ICPDR and Climate Changes in Danube River Basin

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EDO user meeting
09-10 Nov 2017, JRC, Ispra
Danube River Protection Convention

signed 29 June 1994, Sofia (Bulgaria)

ICPDR coordinates implementation of EU Water Framework Directive & EU Floods Directive on basin-wide level
# Contracting Parties

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<th>Bosnia &amp; Herzegovina</th>
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<td>Austria</td>
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<td>European Union</td>
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Coordination Mechanism

Bilateral agreements

Cooperation at sub-basin level:
  e.g. Sava, Tisza

Cooperation
Extreme Climate events in the Danube River Basin

Drought

e.g. Hungary – suffered serious drought events: During the last century on average each 3-4 years

Flash floods

The population of the Danube River Basin suffered from severe floods in 2002, 2005, 2006, 2014 ...
Climate change adaptation
Starting point

- (...) impacts of climate change will increase and develop into a significant threat in the Danube River Basin
- ask the ICPDR to develop until 2012 a Climate Adaptation Strategy in the Danube River Basin (...) and ensure that climate adaptation issues are fully integrated in the second Danube River Basin Management Plan in 2015
Danube Climate Adaptation Strategy

Danube Study – Climate Change Adaptation
“Study to provide a common and basin-wide understanding towards the development of a Climate Change adaptation strategy in the Danube River Basin”

Danube River Basin Climate Change Adaptation

Final Report

Department of Geography
Chair of Geography and Geographical Remote Sensing
Ludwig-Maximilians-Universität München, Germany

ICPDR Strategy on Adaptation to Climate Change
National Adaptation Strategies & National Management Plans

Adoption of National Adaptation Strategy (NAS)
- NAS finished
- NAS in preparation
- NAS not available
Revision and update of the Danube Study

- **Using the same methods** to make the results comparable:
  - No further model calculations
  - Results are solely based on the analysis of the findings of on-going and finalized research and development projects, studies and guidances

- **Evaluating changes** in the scientific knowledge base and documenting still existing knowledge gaps

- **Comparing the findings of both studies** and defining commonalities, differences and contradictions

- **Integrating** the experiences of stakeholders

Close collaboration with experts in the Danube River Basin
Approach:

- Step-wise and cyclic approach - 6-years planning cycle according to Management Plans of EU Water Framework and EU Floods Directive
- Update of Strategy in 2018 (2012 + 6 years)

Incorporation of climate adaptation measures in cyclic Management Plans according to EU Water Framework and EU Floods Directive for the Danube basin
Some predicted CC impacts (on water related fields)

- Climate Change will impact the various sub-catchments, and the three Danube catchment areas (upper, middle, lower DRB) differently → i.e. regional differences may increase

- Discharge: Changes in mean annual runoff: strong decrease in summer, increase in winter
  - Flow regime modification in particular in the mountain regions due to less snow and to earlier snow melt and reduction of glaciers

- Water related energy production:
  - Energy losses due to a decrease in runoff and more low flow and flood events in the far future
  - In high Alpine areas compensation of low flows with glacier melt-water in the near future. In the long term, however, the accelerated retreat of the glaciers is expected to result in decreasing water supply
  - Upper DRB: Mean annual hydroelectric power generation: more or less stable conditions in the near future, a decrease may appear in the far future.
  - Due to an increase in flood events, flood related damages of runoff power plants may increase (especially Middle DRB and Lower DRB)
  - Thermal electricity production: Insecure availability of cooling water for power generation in thermal power stations
  - Higher vulnerability due to higher water temperatures and lower water levels, especially in summer
Lessons learned and Key messages

- **Joint understanding** (i.e. on scenarios and related impacts) and shared knowledge base is essential for **joint decision making** in a trans-boundary basin.

- Making best use of **existing structures** and water management instruments.

- Coordination requirements – climate change is cross-cutting issue requiring **interdisciplinary approach**.

- A **step-wise, cyclical and adaptive approach is needed** to address uncertainties, knowledge gaps, and new scientific findings.
Thank you for your kind attention!

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http://www.icpdr.org/