



Ministry of Infrastructure
and Water Management



Schweizerische Eidgenossenschaft
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UNECE

**Seventh meeting of the
Global network of basins working on climate change adaptation
“Adapting to climate change in transboundary basins: linkages to global processes and
actions on-the-ground on climate, droughts and wetlands”**

Thursday 25th – Friday 26th May 2023, Geneva

**Climate change impact on Water Resources Management
in North Macedonia
- Flood Risk Management in the Drin River Basin**

**Ylber Mirta, North Macedonia
Head of Department for Waters
Ministry of Environment and Physical Planning**

Legal, policy and Institutional framework on climate change

The country has no law on climate change issues, they are incorporated into the Law on Environment .
The preparation of a law on climate action has started

The three main objectives of the legislation on climate action currently under development are:

- The full transposition and implementation of the EU climate acquis,
- Achieving a low-carbon economy and
- Achieving a more “climate resilient” society.

The Ministry of Environment and Physical Planning (MoEPP) is the designated National Focal Point for UNFCCC and the key governmental body responsible for **policymaking** with regard to climate change issues.

The Ministry is also identified as the main institution responsible for coordinating inter-institutional cooperation for the preparation of the National plans on climate change and action plans.

Despite the centrality of the Ministry’s role on climate action issues, the Ministry **has very limited institutional and human capacities** for the role. In January 2000, the Climate Change **Project Office** was set up within MOEPP

The National Climate Change Committee (NCCC) was established in 2000 as an advisory body (32 members) for policymaking related to climate change issues in the country.

National Communications to the UNFCCC & Biennial Update Reports

Development of three (3) National Communications to the UNFCCC has contributed to address climate change issues.

The First, Second, and Third National Communication on Climate Change were adopted by the Government of North Macedonia and submitted to the UNFCCC Secretariat in 2003, 2008, and 2014 respectively.

There is no dedicated **Strategy for adaptation to climate change**. In the absence of another strategic document for adaptation to climate change, **the National plans on climate change serve as strategic documents for adaptation to climate change**.

As part of the process of developing the Third National Communication, a **Climate Change Communication Strategy and Action Plan** has been developed for the country. The main declared objective of the Strategy is to **raise awareness** on climate-change-related issues, as well as to foster broader **stakeholder engagements**.

The Strategy identifies three separate target groups: **Local governments, the business community and the general public**.

This Fourth National Communication (NC4) represents a further step forward in the process.

In addition, three Biennial Update Reports (BURs) have been carried out (BUR 3 was submitted in June 2021)

The climate impacts on water resources management

Water supply

North Macedonia has about **8 billion m³** of freshwater sources.

Water is used for human consumption (drinking water), irrigation, industrial, economic and other purposes.

- **80%** of the inhabitants were supplied with water from **centralized drinking water systems**
- **10%** of the population is supplied to **local rural water supply systems** and
- **10%** have their own, **individual water supply**.

Water losses in water supply companies remain high, ranging from **40 to 65%**.

Sewerage

The current state of sewage systems differs in **urban and rural areas**. Overall, existing systems are quite old, the collection network is composed of different materials, the pipes are cracked and there are leakages of wastewater. Urban wastewater and stormwater systems are not separated, and during floods the pipes are overloaded and subject to increased pressure, causing flooding of streets during heavy rainfall.

By now, 12 cities and towns (incl. Skopje) have built separate sewerage systems.

Irrigation

Most irrigation systems in North Macedonia were built before the 1990s. For this purpose, more **than 27 large dams, more than 120 small dams, about 1,400 km of main canals / pipelines and about 6800 km of detailed irrigation networks were built**. The existing network is old, destroyed or not functioning and needs to be repaired.

Therefore, it was up to the farmers to find solutions on their own, by digging wells, securing pipes and installing pumps.

The climate impacts on water management infrastructures

Water management infrastructures can be used for: **agricultural purposes** or for **urban and industrial use**.

Water infrastructures for **agricultural use** include storage reservoirs and derivation works, distribution networks and, finally, irrigation systems.

The water infrastructures for **urban and industrial use** considered include the collection, purification and depuration works, distribution to the final users and, finally, the drainage and collection systems of rainwater and wastewater.

