATION IN THE DNIESTER BASIN

52 → Principles of climate change adaptation in the Dniester basin
53 → Strategic Framework for Adaptation: overview of proposed measures
58 → Economic aspects of adaptation in the basin

60 → 07. WHERE TO BEGIN

60 → Institutional mechanisms
63 → Concrete steps

65 → SOURCES USED

67 → NOTES
Proposed adaptation measures

<table>
<thead>
<tr>
<th>Risk forecasting and analysis measures</th>
<th>Risk prevention and reduction measures</th>
<th>Remediation measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction in losses from extreme flooding</td>
<td>● updating and observance of rules for the operation of the Dniester’s system of reservoirs</td>
<td>● providing the public and local authorities with timely information about the flood risk</td>
</tr>
<tr>
<td></td>
<td>● updating of flood protection plans</td>
<td>● updating and implementation of emergency response plans</td>
</tr>
<tr>
<td></td>
<td>● restoration and optimization of the system of flood protection structures and culverts</td>
<td>● insurance of risks (including insurance provided with government support)</td>
</tr>
<tr>
<td>Reduction in losses from water scarcity</td>
<td>● analysis of the water balance in the basin</td>
<td>● modernization of irrigation systems</td>
</tr>
<tr>
<td></td>
<td>● improved monitoring and forecasting of flow and information sharing</td>
<td>● diversification and modernization of water supply systems for population centres</td>
</tr>
<tr>
<td></td>
<td>● assessment and monitoring of the condition of forests</td>
<td>● insurance of risks (including insurance provided with government support)</td>
</tr>
<tr>
<td>Reduction in losses from a deterioration in water quality</td>
<td>● improved monitoring and forecasting of flow and information sharing</td>
<td>● improvement of wastewater treatment systems</td>
</tr>
<tr>
<td></td>
<td>● improved monitoring of water quality</td>
<td>● protection and regulation of the use of catchment basins and water protection zones</td>
</tr>
<tr>
<td>Support for and restoration of aquatic and wetland ecosystems and species</td>
<td>● analysis of ecosystem services at the basin level</td>
<td>● improvement of water treatment and distribution systems</td>
</tr>
<tr>
<td></td>
<td>● improved monitoring of ecosystems and biological resources and transboundary information sharing</td>
<td>● diversification and modernization of water supply systems for population centres</td>
</tr>
<tr>
<td>General measures for adaptation and development of cooperation in the basin</td>
<td>● systematic analysis and forecasting of climate change and its impacts in the Dniester basin</td>
<td>● restoration of shoreline forests, meadows and wetlands</td>
</tr>
<tr>
<td></td>
<td>● consideration of adaptation needs in long-term Integrated Water Resources Management (IWRM) plans</td>
<td>● restoration of habitats, spawning grounds and fish stocks</td>
</tr>
<tr>
<td></td>
<td>● providing information about climate change problems in the basin</td>
<td>● inclusion of adaptation needs in socioeconomic development plans for sectors and territories</td>
</tr>
<tr>
<td></td>
<td>● inclusion of adaptation needs in socioeconomic development plans for sectors and territories</td>
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</table>
Classification of adaptation measures by target area, category and approximate cost

<table>
<thead>
<tr>
<th>Implementation</th>
<th>Informational</th>
<th>Organizational</th>
<th>Investment</th>
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<tr>
<td>Joint</td>
<td>Country actions at the basin level</td>
<td>Labour</td>
<td>Capital</td>
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<tr>
<td>Coordinated</td>
<td>Country actions to better account for basin-level needs</td>
<td>Basins</td>
<td>Capital</td>
</tr>
<tr>
<td>Autonomous</td>
<td>Harmonized actions within the countries and in selected parts of the basin</td>
<td>Local level</td>
<td>Capital</td>
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</table>

Approximate cost of basin-focused adaptation:

- < 1 mln. €
- 1-10 mln. €
- > mln. €

Need in information
Plan of the Strategic Framework implementation
From climate adaptation to climate security
Many thanks for your kind attentions!

https://ehlm.unece.org/display/ClimateChange/Dniester