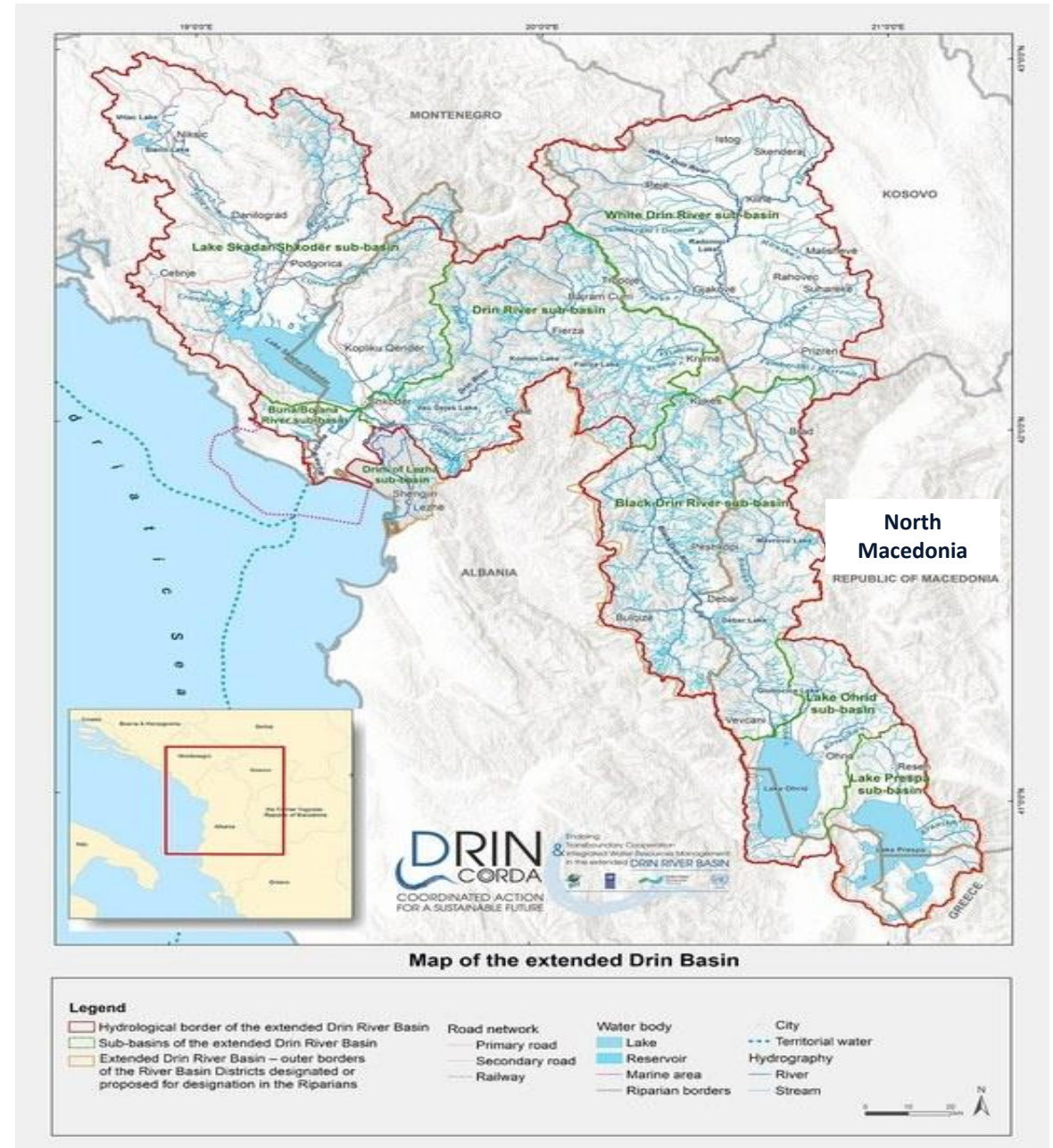
Climate hazard	Impacts for the water infrastructure
	Loss of efficiency of fossil fuel plants
Heat waves	Reduction in electricity transmission capacity
	Reduction in power generation capacity due to reduced discharge capacities in reservoirs
Increase in average temperature	Reduction in wind power generation capacity due to weakening of high pressure winds
	Increased energy demand in the summer period and consequent increased vulnerability of the system when exposed to extreme events
Drought	Structural damage to oil and gas pipelines due to subsidence
	Decreased water availability for cooling of production facilities
Cold waves	Snowfall
	Formation of snow/ice sleeves on transmission and distribution lines
Wildfires	Structural damage caused by exposure to fire and high temperatures
	Structural damage to process plants, storage systems and fuel transport systems due to direct impact with the waves
River flooding	Structural damage as a result of wind pressure or debris impact
	Reduction in operation of wind turbines due to decoupling of turbines from generators to avoid damage to them
Wind storms	Disruption caused by the action of wind on foreign bodies on the infrastructure (Falling trees)

Flood Risk Management in The Drin River Basin

The Drin River Basin is located in the Western Balkans And shared between North Macedonia, Albania, Kosovo, Greece and Montenegro.

According to the National Communications to UNFCCC from Albania, Montenegro and North Macedonia, as well as to the report 'The state of water in Kosovo', Flood risk in riparian countries of the Drin Basin are increasingly exposed to the impact of climate change.

They are experiencing increased periods of extreme heat in the summer and increased rainfall during the cooler seasons.



Adaptation fund / UNDP project

“Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans”

The objective of the project is to assist the riparian countries in the implementation of an integrated climate-resilient river basin flood risk management approach in order to improve their existing capacity to manage flood risk **at regional, national and local levels** and to enhance resilience of vulnerable communities in the DRB to climate-induced floods.

The project will contribute to the **strengthening of the current flood forecasting and early warning system** by increasing the density of the hydrometric network, and by digitizing historical data for stations not currently in the existing forecasting model.

The project will **develop and implement transboundary integrated FRM strategies**.

In addition, the project will develop the underlying capacity of national and regional institutions to ensure sustainability and to scale up the results.

It will **support stakeholders** by providing guidance, sharing climate information, knowledge and best practices. The project will also **invest in the priority structural and community-based non-structural measures**.

Drin FRM Project - components

1. Improving climate and risk informed decision-making, availability and use of climate risk information

- 1.1 Strengthening hydrometric monitoring networks
- 1.2 Improving knowledge of climate change induced flood risk
- 1.3 Establishing – GIS-based **vulnerability, loss and damages assessment tool and database**

2. Improving institutional arrangements, legislative and policy framework for FRM, and development of climate change adaptation and flood risk management strategy and plans at the basin, sub-basin, national and sub-national levels

- 2.1 Improving Drin River Basin FRM Policy Framework
- 2.2 Regional, national and sub-national institutions training in Flood risk management.
- 2.3 Developing an Drin River Basin Integrated CCA and FRM Strategy and Plan.

3. Strengthening resilience of local communities through improved flood forecasting and early warning, implementation of structural and non-structural measures and the strengthened capacity for CCA and FRM at the local level

- 3.1 Introduction of appraisal-led design for structural and non-structural measures.
- 3.2 Construction of structural risk reduction measures in prioritized areas.
- 3.3 Strengthening local community resilience to flooding and awareness measures

Overview of project progress, main achievements

- During the inception phase of the project, the effective **project governance structure was established** with the Drin Core Group (DCG) in the role of the Regional Project Board
- The capacities of the Hydro-Met Service in North Macedonia have been strengthened through **extension of the national network** of hydrological and meteorological stations (26) in the Drin River Basin.
- UNDP has signed a **Memorandum of Understanding** with UHMR
- The spatial data infrastructure was established with collection, review and post processing of all available historic data;
- LiDAR surveying method (Light Detection and Ranging) for preparation of Digital terrain model (DTM) was completed for the NMK part of the Drin River
- Development of comprehensive hydrological and hydraulic model for the Drin River Basin have progressed well;
- Restoration of Sateska river and diversion in its natural riverbed was completed.
- The flood risk in the urban part of the City of Struga were decreased through the **clean-up of the sediment from the outlet of Drini River from the Ohrid Lake** and from the riverbed of Drini River.

Pilot project: “The diversion of Sateska River”

Sateska River is located in the south-west of the North Macedonia. Currently a tributary of Lake Ohrid, it originally flowed directly into the River Crn Drim but was re-routed in 1961/2.

The 1961/2 Sateska river redirection from its natural flow in the River Crn Drim to the Lake Ohrid, is between the towns of Struga and Ohrid and was motivated by three main reasons:

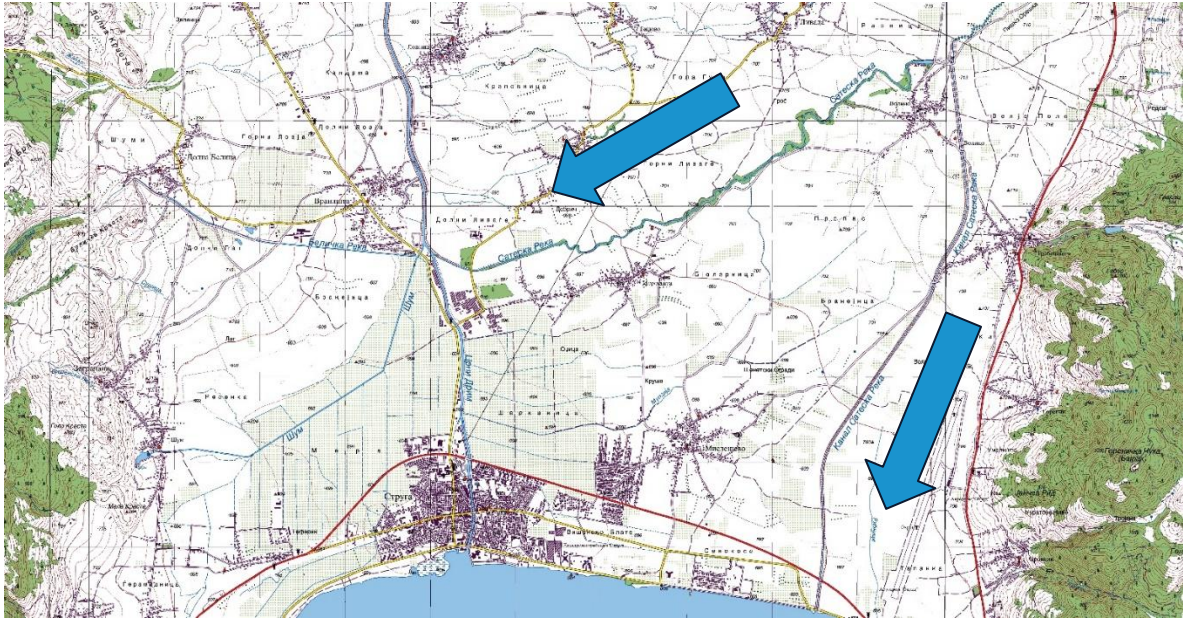
- To decrease the sediment load on the artificial reservoir Globocica and the hydropower plant Globocica;
- To ensure the hydro potential of the hydropower plants on the River Crn Drim;
- To drain the Struga wetland/marshland.

The diversion of Sateska River caused a huge sediment load of approx. 120,000m³ annually to Lake Ohrid which is negatively affecting the habitats and the entire ecosystem in the littoral part of the Ohrid Lake.

Moreover, Sateska River brings 39% of phosphorus load to the Lake Ohrid which on a long run will increase the eutrophication of the Lake.

The sediment that Sateska is bringing is significantly increasing the river bed level and decreasing the storage and conveyance capacity of the river especially during extreme weather events and/or intensive rainfalls.

This pilot project is in final stage of realization.



Sateska River



Next steps

1. Realization of the planned activities under the **Adaptation fund / UNDP project** “Integrated climate-resilient transboundary flood risk management in the Drin River basin” with focus on:
 - (1) exchange of flood risk knowledge and climate information;
 - (2) basin level climate change adaptation and flood risk management strategy and plans;
 - (3) combination of structural and non-structural flood risk reduction interventions;
 - (4) institutional capacity.
2. Implementation of the “**Strategic Action Plan**” (**SAP**) developed in frame of the GEF supported project “Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extended Drin River Basin” (**GEF Drin Project**) through the new GEF project “Implementing the Strategic Action Programme of the Drin Basin to strengthen transboundary cooperation and enable integrated natural resources management” (planned to start by end of 2023).



**Thank you
for your attention!**